

COMMITTENTE:



ALTA SORVEGLIANZA:



GENERAL CONTRACTOR:



**INFRASTRUTTURE FERROVIARIE STRATEGICHE DEFINITE DALLA
LEGGE OBIETTIVO N. 443/01
LINEA A.V. /A.C. TORINO – VENEZIA Tratta MILANO – VERONA
Lotto Funzionale Brescia-Verona
PROGETTO DEFINITIVO**

**CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO
FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE
IN ASSENZA DI VARCHI PER SOTTOSERVIZI.
RELAZIONE DI CALCOLO**

IL PROGETTISTA
saipem spa
Tommaso Taranta
Dottore in Ingegneria Civile Iscritto all'albo
degli Ingegneri della Provincia di Milano
al n. A23768 - Sez. A Settori:
a) civile e ambientale b) industriale c) dell'informatica
Tel. 02 52020571 Fax 02 52020509
CF. e P.IVA 0083709157

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Tel. 02 52020571 Fax 02 52020509
CF. e P.IVA 0083709157

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- **ALLEGATO N°2. Fondazioni su pali per Barriere di h=5.75m con rilevato di H=3.0m. Calcolo agli elementi finiti con il programma di calcolo "ENG"**
- **ALLEGATO N°3. Fondazioni su pali per Barriere di h=4.75m con rilevato di H=3.0m. Calcolo agli elementi finiti con il programma di calcolo "ENG"**

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- **ALLEGATO N°4. Fondazioni su pali per Barriere di h=3.75m con rilevato di H=3.0m. Calcolo agli elementi finiti con il programma di calcolo “ENG”**
- **ALLEGATO N°5. Fondazioni su pali per Barriere di h=6.75m con rilevato di H=7.0m. Calcolo agli elementi finiti con il programma di calcolo “ENG”**
- **ALLEGATO N°6. Fondazioni su pali per Barriere di h=5.75m con rilevato di H=7.0m. Calcolo agli elementi finiti con il programma di calcolo “ENG”**
- **ALLEGATO N°7. Fondazioni su pali per Barriere di h=4.75m con rilevato di H=7.0m. Calcolo agli elementi finiti con il programma di calcolo “ENG”**
- **ALLEGATO N°8. Fondazioni su pali per Barriere di h=3.75m con rilevato di H=7.0m. Calcolo agli elementi finiti con il programma di calcolo “ENG”**



1 PREMESSA

La presente relazione ha come oggetto il dimensionamento e la verifica statica delle fondazioni delle barriere antirumore su rilevato (cordoli, pali) da installarsi sulla Linea AV/AC Torino-Venezia, tratta Milano-Verona, lotto funzionale Brescia Verona.

Questo documento sviluppa una serie di tipologie per le fondazioni delle barriere antirumore da predisporre su rilevati ferroviari, di assegnate caratteristiche geometriche e meccaniche.

I tipologie sviluppati fanno riferimento a barriere antirumore tipo di altezza 3.75, 4.75m, 5.75 e 6.75m, poste in opera con montanti in acciaio disposti ad interasse fisso di 3.0m e su rilevati di altezza pari a 3.0m e 7.0m.

In questo documento vengono trattate fondazioni su pali di diametro $\phi 600$ o $\phi 800$ con interasse pali pari a 3.0m, con trave di coronamento in testa pali pari rispettivamente a 85*100cm ed a 100*100cm.

Sia per il materiale che costituisce i rilevati che per quello dei terreni naturali sottostanti si ipotizza una sola tipologia di parametri geotecnici.

Vengono inoltre considerate due casistiche di altezza rilevato pari rispettivamente a 3.0m e a 7.0m.

La tabella sottoriportata sintetizza le lunghezze dei pali esaminati nel presente documento in funzione dell'altezza della barriera antirumore:

Tratta	Altezza barriera (m)	Lunghezza Palo (m)	Diametro Palo (m)	Trave di coronamento B*H (m)
Milano- Verona	3.75	8.00	0.60	0.85*1.00
	4.75	8.00	0.60	0.85*1.00
	5.75	10.00	0.80	1.00*1.00
	6.75	12.00	0.80	1.00*1.00



2 NORMATIVA DI RIFERIMENTO

La normativa di riferimento è la seguente:

- **Legge n. 1086 del 5/11/1971** - Norme per la disciplina delle opere di conglomerato cementizio normale e precompresso ed a struttura metallica.
- **Norme Tecniche C.N.R. UNI n. 10011 di Giugno 1988** - Costruzioni di acciaio - Istruzioni per il calcolo, l'esecuzione, il collaudo e la manutenzione e s. m. ed i..
- **EN 1993-1-9: 2005** – Eurocodice 3 - Progettazione delle strutture di acciaio - Parte 1-9: Fatica
- **D.M. del 16/01/1996** – Norme tecniche relative ai “Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi”.
- **Circ. Min. LL. PP. n. 156AA.GG./STC del 4/07/1996 (D.M. del 16/01/1996)** - Istruzioni per l'applicazione delle Norme Tecniche relative ai criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi.
- **Circ. Min. LL. PP. n. 252GG./STC del 15/10/1996 (D.M. del 09/01/1996)** - Istruzioni per l'applicazione delle Norme Tecniche per il calcolo, l'esecuzione ed il collaudo delle opere in c.a. normale e precompresso e per le strutture metalliche.
- **Circ. Min. LL.PP. n. 65 del 10/04/1997 (D.M. del 16/01/1996)** - Istruzioni per l'applicazione delle "Norme tecniche per le costruzioni in zone sismiche".
- **Istruzione F.S. I/SC/PS-OM/2298 del 2/06/1995** – Sovraccarichi per il calcolo dei ponti ferroviari – Istruzioni per la progettazione, l'esecuzione e il collaudo.
- **Istruzione F.S. 44/S del 20/10/1999.**
- **Disciplinare tecnico** – Barriere antirumore per impieghi ferroviari -Edizione 1998 e successive modificazioni e/o integrazioni di cui all'allegato 1.
- **RFI 24.03.04** “Prescrizioni tecniche integrative e provvisorie per la progettazione delle barriere antirumore”.
- **Lettera di RFI del 19/12/2005 (Prot. RFI-DIN-ICI\A0011\P\2005\0001184)**
- **Lettera di RFI del 21/06/2006 (Prot. RFI-DIN-ICI\A0011\P\2006\0000717)**
- **Istruzione UNI 9503/2007**
Procedimento analitico per valutare la resistenza al fuoco degli elementi costruttivi in acciaio.

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3 DOCUMENTI DI RIFERIMENTO

TITOLO	CODICE DOCUMENTO
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE IN ASSENZA DI VARCHI PER SOTTOSERVIZI. RELAZIONE DI CALCOLO	IN0500DE2CLIM0006007
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE IN PRESENZA DI VARCHI PER SOTTOSERVIZI. RELAZIONE DI CALCOLO	IN0500DE2CLIM0006008
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI DI BARRIERE ANTIRUMORE. PRESCRIZIONI MATERIALI E NOTE GENERALI	IN0500DE2BXIM0006002
FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE - BA00 - RELAZIONE GEOTECNICA	IN0500DE2RBIM0006001
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON BARRIERE ANTIRUMORE Hmon=5.95m E 6.95m. CASSERATURA	IN0500DE2BXIM0006003
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON BARRIERE ANTIRUMORE Hmon=3.95m E 4.95m. CASSERATURA	IN0500DE2BXIM0006004
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON VARCO 6m PER SOTTOSERVIZI CON BARRIERE ANTIRUMORE Hmon=5.95m e 6.95m. CASSERATURA	IN0500DE2BXIM0006005
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON VARCO 6m PER SOTTOSERVIZI CON BARRIERE ANTIRUMORE Hmon=3.95m e 4.95m. CASSERATURA	IN0500DE2BXIM0006007
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON VARCO 9m PER SOTTOSERVIZI CON BARRIERE ANTIRUMORE Hmon=5.95m e 6.95m. CASSERATURA	IN0500DE2BXIM0006008
CORPO STRADALE FERROVIARIO. SEZIONE TIPO IN RILEVATO. FONDAZIONI SU PALI CON VARCO 9m PER SOTTOSERVIZI CON BARRIERE ANTIRUMORE Hmon=3.95m e 4.95m. CASSERATURA	IN0500DE2BXIM0006009



4 MATERIALI PRESCRITTI

I materiali prescritti per l'esecuzione dell'opera sono:

4.1 CALCESTRUZZO

Sia per i pali di fondazione che per le travi di coronamento pali si adotta un calcestruzzo di classe $R_{ck} = 30\text{N/mm}^2$

Di conseguenza i valori ammissibili per le tensioni risultano:

$$- \sigma_b = 9.75 \text{ N/mm}^2$$

$$- \tau_{c0} = 0.60 \text{ N/mm}^2$$

$$- \tau_{c1} = 1.82 \text{ N/mm}^2$$

$$- 1.1 * \tau_{c1} = 2.00 \text{ N/mm}^2 \text{ (in presenza di azioni combinate di taglio e torsione)}$$

4.2 ACCIAIO IN TONDI AD ADERENZA MIGLIORATA

Si adotta acciaio ex FeB44K (controllato in stabilimento), avente soglia di snervamento $f_{yk} \geq 430\text{N/mm}^2$, ora divenuto acciaio B450C con soglia di snervamento $f_{yk} \geq 450\text{N/mm}^2$, di conseguenza il valore ammissibile per le tensioni in condizioni sismiche risulta: $\sigma_s = 255 \text{ N/mm}^2$

Per le barre ad aderenza migliorata ex FeB44K si definivano inoltre le seguenti quantità:

$$f_y/f_{yk} \leq 1.35$$

$$(f_t/f_y)_{\text{medio}} \geq 1.13$$

Ora per le barre ad aderenza migliorata B450C si definiscono le seguenti quantità:

$$f_y/f_{yk} \leq 1.25$$

$$(f_t/f_y)_{\text{medio}} \geq 1.05$$



I diametri e gli interassi massimi delle barre devono soddisfare le condizioni previste dalla Tab.2.2.2.4 (tratta dall'Istruzione I/SC/PS-OM/2298 F.S. del 13 gennaio 1997 e di seguito riprodotta). La tensione σ_s dell'acciaio indicata è relativa alle Combinazioni TA1 e TA2 (condizioni di esercizio).

Tensione dell'acciaio [N/mm ²]	σ_s	Massimo diametro delle barre [mm]	Massimo interasse delle barre [mm]
≤ 220		20	200
≤ 185		25	258
≤ 160		30	300

4.2.1 Verifiche di resistenza e fessurazione

Le verifiche di resistenza vengono svolte adottando il metodo delle tensioni ammissibili e sono raggruppate in apposite tabelle, di seguito riportate.

Le verifiche a fessurazione sono state condotte considerando:

a) Verifica di formazione delle fessure: in sezione interamente reagente e per le sollecitazioni di esercizio si determina la massima trazione nel calcestruzzo σ_{ct} confrontandola con la resistenza caratteristica a trazione per flessione f_{ctk} : se risulta $\sigma_{ct} < f_{ctk}$ la verifica è soddisfatta, altrimenti si procede alla verifica di apertura delle fessure.

b) Verifica di apertura delle fessure: l'apertura convenzionale delle fessure viene calcolata con le modalità indicate nel vigente D.M. LL.PP. relativo alle "Norme Tecniche per il calcolo, l'esecuzione ed il collaudo delle opere in cemento armato normale e precompresso, e per le strutture metalliche" (D.M. 9/01/1996). Indicando con:

- ricoprimento sezione di verifica: c

- ricoprimento minimo per le fondazioni: $c_{min} = 4.0\text{cm}$

la massima apertura ammissibile risulta (strutture poste a permanente contatto con il terreno):

$$w_{amm} = c/c_{min} * w_1 = c/4.0 * 0.10\text{mm} \text{ (con } c/c_{min} \leq 1.5).$$



In particolare per i pali di fondazione si ha che:

il ricoprimento è di $c > 6.0\text{cm}$

la massima apertura ammissibile risulta $w_{\text{amm}} = 0.15\text{mm}$

mentre per le travi di coronamento pali:

il ricoprimento è di $c = 5.0\text{cm}$

la massima apertura ammissibile risulta $w_{\text{amm}} = 0.125\text{mm}$

4.3 CARATTERIZZAZIONE GEOTECNICA DEI TERRENI

4.3.1 Rilevato ferroviario (Terreno tipo 1)

Le caratteristiche del rilevato ferroviario sono di seguito riassunte:

- $\gamma_R = 20 \text{ kN/m}^3$
- $\phi' = 40^\circ$ (utilizzabile nelle verifiche in oggetto)
- $c' = 0 \text{ kPa}$

4.3.2 Terreno sottostante al rilevato (Terreno tipo 2)

Le caratteristiche del terreno naturale sottostante il rilevato sono di seguito riassunte:

- $\gamma_R = 19 \text{ kN/m}^3$
- $\phi' = 33^\circ$
- $c' = 0 \text{ kPa}$



5 DESCRIZIONE DEI CARICHI AGENTI

I carichi agenti sulle strutture di fondazioni sono i seguenti:

- 1) Peso proprio strutture di fondazione,
- 2) Azioni trasmesse dalle barriere antirumore,
- 3) Spinta delle terre,
- 4) Spinta dovuta ai sovraccarichi presenti sul rilevato,
- 5) Effetti indotti dal ritiro e dalla diminuzione di temperatura (15°C) della trave di coronamento testa pali.

5.1 PESO PROPRIO STRUTTURE DI FONDAZIONE

Peso proprio: = 25.00 kN/m³

5.2 AZIONI TRASMESSE DALLE BARRIERE ANTIRUMORE

Si esaminano nel dettaglio i carichi agenti sulle barriere e le sollecitazioni trasmesse alle strutture di fondazione.

5.2.1 Peso proprio

Il peso proprio è costituito dal peso dei pannelli fonoassorbenti; per le successive calcolazioni si sono assunti i seguenti carichi comprensivi di telai, piatti, guarnizioni, ecc:

Peso proprio pannelli in cls: = 2.50 kN/m²

Peso proprio pannelli fonoisolanti in cls e argilla: = 3.70 kN/m²

Peso proprio pannelli fonoisolanti in acciaio: = 0.25 kN/m²

Montanti in acciaio con sezione ad H = 78.50 kN/m³

5.2.2 Pressione aerodinamica e vento trasversale

5.2.2.1 Pressione aerodinamica dei convogli

Per le azioni prodotte dal passaggio dei convogli ferroviari si fa riferimento al punto 1.4.6 dell'istruzione I/SC/PS/-OM/2298 del 02.06.1995 aggiornato al 13.01.1997.

Considerando le velocità di percorrenza di un convoglio con forme aerodinamiche pari a V=300 km/h, dall'abaco riportato in normativa si evince che:

essendo la distanza tra le barriere e l'asse binario

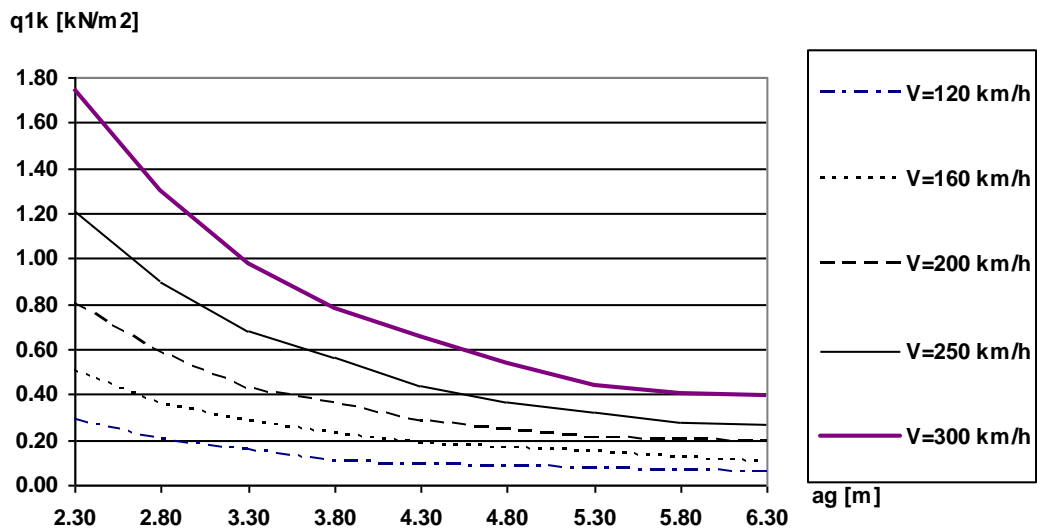
$a_g \cong a_{g \min} = 4.65\text{m}$



si ha:

$$f(300; a_g) = 0.58 \text{ kN/m}^2$$

$$q_{1k} = q_{4k} \cong 0.60 \cdot 0.58 = 0.348 \text{ kN/m}^2$$



5.2.2.2 Pressione del vento

La pressione del vento è stata calcolata secondo quanto riportato D.M. del 16/01/1996 ed in particolare determinando le azioni statiche equivalenti all'azione del vento per la barriera di altezza maggiore e posta ad altezza massima rispetto al piano campagna.

Le calcolazioni effettuate forniscono:

REGIONE	Zona	$v_{ref,0}$ [m/s]	a_0 [m]	k_a [1/s]
Lombardia	1	25	1000	0.012

a_s	100	[m]	altitudine del sito ove sorge la costruzione
v_{ref}	25.0	[m/s]	
q_{ref}	390.6	[N/m ²]	

ZONA	1		
Aree con ostacoli diffusi		Cl.	
		Rugosità	C



CATEGORIA DI ESPOSIZIONE	k_r	z_0 [m]	z_{min} [m]
III <input type="button" value="▼"/>	0.20	0.10	5

z	6.75	[m]	altezza della costruzione sul (dal) suolo
C_t	1.50		coefficiente di topografia
C_e	3.366		coefficiente di esposizione

C_d	1		coefficiente dinamico
C_p	1.2		coefficiente di forma o aerodinamico
C_f	0.02		coefficiente di attrito

p	1577.8	[N/m ²]
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5.2.2.3 Azioni considerate per le barriere su rilevato

La somma delle azioni dovute agli effetti del vento e della pressione / depressione aerodinamica dovuta ai convogli ferroviari risulta pari a:

$$p_{tot} = q_{1k} + p = 0.348 + 1.578 = 1.926 \text{ kN/m}^2$$

La somma dei valori ricavati è quindi inferiore al valore minimo, pari a 2.50 kN/m² per linee con velocità superiore a 200 km/h, prescritto nelle già citate "Prescrizioni tecniche integrative e provvisorie per la progettazione delle Barriere Antirumore".

Pertanto i carichi di progetto restano definiti come segue:

$$p_{tot} = p_{vento} + p_{aerodinamica} = 2.50 \text{ kN/m}^2$$



Quindi per un interasse di 3.00m tra montante e montante della barriera acustica si avranno i seguenti carichi ripartiti agenti su ogni elemento strutturale:

analisi statica: $p = 2.50 \times 3.00 = 7.50$ [kN/m]

5.2.3 Estratto sollecitazioni a base montanti delle barriere

Si riporta di seguito in forma tabellare un riassunto delle sollecitazioni agenti a base montante per le diverse altezze di barriere.

AZIONI BASE MONTANTE		
BARRIERA H=6.75m	$N_B =$ (daN)	4'725.0
	$M_B =$ (daNm)	17'085.9
	$T_B =$ (daN)	5'062.5
BARRIERA H=5.75m	$N_B =$ (daN)	4'560.0
	$M_B =$ (daNm)	12'398.4
	$T_B =$ (daN)	4'312.5
BARRIERA H=4.75m	$N_B =$ (daN)	4'347.5
	$M_B =$ (daNm)	8'460.9
	$T_B =$ (daN)	3'562.5
BARRIERA H=3.75m	$N_B =$ (daN)	4'192.5
	$M_B =$ (daNm)	5'273.5
	$T_B =$ (daN)	2'812.5

in cui:

$N_B =$ Peso montante+Peso pannelli (kN)

$M_B = p_{tot} * i * H^2 / 2$ (kNm)

$T_B = p_{tot} * i * H$ (kN)

essendo:

$i = 3.0m$

$p_{tot} = 2.50$ kN/m²

$H =$ altezza barriera



5.3 SPINTA DELLE TERRE

5.3.1 Spinta prodotta dai carichi permanenti

Vista la geometria della fondazione, si considera gravante sul palo la spinta del terreno agente sul cordolo di coronamento.

Essendo il rilevato caratterizzato da un $\phi = 40^\circ$ si ottengono i seguenti coefficienti di spinta attiva e passiva:

$$\lambda_A = \lambda_A(\phi=40^\circ) = \operatorname{tg}^2(\pi/4 - \phi/2) = 0.217$$

$$\lambda_P = \lambda_P(\phi=40^\circ) = \operatorname{tg}^2(\pi/4 + \phi/2) = 4.599$$

Mentre per il terreno sottostante essendo $\phi = 33^\circ$ si ha:

$$\lambda_A = \lambda_A(\phi=33^\circ) = \operatorname{tg}^2(\pi/4 - \phi/2) = 0.295$$

$$\lambda_P = \lambda_P(\phi=33^\circ) = \operatorname{tg}^2(\pi/4 + \phi/2) = 3.392$$

La pressione agente a tergo dei pali di fondazione alla profondità z rispetto a sommità palo, espressa per metro lineare di sviluppo in direzione longitudinale, vale:

$$p_A = \lambda_A \cdot \gamma \cdot z \quad (\text{con } z \text{ in metri e } P_A \text{ in daN/m}^2)$$

Pertanto, considerando che il singolo palo assorba la pressione esercitata sulla trave di coronamento per una lunghezza di $i=3$ m, si ottiene a tergo della trave una pressione di spinta pari a:

$$p_{sac} = 3.0 \cdot (k_A \cdot \gamma \cdot z) \quad (\text{con } z \text{ in metri e } p_{sac} \text{ in daN/m})$$

Poiché l'altezza della trave di coronamento è sempre pari a $H=1.00$ m per tutte le altezze delle barriere si ottiene:



BARRIERA H=6.75m	$p_{sac-max}=i*\gamma*H*\lambda_{a_1}$ (daN/m)	1'304.66
BARRIERA H=5.75m	$p_{sac-max}=i*\gamma*H*\lambda_{a_1}$ (daN/m)	1'304.66
BARRIERA H=4.75m	$p_{sac-max}=i*\gamma*H*\lambda_{a_1}$ (daN/m)	1'304.66
BARRIERA H=3.75m	$p_{sac-max}=i*\gamma*H*\lambda_{a_1}$ (daN/m)	1'304.66

5.3.2 Spinta prodotta dai carichi accidentali

a) Spinta agente sulla trave di correa

Come carico accidentale sul rilevato per la valutazione sulla spinta sulla trave di coronamento pali si assume un sovraccarico pari a $q=10 \text{ kN/m}^2$;

La pressione agente a tergo dei pali di fondazione alla profondità z , espressa per metro lineare di sviluppo in direzione longitudinale, vale quindi:

$$q_c = \lambda_a * q \text{ (con } z \text{ in metri e } q \text{ in daN/m}^2\text{)}$$

Pertanto, considerando che il singolo palo assorba la pressione esercitata sulla trave di coronamento per una lunghezza di $i=3 \text{ m}$, si ottiene a tergo della trave una pressione pari a:

$$q_{ct} = 3.0 * \lambda_a * q \text{ (con } z \text{ in metri e } q \text{ in daN/m)}$$

Poiché l'altezza della trave di coronamento è sempre pari a $H=1.00\text{m}$ per tutte le altezze delle barriere si ottiene:

BARRIERA H=6.75m	$q_{ct}=q*\lambda_{a_1}*H*i$ (daN/m)	652.33
BARRIERA H=5.75m	$q_{ct}=q*\lambda_{a_1}*H*i$ (daN/m)	652.33
BARRIERA H=4.75m	$q_{ct}=q*\lambda_{a_1}*H*i$ (daN/m)	652.33
BARRIERA H=3.75m	$q_{ct}=q*\lambda_{a_1}*H*i$ (daN/m)	652.33

b) Spinta agente lungo il palo:



Si considera agente lungo tutto il palo l'azione orizzontale dovuta ad un sovraccarico, eventualmente presente sul rilevato, pari a $q_1=20 \text{ kN/m}^2$ (valore che tiene conto della presenza delle fondazioni e portali T.E.).

Pertanto, si ottiene a tergo della palo una pressione pari a:

$$q_{s1} = \lambda_A \cdot q_1 D_{\text{palo}} \quad (\text{con } z \text{ in metri e } q_{s1} \text{ in daN/m})$$

dove D_{palo} = diametro del palo considerato

5.3.3 Effetti indotti dal ritiro e dalla diminuzione di temperatura

Gli effetti indotti dal ritiro del getto del cordolo e dalla diminuzione di temperatura vengono di seguito determinati per i cordoli di dimensione 100x100cm ma risultano significativi anche per quelli di dimensione 85x100cm.

Per le travi di coronamento pali di dimensione 100x100cm si ha che:

essendo α = dimensione fittizia pari a $\alpha = 2 \cdot A_c / u = 2 \cdot 100 \cdot 100 / 100 = 200 \text{ cm}$ risulta:

$$\varepsilon_0 \approx 0.00021$$

Dalle seguenti uguaglianze:

$$\Delta l = \alpha \cdot l_0 \cdot \Delta t$$

$$\Delta l = \varepsilon_{\text{rit}} \cdot l_0$$

è possibile esprimere il ritiro in funzione di una variazione termica, si ha:

$$\alpha_{\Delta t} \cdot \Delta t = \varepsilon_{\text{rit}}$$

sostituendo i valori numerici:

$$\Delta t_{\text{rit}} = \varepsilon_{\text{rit}} / \alpha_{\Delta t} = (0.21 \cdot 10^{(-3)}) / (1.0 \cdot 10^{(-5)}) = 21^\circ \text{C}$$

Si assume altresì una diminuzione di temperatura pari a $\Delta t_t = 15^\circ \text{C}$.

Poiché la coazione da ritiro è un fenomeno “lento”, mentre quella da variazione di temperatura è “veloce”, si adotta un modulo elastico del calcestruzzo “non abbattuto” ($E_c = 31'200 \text{ N/mm}^2$) ed un valore efficace di temperatura pari a:

$$\Delta T = \Delta t_{\text{rit}} / 3 + \Delta t_t = 21 / 3 + 15 = 22^\circ \text{C}$$

Tale variazione termica viene messa in conto imponendo uno spostamento impresso ai pali pari a:



$$\Delta l = 1.0 \cdot 10^{(-5)} \cdot 2700/2 \cdot 22 = 0.297 \text{cm}$$

A favore di sicurezza gli effetti di tale coazione (agenti in direzione parallela al cordolo) vengono considerati nella stessa direzione delle azioni trasversali, e quindi ad essi sommati algebricamente, anziché “in quadratura”.

5.4 COMPORTAMENTO DEI PALI ALLE AZIONI ORIZZONTALI E VERTICALI

5.4.1 Premessa

Le sollecitazioni nei pali di fondazione vengono calcolate con un semplice modello agli elementi finiti costituito da elementi “beam”, di lunghezza complessiva pari alla lunghezza effettiva dei pali, aventi la medesima inerzia del palo, larghezza pari al diametro del palo, ed immersi in molle indipendenti tra loro (suolo elastico alla Winkler).

Per quanto riguarda il comportamento dei pali alle azioni orizzontali, si fa riferimento ad un modulo di reazione orizzontale del terreno uniforme con la profondità, assunto pari a $k=3.0 \text{kg/cm}^3$ nello strato di rilevato e pari a $k=1.0 \text{kg/cm}^3$ al di sotto di tale strato (parametri da ritenersi adeguati per gli strati presenti in quanto equivalenti all’assunzione di un modulo di elasticità del terreno rispettivamente pari a circa $E_1=3.0 \cdot 80= 240 \text{daN/cm}^2$ ed $E_2=1.0 \cdot 80=80 \text{daN/cm}^2$).

Si considera la testa del palo coincidente con l’intradosso della trave di coronamento dei pali; si ritiene pertanto cautelativamente non collaborante nei confronti del palo di fondazione il primo metro di rilevato poiché poco confinato verso la scarpata.

Vengono inoltre considerate due casistiche di altezza rilevato:

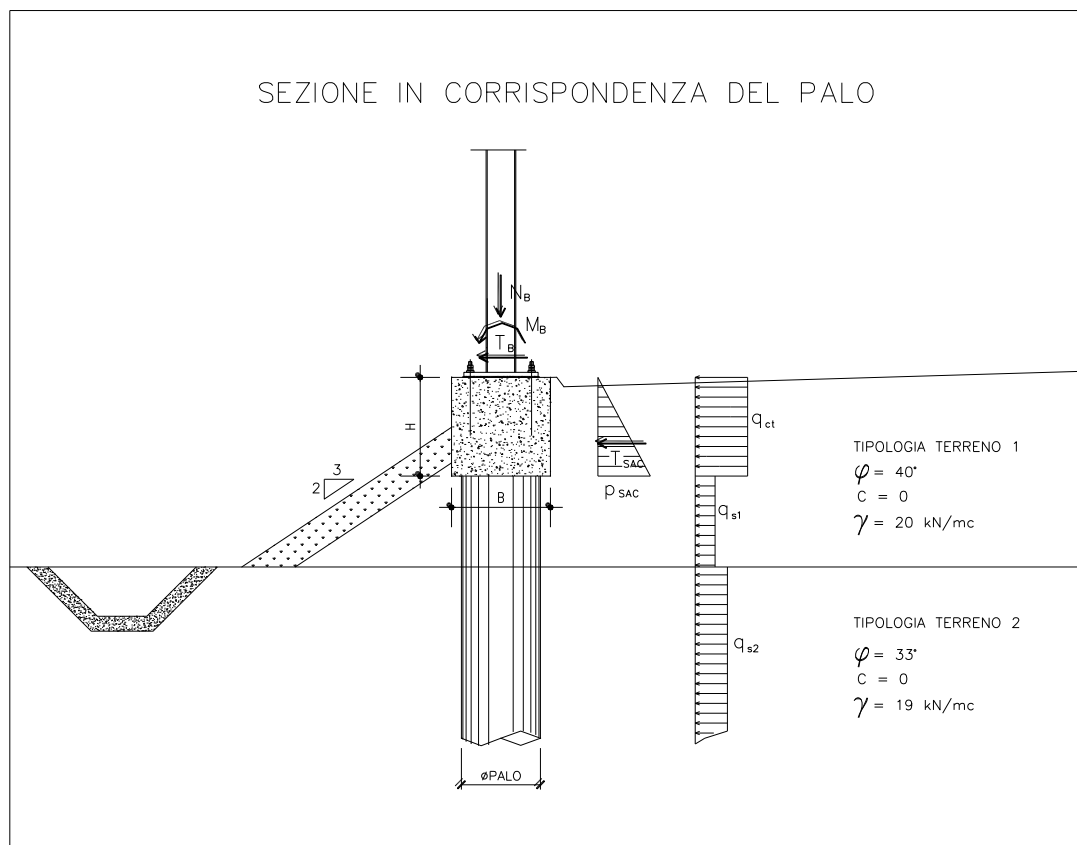
- Caso 1: H_r rilevato pari a 3.00m
- Caso 2: H_r rilevato pari a 7.00m

Nel modello implementato si verifica che le reazioni delle molle non siano superiori al 50% della spinta passiva; in caso affermativo nel modello verranno eliminate tali molle e verrà applicata una spinta resistente pari al 50% della spinta passiva.

Le azioni considerate in testa palo sono:

- Azioni trasmesse dalle barriere antirumore
- Spinte delle terre (carichi permanenti ed accidentali)
- Azioni dovute al ritiro e alla variazione di temperatura

Per chiarezza si riportano le azioni agenti nella figura sottostante.



Nel seguito si riportano in tabella le azioni agenti in sommità al palo e quelle considerate lungo lo sviluppo del palo.

5.4.1.1 Azioni agenti nella sommità del palo

1) Sollecitazioni a base montante dovute alle pressioni aerodinamiche +vento agenti sulle barriere antirumore e al peso delle barriere alle barriere antirumore (si veda quanto riportato nei paragrafi precedenti).



AZIONI BASE MONTANTE		
BARRIERA H=6.75m	$N_B = (\text{daN})$	4'725.0
	$M_B = (\text{daNm})$	17'085.9
	$T_B = (\text{daN})$	5'062.5
BARRIERA H=5.75m	$N_B = (\text{daN})$	4'560.0
	$M_B = (\text{daNm})$	12'398.4
	$T_B = (\text{daN})$	4'312.5
BARRIERA H=4.75m	$N_B = (\text{daN})$	4'347.5
	$M_B = (\text{daNm})$	8'460.9
	$T_B = (\text{daN})$	3'562.5
BARRIERA H=3.75m	$N_B = (\text{daN})$	4'192.5
	$M_B = (\text{daNm})$	5'273.5
	$T_B = (\text{daN})$	2'812.5

1.1) Caratteristiche cordolo

CARATTERISTICHE GEOMETRICHE		
CORDOLO	B(m)	0.85, 1.00
	H(m)	1.00
	s(cm)=PIASTRA+EMACO	0.05

1.1) Sollecitazioni agenti in testa palo dovute alle barriere antirumore.

Definendo:

- T_B = Taglio a base montante barriera per gli effetti aerodinamici + vento

-H = l'altezza della trave di coronamento in testa ai pali

- s = spessore della piastra di base e dell'emaco

Si ha che le azioni agente in sommità palo dovute alle azioni aerodinamiche e al vento valgono:



BARRIERA H=6.75m	$N_{BP} = (\text{daN})$	4'725.0
	$M_{BP}=M_B+ T_B*(H+s) (\text{daNm})$	22'401.5
	$T_{BP}= T_B (\text{daN})$	5'062.5
BARRIERA H=5.75m	$N_{BP} = (\text{daN})$	4'560.0
	$M_{BP}=M_B+ T_B*(H+s) (\text{daNm})$	16'926.5
	$T_{BP}= T_B (\text{daN})$	4'312.5
BARRIERA H=4.75m	$N_{BP} = (\text{daN})$	4'347.5
	$M_{BP}=M_B+ T_B*(H+s) (\text{daNm})$	12'201.5
	$T_{BP}= T_B (\text{daN})$	3'562.5
BARRIERA H=3.75m	$N_{BP} = (\text{daN})$	4'192.5
	$M_{BP}=M_B+ T_B*(H+s) (\text{daNm})$	8'226.6
	$T_{BP}= T_B (\text{daN})$	2'812.5

2) Spinta delle terre

Si riportano di seguito sia le caratteristiche dei terreni (strato in rilevato e strato sottostante) sia le sollecitazioni agenti in testa palo.

2.1) Caratteristiche del terreno:

CARATTERISTICHE TERRENO		
RILEVATO	γ (kN/m ³)	20.00
(TERRENO TIPO 1)	φ (°)	40
	λa_1	0.217
	λp_1	4.599
CARATTERISTICHE TERRENO		
TERRENO SOTTOSTANTE AL RILEVATO	γ (kN/m ³)	19.00
(TERRENO TIPO 2)	φ (°)	33
	λa_2	0.295
	λp_2	3.392



2.2) Spinta della terra sulla trave di coronamento, agente in testa palo:

BARRIERA H=6.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{SACP} * H/3 (\text{daNm})$	217.44
	$T_{SACP} = i * \gamma * H^2 * \lambda a_1 / 2 (\text{daN})$	652.33
BARRIERA H=5.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{SACP} * H/3 (\text{daNm})$	217.44
	$T_{SACP} = i * \gamma * H^2 * \lambda a_1 / 2 (\text{daN})$	652.33
BARRIERA H=4.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{SACP} * H/3 (\text{daNm})$	217.44
	$T_{SACP} = i * \gamma * H^2 * \lambda a_1 / 2 (\text{daN})$	652.33
BARRIERA H=3.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{SACP} * H/3 (\text{daNm})$	217.44
	$T_{SACP} = i * \gamma * H^2 * \lambda a_1 / 2 (\text{daN})$	652.33

2.3) Spinta sulla trave di coronamento dovuta al sovraccarico, agente in testa palo:

SOVRACCARICO AGENTE SUL TERRENO	
q (kN/m ²)	10.00



BARRIERA H=6.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_{QP} * H/2 (\text{daNm})$	326.16
	$T_{QP} = q * \lambda_{a1} * H * i (\text{daN})$	652.33
BARRIERA H=5.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_{QP} * H/2 (\text{daNm})$	326.16
	$T_{QP} = q * \lambda_{a1} * H * i (\text{daN})$	652.33
BARRIERA H=4.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_{QP} * H/2 (\text{daNm})$	326.16
	$T_{QP} = q * \lambda_{a1} * H * i (\text{daN})$	652.33
BARRIERA H=3.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_{QP} * H/2 (\text{daNm})$	326.16
	$T_{QP} = q * \lambda_{a1} * H * i (\text{daN})$	652.33

2.3) Effetti indotti dal ritiro e dalla variazione di temperatura:

Gli effetti indotti dal ritiro e dalla diminuzione di temperatura vengono implementati applicando in sommità palo uno spostamento impresso pari a 0.297cm in base a quanto determinato in precedenza.

Tali effetti, agenti in direzione parallela al cordolo pertanto in quadratura con le altre azioni, nelle calcolazioni effettuate vengono, a favore di sicurezza, considerate agenti con la con la medesima direzione delle azioni precedenti.

5.4.1.2 Azioni agenti lungo lo sviluppo longitudinale del palo

Si considera agente lungo tutto il palo l'azione orizzontale dovuta ad un sovraccarico, eventualmente presente sul rilevato, pari a 20kN/m^2 (valore che tiene conto della presenza delle fondazioni e dei portali T.E.).

Pertanto si ottiene a tergo della palo una pressione pari a:

$$q_{s1} = \lambda_A * q_1 D_{\text{palo}} \quad (\text{con } z \text{ in metri e } q_{s1} \text{ in daN/m})$$

dove D_{palo} = diametro del palo considerato

Nelle tabelle allegate si riporta il diametro e la lunghezza dei pali per le varie altezze delle barriere considerate e vengono riassunte le spinte dovute al sovraccarico q_1 sia nello strato di rilevato sia in quello sottostante.

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per verifiche di esercizio							
Combinazione per verifiche a fessurazione	1.0	1.0	0.5	1.0	1.0	1.0	1.0

Nella tabella sopra riportata (coerente con quanto prescritto nelle norme FS vigenti) per le verifiche a fessurazione andrebbe assunto un coefficiente moltiplicativo pari a 1.00 per le pressioni aerodinamiche e 0.50 per il vento. Pertanto le verifiche a fessurazione andrebbero eseguite assumendo il seguente carico orizzontale:

$$0.5 \cdot v + 1.0 \cdot p_{\text{aerod}} = 0.50 \cdot 1.58 + 0.348 = 1.138 \text{ kN/m}^2$$

Prudenzialmente si assume il seguente carico orizzontale: $0.5 \cdot 2.50 = 1.25 \text{ kN/m}^2$

Si riporta a titolo esemplificativo, lo schema di calcolo nonché i diagrammi di momento flettente e taglio nel terreno relativamente al caso di fondazione per barriere di $h=6.75\text{m}$.

Schema di calcolo

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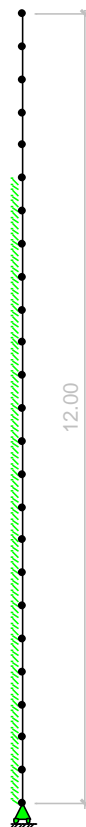
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Carichi applicati

a) Peso montante (agente testa palo)

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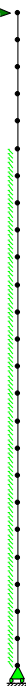
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Nbp
P=-4725.00



b) Pressioni aerodinamiche + vento sul montante (agenti in testa palo)

Tbp
P=5062.50



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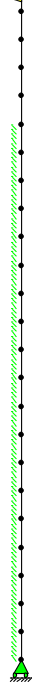
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$M_{tp} = M_b + T_b \cdot (H+s)$
 $M = 22401.50$



c) Spinta attiva delle terre sulla trave (agente in testa palo)

T_{sacpv}
 $P = 652.30$



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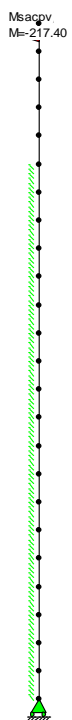
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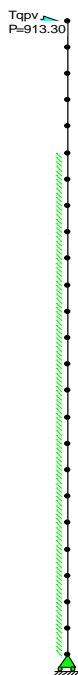
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d) Spinta sulla trave dovuta al sovraccarico q (agente in testa palo)



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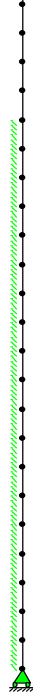
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Mqpv
M=456.60



e) Spinta sul palo dovuta al sovraccarico q_1 (agenti in testa palo)

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Diagramma del Momento

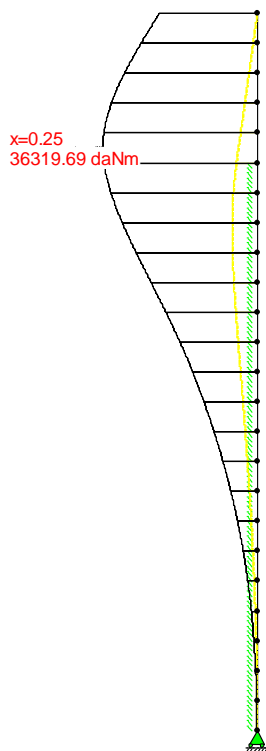


Diagramma del Taglio

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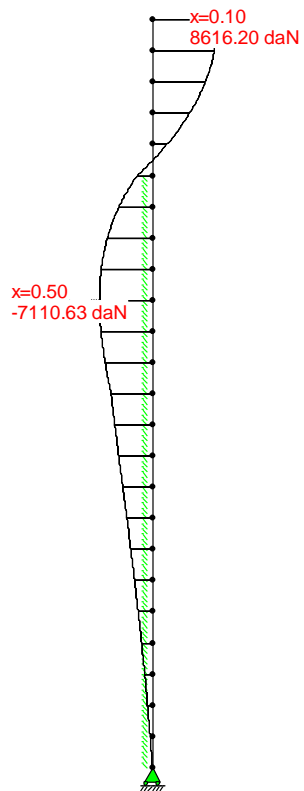
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5.4.3 Riassunto sollecitazioni massime agenti sui pali

Nelle tabelle seguenti si riportano le sollecitazioni massime agenti sui pali di fondazione per tutte le altezze dei pali considerate e per i due casi di altezza rilevato esaminati.

5.4.3.1 Altezza rilevato = 3.0m

ALTEZZA RILEVATO: 3m			VERIFICHE DI ESERCIZIO			VERIFICHE A FESSURAZIONE		
H BARRIERA	D. PALO (cm)	L . PALO (m)	Mmax (daNm)	Nmax (daN)	Tmax (daN)	Mmax (daNm)	Nmax (daN)	Tmax (daN)
BARRIERA H=6.75m	80	12.0	34275	-4725	7613	18598	-4725	5368
BARRIERA H=5.75m	80	10.0	27520	-4560	7000	16505	-4560	5874
BARRIERA H=4.75m	60	8.0	20582	-4347.5	5497	11532	-4347.5	3942
BARRIERA H=3.75m	60	8.0	15361	-4192.5	4787	8663	-4192.5	3381

5.4.3.2 Altezza rilevato = 7.0m

ALTEZZA RILEVATO: 7m			VERIFICHE DI ESERCIZIO			VERIFICHE A FESSURAZIONE		
H BARRIERA	D. PALO (cm)	L . PALO (m)	Mmax (daNm)	Nmax (daN)	Tmax (daN)	Mmax (daNm)	Nmax (daN)	Tmax (daN)
BARRIERA H=6.75m	80	12.0	36320	-4725	8616	22373	-4725	7275
BARRIERA H=5.75m	80	10.0	29497	-4560	8100	17530	-4560	6386
BARRIERA H=4.75m	60	8.0	20955	-4347.5	6097	11976	-4347.5	4227
BARRIERA H=3.75m	60	8.0	16105	-4192.5	5256	9307	-4192.5	3850



5.4.4 Verifica a flessione taglio e fessurazione

Si esegue in forma estesa la verifica per i pali di fondazione per barriere antirumore di $H=6.75\text{m}$ su rilevato di H pari a 7.0m .

Il singolo palo di fondazione $\Phi 800\text{mm}$ presenta le seguenti caratteristiche:

Area palo : $A_p = \pi * \Phi^2/4 = 5024 \text{ cm}^2$

Armatura corrente presente: $A_{\text{ferri } 1^{\circ}\text{strato}} = 26 \Phi 24 = 117.56 \text{ cm}^2$

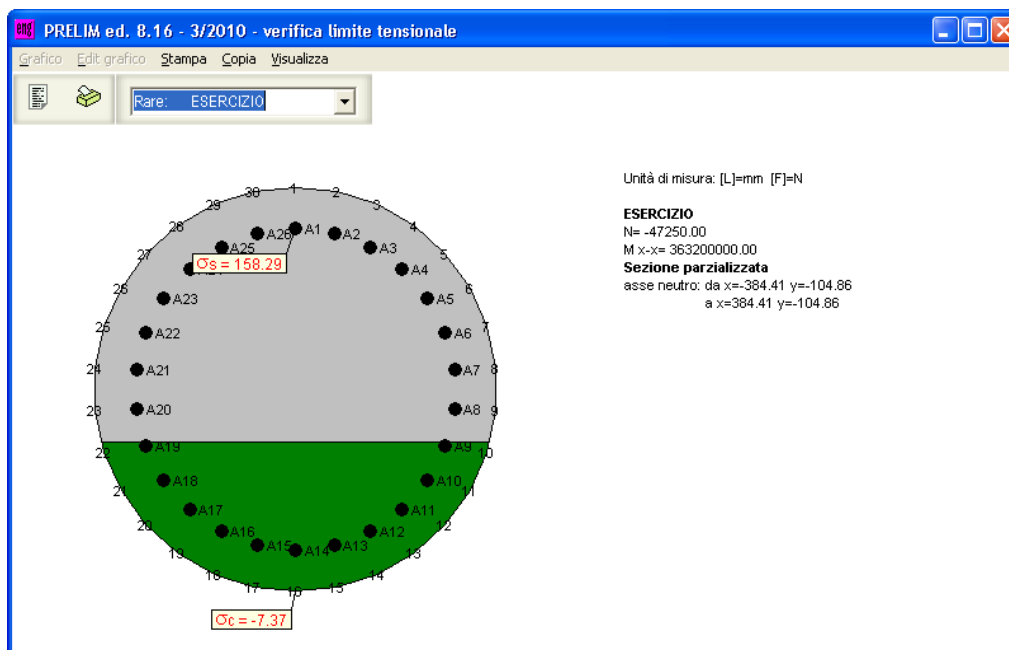
Copriferro esterno = 7.0 cm

Verifica a pressoflessione

Le sollecitazioni massime in testa al palo sono pari a:

$M = 36320 \text{ daNm}$, $N = -4725 \text{ daN}$

Si effettua la verifica a pressoflessione con il programma ENG (N-mm):



Verifica a taglio

$$\tau = 4 * T / (3 * A) = 4 * 8994 / (3 * 502400) = 0.24 \text{ N/mm}^2 < \tau_{c0}.$$

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



Doc. N. 60001-00

Progetto
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Verifica a fessurazione

VERIFICHE A FESSURAZIONE				
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	5.09 N/mm ²	(> $f_{ctk} = 2.19$ N/mm ²)	si formano le fessure
Ampiezza fessura	$w_k =$	0.099mm	(< $w_{amm} = 1.5 * 0.1 = 0.15mm$)	

Lo svolgimento per esteso della verifica a fessurazione è riportato nella pagina seguente.



Caratteristiche dei materiali				
Coefficiente di omogeneizzazione	$n =$	15		
Classe cls	$R_{ck} =$	30	N/mm^2	
Modulo elastico acciaio	$E_s =$	2.1E+05	N/mm^2	
Caratteristiche geometriche della sezione				
Diametro	$D =$	80	cm	
Area armatura esterna	$A_{se} =$	117.56	cm^2	
Copriferro baricentro acciaio esterno	$cs =$	8.2	cm	
Area armatura interna	$A_{si} =$	0	cm^2	
Copriferro baricentro acciaio interno	$c's =$	8.2	cm	
Ricoprimento barre più esterne	$c =$	7.0	cm	
Ricoprimento barre più interne	$c+S =$	7.0	cm	
Diametro massimo barre	$\Phi =$	2.4	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	$M_{es} =$	363.20	kNm	
Sforzo assiale in condizioni di esercizio	$N_{es} =$	-47.25	kN	
Rapporto sforzo normale/momento	$r_{es} =$	-0.00130	cm^{-1}	
Resistenza media a trazione semplice del cls	$f_{ctm} =$	2.61	N/mm^2	
Resistenza caratt. a trazione per fless. del cls	$f_{ctk} =$	2.19	N/mm^2	
Area ideale	$A_{cid} =$	6787	cm^2	
Momento d'inerzia area ideale	$J_{cid} =$	2901210	cm^4	
Modulo di resistenza non fessurato	$W_{sr} =$	72530	cm^3	
Momento di formazione delle fessure	$M_{ff} =$	158.82	kNm	
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	4.94	N/mm^2	> f_{ctk}
Sezione fessurata: apertura fessure				
Momento flettente in condizioni di fessurazione	$M =$	223.73	kNm	
Sforzo assiale in condizioni di fessurazione	$N =$	-47.25	kN	
Rapporto sforzo normale/momento	$r =$	-0.00211		
Distanza asse neutro da lembo compresso	$x_p =$	29.86	cm	
Tensione cls	$\sigma_c =$	-4.55	N/mm^2	
Tensione barra esterna tesa	$\sigma_s =$	95.82	N/mm^2	
Momento di fessurazione	$M_{sr} =$	189.5	kNm	
Tensione nell'acciaio prodotta da M_{sr}	$\sigma_{sr} =$	81.16	N/mm^2	
Distanza media fra due fessure attigue				
Distanza media barre	$s =$	7.7	cm	
Coefficiente k_2	$k_2 =$	0.4		
Tensioni nel calcestruzzo teso	$\sigma_1 =$	3.02	N/mm^2	
	$\sigma_2 =$	-3.15	N/mm^2	
Coefficiente k_3	$k_3 =$	0.125		
Larghezza efficace	$b_{eff} =$	7.7	cm	
Altezza efficace	$d_{eff} =$	25.0	cm^2	
Area efficace	$A_{ceff} =$	192.0	cm^2	
Area armature poste in A_{ceff}	$A_s =$	4.52	cm^2	
Distanza media fra due fessure attigue	$s_{rm} =$	20.63	cm	
Deformazione unitaria media				
Coefficiente β_1	$\beta_1 =$	1.0		
Coefficiente β_2	$\beta_2 =$	0.5		
Deformazione unitaria media	$\epsilon_{sm} =$	2.93E-04		
Ampiezza fessura				
	$w_k =$	0.103	mm	< w_{amm}



Di seguito si riportano, raccolte in tabelle, le verifiche a pressoflessione (in condizioni di esercizio e di fessurazione), le verifiche a taglio ed il valore w_k della verifica a fessurazione (che rappresenta l'ampiezza delle fessure) per tutte le tipologie dei pali presenti.

5.4.4.1 Altezza rilevato = 3.0m

ALTEZZA RILEVATO: 3m		CARATTERISTICHE GEOMETRICHE				
H BARRIERA	D. PALO (cm)	L. PALO (m)	n°	D. FERRI (1° strato)	A _{ferrì 1° strato}	% armatura
BARRIERA H=6.75m	80	12.0	26	24	117.56	0.023
BARRIERA H=5.75m	80	10.0	26	20	81.64	0.016
BARRIERA H=4.75m	60	8.0	26	24	117.56	0.042
BARRIERA H=3.75m	60	8.0	20	20	62.80	0.022

VERIFICHE DI ESERCIZIO						VERIFICHE A FESSURAZIONE						
Mmax (daNm)	Nmax (daN)	Tmax (daN)	σ_c (N/mm ²)	σ_s (N/mm ²)	τ (N/mm ²)	Mmax (daNm)	Nmax (daN)	Tmax (daN)	σ_c (N/mm ²)	σ_s (N/mm ²)	x (cm)	Fess. Wk (mm)
34275	-4725	7613	-6.95	149.13	0.20	18598	-4725	5368	-3.79	78.91	30.05	0.063
27520	-4560	7000	-6.83	165.14	0.19	16505	-4560	5874	-4.10	96.55	27.95	0.075
20582	-4347.5	5497	-8.87	131.85	0.26	11532	-4347.5	3942	-4.43	72.07	24.94	0.070
15361	-4192.5	4787	-8.40	170.34	0.23	8663	-4192.5	3381	-4.75	92.90	22.6	0.091

5.4.4.2 Altezza rilevato = 7.0m

ALTEZZA RILEVATO: 7m		CARATTERISTICHE GEOMETRICHE				
H BARRIERA	D. PALO (cm)	L. PALO (m)	n°	D. FERRI (1° strato)	A _{ferrì 1° strato}	% armatura
BARRIERA H=6.75m	80	12.0	26	24	117.56	0.02
BARRIERA H=5.75m	80	10.0	26	20	81.64	0.02
BARRIERA H=4.75m	60	8.0	26	24	117.56	0.04
BARRIERA H=3.75m	60	8.0	20	20	62.80	0.02

VERIFICHE DI ESERCIZIO						VERIFICHE A FESSURAZIONE						
Mmax (daNm)	Nmax (daN)	Tmax (daN)	σ_c (N/mm ²)	σ_s (N/mm ²)	τ (N/mm ²)	Mmax (daNm)	Nmax (daN)	Tmax (daN)	σ_c (N/mm ²)	σ_s (N/mm ²)	x (cm)	Fess. Wk (mm)
36320	-4725	8616	-7.37	158.29	0.23	22373	-4725	7275	-4.55	95.82	29.86	0.103
29497	-4560	8100	-7.32	177.40	0.21	17530	-4560	6386	-4.36	102.90	27.88	0.090
20955	-4347.5	6097	-8.95	134.20	0.29	11976	-4347.5	4227	-4.60	75.00	24.9	0.076
16105	-4192.5	5256	-9.04	183.84	0.25	9307	-4192.5	3850	-5.10	100.30	22.38	0.100



5.4.5 Verifica alla portanza verticale

Nella pagine seguenti viene riportata la verifica di portanza in direzione verticale dei pali di fondazione.

I parametri geotecnici assunti sono quelli usuali per terreni analoghi a quelli in essere. Prudenzialmente verrà sempre ignorato il contributo alla portanza laterale sia del tratto di palo in rilevato che nei primi 3m del terreno in situ (nel caso di $H_{rit}=7m$) o nei primi 5m (nel caso di $H_{rit}=3m$). Inoltre si assume prudenzialmente che il livello della falda sia a quota piano di campagna. Si riportano le verifiche di portanza sia nell'ipotesi di $H_{rit}=7m$ che di $H_{rit}=3m$.

I calcoli sono svolti con gli usuali criteri indicati in letteratura propri del metodo delle tensioni ammissibili, prendendo in considerazione il carico massimo sui pali. La verifica risulta soddisfatta.

La casistica presente è la seguente:

- a) Barriere $H=6.75m$ (interasse pali $i=3.0m$, diametro palo = $0.80m$, $L_{palo}=12.0m$, cordolo: $1.00*1.00m$),
- b) Barriere $H=5.75m$ (interasse pali $i=3.0m$, diametro palo = $0.80m$, $L_{palo}=10.0m$, cordolo: $1.00*1.00m$),
- c) Barriere $H=4.75m$ (interasse pali $i=3.0m$, diametro palo = $0.60m$, $L_{palo}=8.0m$, cordolo: $0.85*1.00m$),
- d) Barriere $H=3.75m$ (interasse pali $i=3.0m$, diametro palo = $0.60m$, $L_{palo}=8.0m$, cordolo: $0.85*1.00m$)

La verifica del caso d) viene omessa in quanto per esso è già significativo il caso c).

Calcolo del carico massimo sui pali:

- a) Barriere $H=6.75m$ (inter. pali $i=3.0m$, diametro palo = $0.80m$, $L_{palo}=12.0m$, cordolo: $1.00*1.00m$)

Cordolo: $1.00*1.00*25.0*3.0 =$	75.0 kN
Pannelli e peso proprio montante: $2.00*6.75*3.0 =$	<u>40.5 kN</u>
Peso totale =	115.5 kN
Carico massimo assunto: $P_{max} =$	120.0 kN



b) Barriere H=5.75m (inter. pali i=3.0m diametro palo = 0.80m, Lpalo=10.0m, cordolo: 1.00*1.00m)

$$\text{Cordolo: } 1.00 * 1.00 * 25.0 * 3.0 = 75.0 \text{ kN}$$

$$\text{Pannelli e peso proprio montante: } 2.00 * 5.75 * 3.0 = \underline{34.5 \text{ kN}}$$

$$\text{Peso totale} = 109.5 \text{ kN}$$

$$\text{Carico massimo assunto: } P_{\max} = 110.0 \text{ kN}$$

c) Barriere H=4.75m (inter. pali i=3.0m diametro palo = 0.60m, Lpalo=8.0m, cordolo: 0.85*1.00m)

$$\text{Cordolo: } 0.85 * 1.00 * 25.0 * 3.0 = 63.8 \text{ kN}$$

$$\text{Pannelli e peso proprio montante: } 2.00 * 4.75 * 3.0 = \underline{28.5 \text{ kN}}$$

$$\text{Peso totale} = 92.3 \text{ kN}$$

$$\text{Carico massimo assunto: } P_{\max} = 100.0 \text{ kN}$$


Pali barriere su rilevato. Hrilevato = 7.0m. Hbarr=6.75m
PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.80
Lunghezza palo (m) 12.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p' _v (kN/m ²)	p' _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
0	-1.00	-4.00	6.00	20.00	0.00	60.00	0	1.000	0.000	0.000	0.00	0.00	0.00	15.08	0.0
1	-7.00	-8.50	3.00	9.00	120.00	133.50	0	1.000	0.000	0.000	0.00	0.00	0.00	7.54	0.0
2	-10.00	-11.50	3.00	9.00	147.00	160.50	33	0.455	0.649	0.404	0.00	0.00	47.46	7.54	357.9
	-13.00				174.00										

Ql = 357.9 kN
sl = 2.5
Qlamm = 143.1 kN

Portanza per punta

φ = 33 (°)
Ap = 0.503 mq
Nc = 20.6
c' = 0.0 kN/mq
Nq = 14.4
pv = 174.0 kN/mq
Qp = Ap*(Nc*c'+Nq*pv)

Qp = 1'255.1 kN
sp = 2.5
Qpamm = 502.1 kN

Portanza limite

Qlim = Ql+Qp

Qlim = 1'613.0 kN

Peso proprio

γ_{peff} = 5.0 kN/mc
Lp = 12.0 m
Ppeff = Ap*Lp*γ_{peff}

Ppeff = 30.2 kN

Portanza ammissibile

Qamm = Ql/sl+Qp/sp-Ppeff

Qamm = 615.0 kN

Carico massimo in testa palo

Pmax = 120.0 kN

Coefficiente di sicurezza

s = Qlim/(Pmax+Ppeff)

s = 10.74

N° Tipo di terreno

0 Rilevato inerte
1 Sabbia inerte
2 Sabbia
3
4



Pali barriere su rilevato. Hrilevato = 3.0m. Hbarr=6.75m

PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.80

Lunghezza palo (m) 12.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p' _v (kN/m ²)	p' _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
0	-1.00	-2.00	2.00	20.00	0.00	20.00	0	1.000	0.000	0.000	0.00	0.00	0.00	5.03	0.0
1	-3.00	-5.50	5.00	9.00	40.00	62.50	0	1.000	0.000	0.000	0.00	0.00	0.00	12.57	0.0
2	-8.00	-10.50	5.00	9.00	85.00	107.50	33	0.455	0.649	0.404	0.00	0.00	31.79	12.57	399.5
	-13.00				130.00										

Ql = 399.5 kN

sl = 2.5

Qlamm = 159.8 kN

Portanza per punta

φ = 33 (°)

Ap = 0.503 mq

Nc = 20.6

c' = 0.0 kN/mq

Nq = 14.4

pv = 130.0 kN/mq

Qp = Ap*(Nc*c'+Nq*pv)

Qp = 937.7 kN

sp = 2.5

Qpamm = 375.1 kN

Portanza limite

Qlim = Ql+Qp

Qlim = 1'337.2 kN

Peso proprio

γ_{peff} = 5.0 kN/mc

Lp = 12.0 m

Ppeff = Ap*Lp*γ_{peff}

Ppeff = 30.2 kN

Portanza ammissibile

Qamm = Ql/sl+Qp/sp-Ppeff

Qamm = 504.7 kN

Carico massimo in testa palo

Pmax = 120.0 kN

Coefficiente di sicurezza

s = Qlim/(Pmax+Ppeff)

s = 8.91

N° Tipo di terreno

0 Rilevato inerte

1 Sabbia inerte

2 Sabbia

3

4


Pali barriere su rilevato. Hrilevato = 7.0m. Hbarr=5.75m
PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.80
Lunghezza palo (m) 10.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p' _v (kN/m ²)	p' _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
0	-1.00	-4.00	6.00	20.00	0.00	60.00	0	1.000	0.000	0.000	0.00	0.00	0.00	15.08	0.0
1	-7.00	-8.50	3.00	9.00	120.00	133.50	0	1.000	0.000	0.000	0.00	0.00	0.00	7.54	0.0
2	-10.00	-10.50	1.00	9.00	147.00	151.50	33	0.455	0.649	0.404	0.00	0.00	44.80	2.51	112.6
	-11.00				156.00										

Ql = 112.6 kN
sl = 2.5
Qlamm = 45.0 kN

Portanza per punta

φ = 33 (°)
Ap = 0.503 mq
Nc = 20.6
c' = 0.0 kN/mq
Nq = 14.4
pv = 156.0 kN/mq
Qp = Ap*(Nc*c'+Nq*pv)

Qp = 1125.3 kN
sp = 2.5
Qpamm = 450.1 kN

Portanza limite

Qlim = Ql+Qp

Qlim = 1237.9 kN

Peso proprio

γ_{peff} = 5.0 kN/mc
Lp = 10.0 m
Ppeff = Ap*Lp*γ_{peff}

Ppeff = 25.1 kN

Portanza ammissibile

Qamm = Ql/sl+Qp/sp-Ppeff

Qamm = 470.0 kN

Carico massimo in testa palo

Pmax = 110.0 kN

Coefficiente di sicurezza

s = Qlim/(Pmax+Ppeff)

s = 9.16

N° Tipo di terreno

0 Rilevato inerte
1 Sabbia inerte
2 Sabbia
3
4



Pali barriere su rilevato. Hrilevato = 3.0m. Hbarr=5.75m

PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.80
Lunghezza palo (m) 10.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p _v (kN/m ²)	p _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
	-1.00				0.00										
0	-3.00	-2.00	2.00	20.00	40.00	20.00	0	1.000	0.000	0.000	0.00	0.00	0.00	5.03	0.0
1	-8.00	-5.50	5.00	9.00	85.00	62.50	0	1.000	0.000	0.000	0.00	0.00	0.00	12.57	0.0
2	-11.00	-9.50	3.00	9.00	112.00	98.50	33	0.455	0.649	0.404	0.00	0.00	29.13	7.54	219.6

Q_l = 219.6 kN
s_l = 2.5
Q_{lamm} = 87.8 kN

Portanza per punta

φ = 33 (°)
A_p = 0.503 mq
N_c = 20.6
c' = 0.0 kN/mq
N_q = 14.4
p_v = 112.0 kN/mq
Q_p = A_p*(N_c*c'+N_q*p_v)

Q_p = 807.9 kN
s_p = 2.5
Q_{pamm} = 323.2 kN

Portanza limite

Q_{lim} = Q_l+Q_p

Q_{lim} = 1'027.5 kN

Peso proprio

γ_{peff} = 5.0 kN/mc
L_p = 10.0 m
P_{peff} = A_p*L_p*γ_{peff}

P_{peff} = 25.1 kN

Portanza ammissibile

Q_{amm} = Q_l/s_l+Q_p/s_p-P_{peff}

Q_{amm} = 385.9 kN

Carico massimo in testa palo

P_{max} = 110.0 kN

Coefficiente di sicurezza

s = Q_{lim}/(P_{max}+P_{peff})

s = 7.60

N° Tipo di terreno

- 0 Rilevato inerte
1 Sabbia inerte
2 Sabbia
3
4



Pali barriere su rilevato. Hrilevato = 7.0m. Hbarr=4.75m

PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.60

Lunghezza palo (m) 8.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p' _v (kN/m ²)	p' _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
	-1.00				0.00										
0	-7.00	-4.00	6.00	20.00	120.00	60.00	0	1.000	0.000	0.000	0.00	0.00	0.00	11.31	0.0
1	-9.00	-8.00	2.00	9.00	138.00	129.00	0	1.000	0.000	0.000	0.00	0.00	0.00	3.77	0.0
2	-9.00	-9.00	0.00	9.00	138.00	138.00	33	0.455	0.649	0.404	0.00	0.00	40.81	0.00	0.0
	-9.00				138.00										

Q_l = 0.0 kNs_l = 2.5Q_{lamm} = 0.0 kN

Portanza per punta

φ = 33 (°)

A_p = 0.283 mqN_c = 20.6

c' = 0.0 kN/mq

N_q = 14.4p_v = 138.0 kN/mqQ_p = A_p*(N_c*c'+N_q*p_v)Q_p = 559.9 kNs_p = 2.5Q_{pamm} = 224.0 kN

Portanza limite

Q_{lim} = Q_l+Q_pQ_{lim} = 559.9 kN

Peso proprio

γ_{peff} = 5.0 kN/mcL_p = 8.0 mP_{peff} = A_p*L_p*γ_{peff}P_{peff} = 11.3 kN

Portanza ammissibile

Q_{amm} = Q_l/s_l+Q_p/s_p-P_{peff}Q_{amm} = 212.7 kN

Carico massimo in testa palo

P_{max} = 100.0 kN

Coefficiente di sicurezza

s = Q_{lim}/(P_{max}+P_{peff})

s = 5.03

N° Tipo di terreno

0 Rilevato inerte

1 Sabbia inerte

2 Sabbia

3

4



Pali barriere su rilevato. Hrilevato = 3.0m. Hbarr=4.75m

PORTANZA PALI A LUNGO TERMINE

Diametro palo (m) 0.60
Lunghezza palo (m) 8.00

Portanza laterale

N°	Da (m) A (m)	Z _m (m)	ΔH (m)	γ' (kN/m ³)	p _v (kN/m ²)	p _{vm} (kN/m ²)	Φ'	λ	tgΦ'	tg(2/3*Φ')	α'	c' (kN/m ²)	τ _{lim} (kN/m ²)	Slat _i (m ²)	P _i (kN)
	-1.00				0.00										
0	-3.00	-2.00	2.00	20.00	40.00	20.00	0	1.000	0.000	0.000	0.00	0.00	0.00	3.77	0.0
1	-8.00	-5.50	5.00	9.00	85.00	62.50	0	1.000	0.000	0.000	0.00	0.00	0.00	9.42	0.0
2	-9.00	-8.50	1.00	9.00	94.00	89.50	33	0.455	0.649	0.404	0.00	0.00	26.47	1.88	49.9

Q_l = 49.9 kN
s_l = 2.5
Q_{lamm} = 20.0 kN

Portanza per punta

φ = 33 (°)
A_p = 0.283 mq
N_c = 20.6
c' = 0.0 kN/mq
N_q = 14.4
p_v = 94.0 kN/mq
Q_p = A_p*(N_c*c'+N_q*p_v)

Q_p = 381.4 kN
s_p = 2.5
Q_{pamm} = 152.6 kN

Portanza limite

Q_{lim} = Q_l+Q_p

Q_{lim} = 431.3 kN

Peso proprio

γ_{peff} = 5.0 kN/mc
L_p = 8.0 m
P_{peff} = A_p*L_p*γ_{peff}

P_{peff} = 11.3 kN

Portanza ammissibile

Q_{amm} = Q_l/s_l+Q_p/s_p-P_{peff}

Q_{amm} = 161.2 kN

Carico massimo in testa palo

P_{max} = 100.0 kN

Coefficiente di sicurezza

s = Q_{lim}/(P_{max}+P_{peff})

s = 3.87

N° Tipo di terreno

- 0 Rilevato inerte
1 Sabbia inerte
2 Sabbia
3
4



5.4.6 Verifica alla portanza orizzontale

Per quanto concerne le verifiche alla portanza orizzontale si fa riferimento alla teoria di Broms (1964), nell'ipotesi di palo libero di ruotare in testa ed assumendo un coefficiente di spinta passiva ridotto per effetto della presenza della scarpata in prossimità del palo stesso. A favore di sicurezza si assumerà $K_p=1$.

Verrà presa in considerazione sia l'ipotesi di palo flessibile (o palo lungo), che di palo infinitamente rigido (o palo corto): la portanza trasversale limite sarà data dal minore dei due valori trovati separatamente. Il coefficiente di sicurezza minimo sarà assunto pari a 3 (valore indicato nelle Raccomandazioni AGI 1984 sui pali di fondazione).

Le verifiche saranno svolte prendendo in esame i pali di fondazione per le varie altezze di barriera. Il carico trasversale sollecitante in sommità palo H_{soll} (chiamato anche genericamente T) ed il momento flettente M ivi presente vengono ricavati dalle tabelle di cui al par. 5.4 (prendendo in considerazione le azioni effettivamente ortogonali all'asse palificata ed agenti in testa palo, ossia: vento+effetti aerodinamici, spinta del terreno e spinta del sovraccarico agenti sul cordolo di sommità); una volta noti M e T, il valore del trasporto "h" sarà pari al rapporto M/T.

Le equazioni di equilibrio vengono risolte per via iterativa (la convergenza si ha dopo 4-5 iterazioni).

Il valore del momento ultimo del palo M_{ult} offerto dall'armatura presente viene determinato con il noto programma di calcolo del Prof. Gelfi in base alla sezione geometrica del palo ed all'armatura verticale presente.

Le verifiche sono riportate nelle tabelle seguenti, esse sono sempre soddisfatte.



a) Assenza di varchi. Altezza barriera H=6.75m.

Terreno Incoerente e palo flessibile			
Lp =	12.0 m		
Spess. di terreno inerte Li =	0.0 m		
$\phi =$	0°		
$\gamma_{M1} =$	1.0		
$\phi' =$	0.00		
Kp =	1.00		
$K_{p\delta} =$	3.00		
$\gamma_{ter} =$	20.0 kN/mc		
D =	0.80 m		
L = Lp - Li =	12.00 m		
h =	3.60 m		
Coeff. di sic. richiesto R =	3.00		
$M_{ult} =$	1'345.00 kNm		
Sezione libera in sommità			
$M_{max} =$	1'345.00 kNm		
$H_{ult} =$	236.16 kN	ok	
$z_{\gamma} =$	3.14 m		
$H_{soll} =$	63.66 kN		
VERIFICA PORTANZA SODDISFATTA			
$FS = H_{ult}/H_{soll} =$	3.71		
$z_{\gamma} + 3D =$	5.54 m		
$L \geq z_{\gamma} + 3D ?$	SI'		
VERIFICA GEOMETRICA SODDISFATTA			
b.1.1) Pali a Testa Libera Rigidi			
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	885.92 kN		
$z_{\gamma} = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.08 m		
$M_{max} = H_{ult} * (h + 2/3 * z_{\gamma}) =$	6'781.32 kNm		



Titolo : _____

Sezione circolare cava

Raggio esterno [cm]

Raggio interno [cm]

N° barre uguali

Diametro barre [cm]

Copriferro (baric.) [cm]

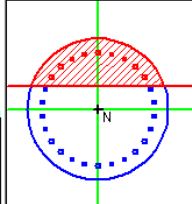
N° barre **Zoom**

Tipo Sezione

Rettan.re Trapezi

a T Circolare

Rettangoli Coord.



Sollecitazioni

S.L.U. kN

Metodo n kNm

P.to applicazione N

Centro Baricentro cls

Coord.[cm] xN yN

Tipo rottura

Lato calcestruzzo - Acciaio snervato

Metodo di calcolo

S.L.U.+ S.L.U.-

Metodo n

Tipo flessione

Retta Deviata

Vertici: N° rett.

Calcola MRd **Dominio M-N**

L₀ cm **Col. modello**

Precompresso

Materiali

B450C **C25/30**

ϵ_{su} ‰ ϵ_{c2} ‰

f_{yd} N/mm² ϵ_{cu} ‰

E_s N/mm² f_{cd} ‰

E_s/E_c f_{cc}/f_{cd} ?

ϵ_{syd} ‰ $\sigma_{c,adm}$ N/mm²

$\sigma_{s,adm}$ N/mm² τ_{co} τ_{cl}

M_{xRd} kN m

σ_c N/mm²

σ_s N/mm²

ϵ_c ‰ ϵ_s ‰

d cm

x w/d δ



b) Assenza di varchi. Altezza barriera H=5.75m.

Terreno Incoerente e palo flessibile			
Lp =	10.0	m	
Spess. di terreno inerte Li =	0.0	m	
ϕ =	0	°	
γ_{M1} =	1.0		
ϕ' =	0.00		
Kp =	1.00		
$K_{p\delta}$ =	3.00		
γ_{ter} =	20.0	kN/mc	
D =	0.80	m	
L = Lp-Li =	10.00	m	
h =	3.11	m	
Coeff. di sic. richiesto R =	3.00		
M_{ult} =	992.00	kNm	
Sezione libera in sommità			
M_{max} =	992.00	kNm	
H_{ult} =	197.50	kN	ok
z_{γ} =	2.87	m	
H_{soll} =	56.17	kN	
VERIFICA PORTANZA SODDISFATTA			
FS = H_{ult}/H_{soll} =	3.52		
$z_{\gamma} + 3D =$	5.27	m	
L >= $z_{\gamma} + 3D$?	SI'		
VERIFICA GEOMETRICA SODDISFATTA			
b.1.1) Pali a Testa Libera Rigidi			
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	610.21	kN	
$z_{\gamma} = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.04	m	
$M_{max} = H_{ult} * (h + 2/3 * z_{\gamma}) =$	3'949.16	kNm	



Titolo : _____

Sezione circolare cava

Raggio esterno: 40 [cm]

Raggio interno: 0 [cm]

N° barre uguali: 26

Diametro barre: 2 [cm]

Copriferro (baric.): 8 [cm]

N° barre: 0 **Zoom**

Tipologia Sezione

Rettan.re Trapezi

a T Circolare

Rettangoli Coord.

Sezione C.A.

Sollecitazioni

S.L.U. **Metodo n**

N_{Ed}: 120.6 [kN]

M_{xEd}: 0 [kNm]

M_{yEd}: 0 [kNm]

P.to applicazione N

Centro Baricentro cls

Coord.[cm]

xN: 0

yN: 0

Tipologia rottura

Lato calcestruzzo - Acciaio snervato

Metodo di calcolo

S.L.U.+ S.L.U.-

Metodo n

Tipologia flessione

Retta Deviata

Vertici: 52 N° rett. 100

Calcola MRd **Dominio M-N**

L_o: 0 [cm] **Col. modello**

Precompresso

Materiali

B450C **C25/30**

ϵ_{su} : 67.5 ‰ ϵ_{c2} : 2 ‰

f_{yd} : 450 N/mm² ϵ_{cu} : 3.5 ‰

E_s : 210'000 N/mm² f_{cd} : 14.17

E_s/E_c : 15 f_{cc}/f_{cd} : 0.8

ϵ_{syd} : 2.143 ‰ $\sigma_{c,adm}$: 9.75

$\sigma_{s,adm}$: 255 N/mm² τ_{co} : 0.6

τ_{cl} : 1.829

M xRd : 991.7 [kNm]

σ_c : -14.17 N/mm²

σ_s : 450 N/mm²

ϵ_c : 3.5 ‰

ϵ_s : 6.791 ‰

d: 72 [cm]

x: 24.49 x/d : 0.3401

δ : 0.8651



c) Assenza di varchi. Altezza barriera H=4.75m.

Terreno Incoerente e palo flessibile			
Lp =	8.0	m	
Spess. di terreno inerte Li =	0.0	m	
ϕ =	0	°	
γ_{M1} =	1.0		
ϕ' =	0.00		
Kp =	1.00		
$K_{p\delta}$ =	3.00		
γ_{ter} =	20.0	kN/mc	
D =	0.60	m	
L = Lp - Li =	8.00	m	
h =	2.62	m	
Coeff. di sic. richiesto R =	3.00		
M_{ult} =	848.00	kNm	
Sezione libera in sommità			
M_{max} =	848.00	kNm	
H_{ult} =	179.51	kN	ok
z_{γ} =	3.16	m	
H_{soll} =	48.67	kN	
VERIFICA PORTANZA SODDISFATTA			
$FS = H_{ult}/H_{soll} =$	3.69		
$z_{\gamma} + 3D =$	4.96	m	
$L >= z_{\gamma} + 3D ?$	SI'		
VERIFICA GEOMETRICA SODDISFATTA			
b.1.1) Pali a Testa Libera Rigidi			
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	289.30	kN	
$z_{\gamma} = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.01	m	
$M_{max} = H_{ult} * (h + 2/3 * z_{\gamma}) =$	1'530.80	kNm	



Titolo : _____

Sezione circolare cava

Raggio esterno: 30 [cm]
 Raggio interno: 0 [cm]
 N° barre uguali: 26
 Diametro barre: 2.4 [cm]
 Coprifero (baric.): 8 [cm]

N° barre: 0 Zoom

Tipologia Sezione

Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Sollecitazioni

S.L.U. Metodo n

N_{Ed}: 107.2 [kN]
 M_{xEd}: 0 [kNm]
 M_{yEd}: 0 [kNm]

P.to applicazione N

Centro Baricentro cls
 Coord.[cm] xN: 0 yN: 0

Tipologia rottura

Lato calcestruzzo - Acciaio snervato

M_{xRd}: 847.7 [kNm]

Materiali

B450C C25/30

ϵ_{su} : 67.5 ‰ ϵ_{c2} : 2 ‰
 f_{yd} : 450 N/mm² ϵ_{cu} : 3.5 ‰
 E_s : 210'000 N/mm² f_{cd} : 14.17 N/mm²
 E_s/E_c : 15 f_{cc}/f_{cd} : 0.8
 ϵ_{syd} : 2.143 ‰ $\sigma_{c,adm}$: 9.75 N/mm²
 $\sigma_{s,adm}$: 255 N/mm² τ_{co} : 0.6
 τ_{c1} : 1.829

σ_c : -14.17 N/mm²
 σ_s : 450 N/mm²
 ϵ_c : 3.5 ‰
 ϵ_s : 4.054 ‰
 d: 52 cm
 x: 24.09 x/d: 0.4633
 δ : 1

Metodo di calcolo

S.L.U.+ S.L.U.-
 Metodo n

Tipologia flessione

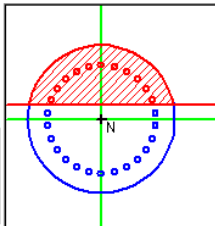
Fletta Deviata

Vertici: 52 N° rett.: 100

Calcola MRd Dominio M-N

L₀: 0 cm Col. modello

Precompresso





d) Assenza di varchi. Altezza barriera H=3.75m.

Terreno Incoerente e palo flessibile			
Lp =	8.0	m	
Spess. di terreno inerte Li =	0.0	m	
ϕ =	0	°	
γ_{M1} =	1.0		
ϕ' =	0.00		
Kp =	1.00		
$K_{p\delta}$ =	3.00		
γ_{ter} =	20.0	kN/mc	
D =	0.60	m	
L = Lp-Li =	8.00	m	
h =	2.13	m	
Coeff. di sic. richiesto R =	3.00		
M_{ult} =	509.00	kNm	
Sezione libera in sommità			
M_{max} =	509.00	kNm	
H_{ult} =	129.83	kN	ok
z_{γ} =	2.69	m	
H_{soll} =	41.17	kN	
VERIFICA PORTANZA SODDISFATTA			
$FS = H_{ult}/H_{soll} =$	3.15		
$z_{\gamma} + 3D =$	4.49	m	
$L \geq z_{\gamma} + 3D ?$	SI'		
VERIFICA GEOMETRICA SODDISFATTA			
b.1.1) Pali a Testa Libera Rigidi			
$H_{ult} = (0.5 * \gamma_t * D^3 * K_p) / (h+L) =$	303.25	kN	
$z_{\gamma} = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.10	m	
$M_{max} = H_{ult} * (h + 2/3 * z_{\gamma}) =$	1'475.79	kNm	



Titolo : _____

Sezione circolare cava

Raggio esterno: 30 [cm]
 Raggio interno: 0 [cm]
 N° barre uguali: 20
 Diametro barre: 2 [cm]
 Copifero (baric.): 8 [cm]

N° barre: 0 Zoom

Sollecitazioni

S.L.U. Metodo n

N_{Ed}: 105.7 0 kN
 M_{xEd}: 0 0 kNm
 M_{yEd}: 0 0

P.to applicazione N

Centro Baricentro cls
 Coord.[cm] xN: 0 yN: 0

Sezione C.A.

File

Metodo di calcolo

S.L.U. + S.L.U. -
 Metodo n

Tipo flessione

Retta Deviata

Vertici: 52 N° rett. 100
 Calcola MRd Dominio M-N
 L₀: 0 cm Col. modello

Precompresso

Materiali

B450C C25/30

ε_{su}: 67.5 ‰ ε_{c2}: 2 ‰
 f_{yd}: 450 N/mm² ε_{cu}: 3.5 ‰
 E_s: 210'000 N/mm² f_{cd}: 14.17
 E_s/E_c: 15 f_{cc}/f_{cd}: 0.8
 ε_{syd}: 2.143 ‰ σ_{c,adm}: 9.75
 σ_{s,adm}: 255 N/mm² τ_{co}: 0.6
 τ_{c1}: 1.829

M_{xRd}: 509 kNm
 σ_c: -14.17 N/mm²
 σ_s: 450 N/mm²
 ε_c: 3.5 ‰
 ε_s: 5.157 ‰
 d: 52 cm
 x: 21.02 x/d: 0.4043
 δ: 0.9454



5.5 TRAVI DI CORONAMENTO

Nel presente capitolo si determinano le azioni agenti nella trave di coronamento dei pali e si effettuano le relative verifiche a flessione, a taglio e a torsione.

Nella tabella di seguito allegata si riportano le caratteristiche geometriche delle travi di coronamento al variare delle altezze delle barriere antirumore :

CARATTERISTICHE GEOMETRICHE TRAVE		
BARRIERA H=6.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=5.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=4.75m	B(m)	0.85
	H(m)	1.00
BARRIERA H=3.75m	B(m)	0.85
	H(m)	1.00

5.5.1 Azioni agenti

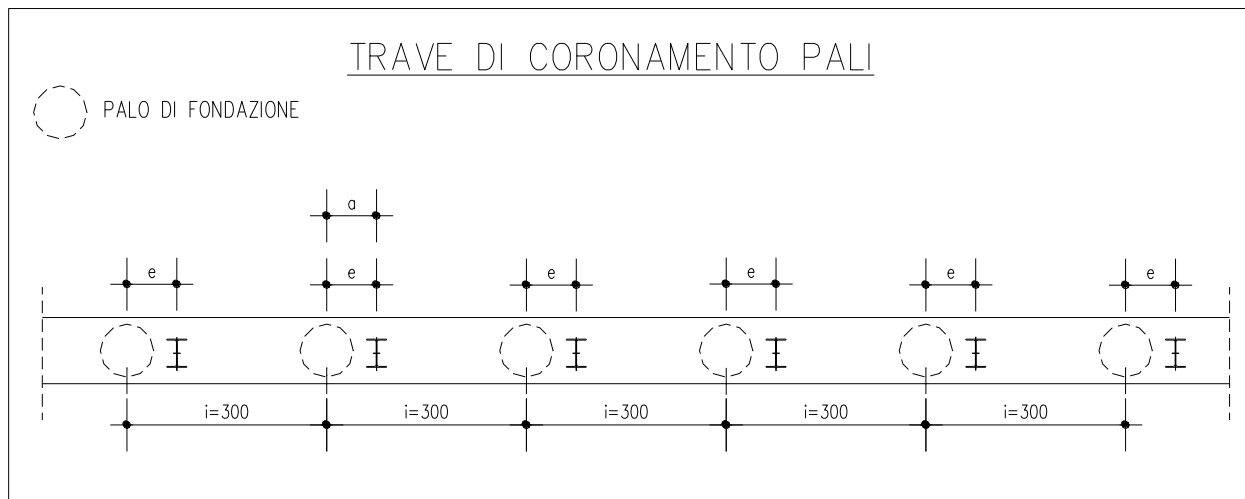
Nei calcoli che seguono viene trascurata la spinta attiva del terreno a tergo delle travi in quanto, oltre ad essere di entità modestissima, fornisce un contributo a favore di sicurezza nei confronti della torsione, che risulta essere una delle componenti di sollecitazione più penalizzanti.

A favore di sicurezza si considera la stessa combinazione di carico sia per le verifiche di resistenza che di fessurazione.

Pertanto le azioni considerate per il dimensionamento e verifica delle travi di coronamento pali sono:

- 1) Azioni trasmesse dai montanti delle barriere antirumore
- 2) Peso proprio cordolo

1) Azioni trasmesse dai montanti delle barriere antirumore



Poiché i montanti delle barriere non sono in asse-palo ma sono eccentrici con $e=0.75\text{m}$ (vedi figura), definite:

N_B = azione verticale trasmessa da un montante delle barriere antirumore alla base del montante

M_B = azione torcentetrasmessa da un montante delle barriere antirumore alla base del montante

T_B = azione di taglio trasmessa da un montante delle barriere antirumore alla base del montante

N_{BAT} = N_B azione verticale trasmessa da un montante delle barriere antirumore portata in asse trave

M_{BAT} = $M_B + T_B \cdot (H/2 + s)$ azione torcente trasmessa da un montante delle barriere antirumore portata in asse trave

(con H = altezza trave e s = spessore della piastra)

T_{BAT} = T_B azione di taglio trasmessa da un montante delle barriere antirumore portata in asse trave

si ha che in corrispondenza dell'attacco trave-palo, le azioni massime agenti in asse trave, trasmesse dai montanti delle barriere e calcolate col metodo delle aree di influenza (definita la quantità $((i-e)/i = \rho = 0.75)$, valgono:

$V_{BATP} = N_{BAT} \cdot 0.75$ (taglio max verticale in prossimità del palo al lato del varco)

$M_{BATP} = M_{BAT} \cdot 0.75$ (momento torcente max in prossimità del palo al lato del varco)

$T_{BATP} = T_{BAT} \cdot 0.75$ (taglio max orizzontale in prossimità del palo al lato del varco)



Nella tabella sotto riportata sono riassunte le azioni agenti nella trave dovute alle azioni aerodinamiche + vento agenti sui montanti.

L'azione torcente e il taglio orizzontale sulla trave di coronamento pali così determinate sono cautelative anche nei confronti delle sollecitazioni determinate considerando la pressione/depressione dinamica (transito dei convogli).

Considerando un'azione $p_{tot}=q_{ik}+p$ (pressione aerodinamica + vento) alternativamente di segno opposto (vedi figura) si ha che l'azione massima torcente e il taglio max orizzontale sulla trave risultano pari a:

	AZIONI TRASMESSE DA UN MONTANTE IN ASSE TRAVE		SOLLECITAZIONI MAX IN ASSE TRAVE IN CORRISPONDENZA PALI	
BARRIERA H=6.75m	$N_{BAT} = N_B$ (daN)	4'725.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	3543.8
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	19'870.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	14902.7
	$T_{BAT} = T_B$ (daN)	5'062.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	3796.9
BARRIERA H=5.75m	$N_{BAT} = N_B$ (daN)	4'560.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	3420.0
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	14'770.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	11077.7
	$T_{BAT} = T_B$ (daN)	4'312.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	3234.4
BARRIERA H=4.75m	$N_{BAT} = N_B$ (daN)	4'347.5	$V_{BATP} = \rho * N_{BAT}$ (daN)	3260.6
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	10'420.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	7815.2
	$T_{BAT} = T_B$ (daN)	3'562.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	2671.9
BARRIERA H=3.75m	$N_{BAT} = N_B$ (daN)	4'192.5	$V_{BATP} = \rho * N_{BAT}$ (daN)	3144.4
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	6'820.4	$M_{BATP} = \rho * M_{BAT}$ (daNm)	5115.3
	$T_{BAT} = T_B$ (daN)	2'812.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	2109.4

2) Peso proprio cordolo

Considerando uno schema di trave semi-incastata, con luce i =interasse pali, si ha che le azioni dovute al peso proprio sono:

$$T_{pp} = B * H * \gamma_{cls} * (i/2)$$

$$M_{pp} = (B * H * \gamma_{cls}) * i^2 / 12$$

Con i =interasse pali

Sostituendo i valori numerici:



CASO TIPICO	PESO PROPRIO: SOLLECITAZIONI TRAVE	
BARRIERA H=6.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'875.0
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'750.0
BARRIERA H=5.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'875.0
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'750.0
BARRIERA H=4.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'593.8
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'187.5
BARRIERA H=3.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'593.8
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'187.5

3) Sollecitazioni totali

Combinando le sollecitazioni dovute alle pressioni aerodinamiche + vento con quelle dovute al peso proprio del cordolo si ottiene:

	SOLLECITAZIONI TOTALI TRAVE DI CORONAMENTO PALI	
BARRIERA H=6.75m	$N_{TC} = (\text{daN})$	
	$M_{TC} = N_b \cdot (i \cdot (i - e)) / i + M_{pp} \text{ (daNm)}$	4'532.8
	$T_{TCV} = T_{pp} + V_{BATP} \text{ (daN)}$	7'293.8
	$T_{TCO} = T_{BATP} \text{ (daN)}$	3'796.9
	$M_{TORSIONE} = M_{BATP} \text{ (daNm)}$	14'902.7
BARRIERA H=5.75m	$N_{TC} = (\text{daN})$	
	$M_{TC} = N_b \cdot (i \cdot (i - e)) / i + M_{pp} \text{ (daNm)}$	4'440.0
	$T_{TCV} = T_{pp} + V_{BATP} \text{ (daN)}$	7'170.0
	$T_{TCO} = T_{BATP} \text{ (daN)}$	3'234.4
	$M_{TORSIONE} = M_{BATP} \text{ (daNm)}$	11'077.7
BARRIERA H=4.75m	$N_{TC} = (\text{daN})$	
	$M_{TC} = N_b \cdot (i \cdot (i - e)) / i + M_{pp} \text{ (daNm)}$	4'039.2
	$T_{TCV} = T_{pp} + V_{BATP} \text{ (daN)}$	6'448.1
	$T_{TCO} = T_{BATP} \text{ (daN)}$	2'671.9
	$M_{TORSIONE} = M_{BATP} \text{ (daNm)}$	7'815.2
BARRIERA H=3.75m	$N_{TC} = (\text{daN})$	
	$M_{TC} = N_b \cdot (i \cdot (i - e)) / i + M_{pp} \text{ (daNm)}$	3'952.0
	$T_{TCV} = T_{pp} + V_{BATP} \text{ (daN)}$	6'331.9
	$T_{TCO} = T_{BATP} \text{ (daN)}$	2'109.4
	$M_{TORSIONE} = M_{BATP} \text{ (daNm)}$	5'115.3

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Nella tabella precedente la sollecitazione flessionale nella trave dovuta al peso dei montanti viene determinata considerando cautelativamente uno schema di trave appoggiata , con luce i =interasse pali, soggetta ad una azione N_b applicata a distanza $e=0.75m$ da una estremità. Mentre i simboli “v” ed “o” dopo il taglio indicano rispettivamente la direzione verticale ed orizzontale del taglio stesso.



5.5.1.1 Verifica di resistenza travi

Le analisi sono state svolte con l'ausilio del programma "VcaSLU" del prof. Gelfi per quanto riguarda la verifica a flessione (svolta alle tensioni ammissibili) e con calcolo manuale per le sollecitazioni di taglio e torsione.

5.5.1.1.1 Verifica a flessione e a taglio

Si riporta come esempio la verifica a flessione della trave di coronamento per le barriere antirumore di H=6.75m.

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

c = c' = 7.0cm

$A_{\text{intradosso per flessione}} = 3 \Phi 16 = 6.03 \text{ cm}^2$

$A_{\text{intradosso per flessione}} = 3 \Phi 16 = 6.03 \text{ cm}^2$

Sollecitazioni

$M_{\text{max}} = 4532.7 \text{ daNm}$

Taglio in direzione verticale: $T_{\text{TCV}} = 7293.8 \text{ daN}$

Taglio in direzione orizzontale: $T_{\text{TCO}} = 3796.9 \text{ daN}$

Verifica a flessione



Verifica C.A. S.L.U. - File: trave 100x100

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

Titolo: **trave 100x100 Hb=6.75m**

N° strati barre: **2** Zoom

N°	b [cm]	h [cm]	N°	As [cm²]	d [cm]
1	100	100	1	6.03	7
			2	6.03	93

Tipo Sezione:
 Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Sollecitazioni: S.L.U. Metodo n

N_{Ed} kN
M_{xEd} 45.327 kNm
M_{yEd} 0

P.to applicazione N:
 Centro Baricentro cls
 Coord.[cm] xN
yN

Metodo di calcolo:
 S.L.U.+ S.L.U.-
 Metodo n

Materiali: **B450C** **C25/30**

ϵ_{su} 67.5 ‰	ϵ_{c2} 2 ‰	σ_c -0.8162 N/mm ²
f_{yd} 391.3 N/mm ²	ϵ_{cu} 3.5 ‰	σ_s 84.56 N/mm ²
E_s 200000 N/mm ²	f_{cd} 14.17 N/mm ²	ϵ_s 0.4228 ‰
E_s/E_c 15	f_{cc}/f_{cd} 0.8	d 93 cm
ϵ_{syd} 1.957 ‰	$\sigma_{c,adm}$ 9.75 N/mm ²	x 11.76 x/d 0.1265
$\sigma_{s,adm}$ 255 N/mm ²	τ_{co} 0.6	δ 0.7
	τ_{c1} 1.829	

Verifica N° iterazioni:

Precompresso

Verifica a taglio

$$T_{TCV} = 7293.8 \text{ daN}$$

$$\tau_v = T_{TCV} / (0.9 * B * (H - c)) = 087 \text{ daN/cm}^2 < \tau_{co}$$

$$T_{TCO} = 3796.9.1 \text{ daN}$$

$$\tau_o = T_{TCO} / (0.9 * H * (B - c)) = 0.45 \text{ daN/cm}^2 < \tau_{co}$$

Verifica a torsione e taglio

Per la verifica a torsione si differenzia il calcolo nel lato verticale (generalmente lato lungo) da quello nel lato orizzontale (generalmente lato corto) della trave.

a) Verifica a torsione nel lato verticale

Si verifica che:

$$\tau_{c0} < \tau_{\text{vert. (torsione + taglio)}} = \tau_{\text{vert. torsione}} + \tau_{\text{vert. taglio}} \leq 1.1 * \tau_{c1}$$

$$\text{con } \tau_{\text{vert. torsione}} = ((3 + 1.8 * B/H) * M_t) / B^2 * H$$



e dove τ_{c1} viene maggiorato del 10% per la verifica delle sollecitazioni dovute a torsione e taglio composte.

Se:

$\tau_{\text{vert. (torsione + taglio)}} < \tau_{c0}$ non occorre armare a torsione

$\tau_{c0} < \tau_{\text{vert. (torsione + taglio)}} < 1.1 * \tau_{c1}$ occorre armare a torsione

$\tau_{\text{vert. (torsione + taglio)}} > 1.1 * \tau_{c1}$ occorre cambiare sezione

Per il calcolo delle armature a torsione e taglio si definisce:

$$H_1 = H - 2 * c$$

$$B_1 = B - 2 * c$$

$$p = 2 * (H_1 + B_1)$$

$$A_1 = H_1 * B_1$$

$A_{\text{long per torsione}} = (M_t * p) / (2 * \sigma_a * A_1)$ area totale dei ferri longitudinali

$S_{\text{staffe per torsione /m.}} = (M_t * 100) / (2 * \sigma_a * A_1)$ area totale delle staffe a torsione per lunghezza unitaria (1 braccio)

$S_{\text{staffe per taglio vert/m.}} = (T_{vt} * 100) / (0.9 * h * \sigma_a * n_{brv})$ area totale delle staffe a taglio per lunghezza unitaria (1 braccio)

b) Verifica a torsione nel lato orizzontale

Si verifica che:

$$\tau_{c0} < \tau_{\text{oriz. (torsione + taglio)}} = \tau_{\text{oriz. torsione}} + \tau_{\text{oriz. taglio}} \leq 1.1 * \tau_{c1}$$

$$\text{con } \tau_{\text{oriz. torsione}} = \tau_{\text{vert. torsione}} * B^2 / H^2$$

e dove τ_{c1} viene maggiorato del 10% per la verifica delle sollecitazioni dovute a torsione e taglio composte.

Se:

$$\tau_{\text{oriz. (torsione + taglio)}} < \tau_{c0} \text{ non occorre armare a torsione}$$

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$\tau_{c0} < \tau_{\text{oriz. (torsione + taglio)}} < 1.1 * \tau_{c1}$ occorre armare a torsione

$\tau_{\text{oriz. (torsione + taglio)}} > 1.1 * \tau_{c1}$ occorre cambiare sezione

La determinazione delle armature resistenti a torsione e taglio orizzontale è analoga a quanto riportato per le verifiche sul lato verticale.

Si riportano i fogli di calcolo di excel dove sono state effettuate le verifiche a torsione per esteso.

In tali fogli di calcolo viene determinata l'armatura minima necessaria a torsione sia per quanto riguarda l'armatura longitudinale che trasversale.



Trave di coronamento pali di fondazione per altezze barriere pari a 6.75m

VERIFICA A TORSIONE E TAGLIO				
$M_{TORSIONE}$	14902.7	daNm		Momento torcente
$T_{TCV} =$	7293.8	daN		Taglio verticale
$T_{TCO} =$	3796.9	daN		Taglio orizzontale
$R_{ck} =$	300	daN/cm ²		
$\tau_{CO} =$	6.00	daN/cm ²		
$\tau_{C1} =$	18.29	daN/cm ²		
$C =$	6.5	cm		
$\sigma_{amm. acc.} =$	2550	daN/cm ²		
Caratteristiche Geometriche				
$B =$	100	cm		
$H =$	100	cm		
$\tau_{vert. torsione} =$	7.15	daN/cm ²		OK
$\tau_{oriz. torsione} =$	7.15	daN/cm ²		OK
$\tau_{vert. taglio} =$	0.87	daN/cm ²		
$\tau_{oriz. taglio} =$	0.45	daN/cm ²		
$\tau_{vert. (torsione+taglio)} =$	8.02	daN/cm ²		ARMARE A TORSIONE
$\tau_{vert. (torsione+taglio)} =$	7.60	daN/cm ²		ARMARE A TORSIONE
$p =$	348	cm		(sviluppo linea media)
$A_1 =$	7569	cm ²		(area racchiusa dalla linea media)
A_{long} per torsione:			13.43	cm ²
diámetro ferri:			1.6	cm
Area singolo ferro:			2.01	cm ²
n° ferri minimo:			7	
diámetro ferri presenti:			1.6	cm
n° ferri long*presenti assegnati alla torsione :			3+3+3+3=12	(VERIFICA SODDISFATTA)
St_{staffe} per torsione vert. /m :			3.86	cm ² /m
St_{staffe} per taglio vert. /m:			3.40	cm ² /m
numero braccia per taglio vert.: bv:			4	
St_{staffe} per torsione + taglio vert. /m:			4.71	cm ² /m (1 braccio)
diámetro staffe presenti:			1.4	cm
passo staffe presenti			25	cm
St_{staffe} presenti /m:			6.15	cm ² /m (VERIFICA SODDISFATTA)
St_{staffe} per torsione oriz. /m :			3.86	cm ² /m
St_{staffe} per taglio oriz. /m (area a m):			1.77	cm ² /m
numero braccia per taglio oriz.: bo:			2	
St_{staffe} per torsione + taglio oriz. /m:			4.75	cm ² /m (1 braccio)
diámetro staffe presenti:			1.4	cm ²
passo staffe presenti			25.0	cm
St_{staffe} presenti /m:			6.15	cm ² /m (VERIFICA SODDISFATTA)



Trave di coronamento pali di fondazione per altezze barriere pari a 5.75m

VERIFICA A TORSIONE E TAGLIO				
$M_{TORSIONE}$	11077.7	daNm		Momento torcente
$T_{TCV} =$	7170	daN		Taglio verticale
$T_{TCO} =$	3234.4	daN		Taglio orizzontale
$R_{ck} =$	300	daN/cm ²		
$\tau_{CO} =$	6.00	daN/cm ²		
$\tau_{C1} =$	18.29	daN/cm ²		
$C =$	6.5	cm		
$\sigma_{amm. acc.} =$	2550	daN/cm ²		
Caratteristiche Geometriche				
$B =$	100	cm		
$H =$	100	cm		
$\tau_{vert. torsione} =$	5.32	daN/cm ²		OK
$\tau_{oriz. torsione} =$	5.32	daN/cm ²		OK
$\tau_{vert. taglio} =$	0.85	daN/cm ²		
$\tau_{oriz. taglio} =$	0.38	daN/cm ²		
$\tau_{vert. (torsione+taglio)} =$	6.17	daN/cm ²		ARMARE A TORSIONE
$\tau_{vert. (torsione+taglio)} =$	5.70	daN/cm ²		NON SERVE ARMARE A TORSIONE
$p =$	348	cm		(sviluppo linea media)
$A_1 =$	7569	cm ²		(area racchiusa dalla linea media)
A_{long} per torsione:			9.99	cm ²
diametro ferri:			1.8	cm
Area singolo ferro:			2.54	cm ²
n° ferri minimo:			4	
diametro ferri presenti:			1.6	cm
n° ferri long. presenti assegnati alla torsione :			3+3+3+3=12	(VERIFICA SODDISFATTA)
St_{staffe} per torsione vert. /m :			2.87	cm ² /m
St_{staffe} per taglio vert. /m:			3.34	cm ² /m
numero braccia per taglio vert.: bv:			4	
St_{staffe} per torsione + taglio vert. /m:			3.71	cm ² /m (1 braccio)
diametro staffe presenti:			1.4	cm
passo staffe presenti			25	cm
St_{staffe} presenti /m:			6.15	cm ² /m (VERIFICA SODDISFATTA)
St_{staffe} per torsione oriz. /m :			2.87	cm ² /m
St_{staffe} per taglio oriz. /m (area a m):			1.51	cm ² /m
numero braccia per taglio oriz.: bo:			2	
St_{staffe} per torsione + taglio oriz. /m:			3.62	cm ² /m (1 braccio)
diametro staffe presenti:			1.4	cm ²
passo staffe presenti			25.0	cm
St_{staffe} presenti /m:			6.15	cm ² /m (VERIFICA SODDISFATTA)



Trave di coronamento pali di fondazione per altezze barriere pari a 4.75m

VERIFICA A TORSIONE E TAGLIO					
M_{TORSIONE}	7815.2	daNm			Momento torcente
T_{TCV}	6448	daN			Taglio verticale
T_{TCCO}	2671.9	daN			Taglio orizzontale
R_{ck}	300	daN/cm ²			
τ_{CO}	6.00	daN/cm ²			
τ_{c1}	18.29	daN/cm ²			
C	6.5	cm			
$\sigma_{\text{amm. acc.}}$	2550	daN/cm ²			
Caratteristiche Geometriche					
B	85	cm			
H	100	cm			
$\tau_{\text{vert. torsione}}$	4.90	daN/cm ²		OK	
$\tau_{\text{oriz. torsione}}$	3.54	daN/cm ²		OK	
$\tau_{\text{vert. taglio}}$	0.90	daN/cm ²			
$\tau_{\text{oriz. taglio}}$	0.38	daN/cm ²			
$\tau_{\text{vert. (torsione+taglio)}}$	5.80	daN/cm ²		NON SERVE ARMARE A TORSIONE	
$\tau_{\text{vert. (torsione+taglio)}}$	3.92	daN/cm ²		NON SERVE ARMARE A TORSIONE	
p	318	cm			(sviluppo linea media)
A_1	6264	cm ²			(area racchiusa dalla linea media)
$A_{\text{long per torsione}}$			7.78	cm ²	
diametro ferri:			1.6	cm	
Area singolo ferro:			2.01	cm ²	
n° ferri minimo:			4		
diametro ferri presenti:			1.8	cm	
n° ferri long* presenti assegnati alla torsione :			2+2+3+3=10		(VERIFICA SODDISFATTA)
$St_{\text{staffe per torsione vert. /m}}$			2.45	cm ² /m	
$St_{\text{staffe per taglio vert. /m}}$			3.00	cm ² /m	
numero braccia per taglio vert.: bv:			4		
$St_{\text{staffe per torsione + taglio vert. /m}}$			3.20	cm ² /m	(1 braccio)
diametro staffe presenti:			1.2	cm	
passo staffe presenti			25	cm	
$St_{\text{staffe presenti /m}}$			4.52	cm ² /m	(VERIFICA SODDISFATTA)
$St_{\text{staffe per torsione oriz. /m}}$			2.45	cm ² /m	
$St_{\text{staffe per taglio oriz. /m (area a m)}}$			1.48	cm ² /m	
numero braccia per taglio oriz.: bo:			2		
$St_{\text{staffe per torsione + taglio oriz. /m}}$			3.19	cm ² /m	(1 braccio)
diametro staffe presenti:			1.2	cm ²	
passo staffe presenti			25.0	cm	
$St_{\text{staffe presenti /m}}$			4.52	cm ² /m	(VERIFICA SODDISFATTA)



Trave di coronamento pali di fondazione per altezze barriere pari a 3.75m

VERIFICA A TORSIONE E TAGLIO				
M_{TORSIONE}	5115.3	daNm		Momento torcente
T_{TCV}	6331.9	daN		Taglio verticale
T_{Tco}	2109.4	daN		Taglio orizzontale
R_{ck}	300	daN/cm ²		
τ_{CO}	6.00	daN/cm ²		
τ_{c1}	18.29	daN/cm ²		
C	6.5	cm		
$\sigma_{\text{amm. acc.}}$	2550	daN/cm ²		
Caratteristiche Geometriche				
B	85	cm		
H	100	cm		
$\tau_{\text{vert. torsione}}$	3.21	daN/cm ²	OK	
$\tau_{\text{oriz. torsione}}$	2.32	daN/cm ²	OK	
$\tau_{\text{vert. taglio}}$	0.89	daN/cm ²		
$\tau_{\text{oriz. taglio}}$	0.30	daN/cm ²		
$\tau_{\text{vert. (torsione+taglio)}}$	4.09	daN/cm ²		NON SERVE ARMARE A TORSIONE
$\tau_{\text{vert. (torsione+taglio)}}$	2.62	daN/cm ²		NON SERVE ARMARE A TORSIONE
p	318	cm		(sviluppo linea media)
A_1	6264	cm ²		(area racchiusa dalla linea media)
$A_{\text{long per torsione}}$			5.09	cm ²
diametro ferri:			1.6	cm
Area singolo ferro:			2.01	cm ²
n° ferri minimo:			3	
diametro ferri presenti:			1.8	cm
n° ferri long* presenti assegnati alla torsione :			5+5+3+3=16	(VERIFICA SODDISFATTA)
$St_{\text{staffe per torsione vert. /m}}$			1.60	cm ² /m
$St_{\text{staffe per taglio vert. /m}}$			2.95	cm ² /m
numero braccia per taglio vert.: bv:			4	
$St_{\text{staffe per torsione + taglio vert. /m}}$			2.34	cm ² /m (1 braccio)
diametro staffe presenti:			1.2	cm
passo staffe presenti			25	cm
$St_{\text{staffe presenti /m}}$			4.52	cm ² /m (VERIFICA SODDISFATTA)
$St_{\text{staffe per torsione oriz. /m}}$			1.60	cm ² /m
$St_{\text{staffe per taglio oriz. /m (area a m)}}$			1.17	cm ² /m
numero braccia per taglio oriz.: bo:			2	
$St_{\text{staffe per torsione + taglio oriz. /m}}$			2.19	cm ² /m (1 braccio)
diametro staffe presenti:			1.2	cm
passo staffe presenti			25.0	cm
$St_{\text{staffe presenti /m}}$			4.52	cm ² /m (VERIFICA SODDISFATTA)

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70 di 394**ALLEGATO N°1****Fondazioni su pali per Barriere di h=6.75m con rilevato di H=3.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"****1) Combinazione di esercizio**

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	0	0
22	0.00	-10.50	0	0	0
23	0.00	-11.00	0	0	0
24	0.00	-11.50	0	0	0
25	0.00	-12.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50

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18	18	19	0.50
19	19	20	0.50
20	20	21	0.50
21	21	22	0.50
22	22	23	0.50
23	23	24	0.50
24	24	25	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	0.0000	0.00
5	1	0.4952	0.019514	3.1447E9	0.0000	0.00
6	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
21	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
22	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
23	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
24	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23



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17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23
21	1214.45	607.23
22	1214.45	607.23
23	1214.45	607.23
24	1214.45	607.23

Peso totale struttura = 14573.40

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-17085.90

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	5062.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5315.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	472.00	472.00	LL
	6	0.00	0.00	472.00	472.00	LL
	7	0.00	0.00	472.00	472.00	LL
	8	0.00	0.00	472.00	472.00	LL
	9	0.00	0.00	472.00	472.00	LL
	10	0.00	0.00	472.00	472.00	LL
	11	0.00	0.00	472.00	472.00	LL
	12	0.00	0.00	472.00	472.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL
	21	0.00	0.00	472.00	472.00	LL
	22	0.00	0.00	472.00	472.00	LL
	23	0.00	0.00	472.00	472.00	LL
	24	0.00	0.00	472.00	472.00	LL

Spinta attiva



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Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3680.00	LL
	3	0.00	0.00	-3680.00	-5520.00	LL
	4	0.00	0.00	-5520.00	-7360.00	LL
	5	0.00	0.00	-7360.00	-9198.00	LL

Combinazioni di carico :

combinazione	P.P...	M(250)	T(250)	Mtrasp(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
ESERCIZIO	1.00	1.00

Sollecitazioni

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Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000

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	0.50	0.00	0.00	-12144.50	0.0000
21	0.00	0.00	0.00	-12144.50	0.0000
	0.50	0.00	0.00	-12751.73	0.0000
22	0.00	0.00	0.00	-12751.73	0.0000
	0.50	0.00	0.00	-13358.95	0.0000
23	0.00	0.00	0.00	-13358.95	0.0000
	0.50	0.00	0.00	-13966.18	0.0000
24	0.00	0.00	0.00	-13966.18	0.0000
	0.50	0.00	0.00	-14573.40	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
2	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
3	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
4	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
5	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
6	0.00	17085.90	0.00	0.00	2570.8550
	0.50	16848.85	-910.72	0.00	2007.0720
7	0.00	16848.85	-910.72	0.00	2007.0720
	0.50	16210.37	-1610.28	0.00	1511.7940
8	0.00	16210.37	-1610.28	0.00	1511.7940
	0.50	15269.28	-2125.55	0.00	1082.4530
9	0.00	15269.28	-2125.55	0.00	1082.4530
	0.50	14111.26	-2482.09	0.00	715.2434
10	0.00	14111.26	-2482.09	0.00	715.2434
	0.50	12809.65	-2703.78	0.00	405.4733
11	0.00	12809.65	-2703.78	0.00	405.4733
	0.50	11426.30	-2812.50	0.00	147.8608
12	0.00	11426.30	-2812.50	0.00	147.8608
	0.50	10012.69	-2827.93	0.00	-63.2124
13	0.00	10012.69	-2827.93	0.00	-63.2124
	0.50	8611.00	-2767.49	0.00	-233.4907
14	0.00	8611.00	-2767.49	0.00	-233.4907
	0.50	7255.30	-2646.32	0.00	-368.6730
15	0.00	7255.30	-2646.32	0.00	-368.6730

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	0.50	5972.64	-2477.31	0.00	-474.2730
16	0.00	5972.64	-2477.31	0.00	-474.2730
	0.50	4784.16	-2271.20	0.00	-555.5091
17	0.00	4784.16	-2271.20	0.00	-555.5091
	0.50	3706.15	-2036.74	0.00	-617.2174
18	0.00	3706.15	-2036.74	0.00	-617.2174
	0.50	2750.99	-1780.82	0.00	-663.7856
19	0.00	2750.99	-1780.82	0.00	-663.7856
	0.50	1928.03	-1508.69	0.00	-699.1015
20	0.00	1928.03	-1508.69	0.00	-699.1015
	0.50	1244.36	-1224.15	0.00	-726.5156
21	0.00	1244.36	-1224.15	0.00	-726.5156
	0.50	705.51	-929.78	0.00	-748.8111
22	0.00	705.51	-929.78	0.00	-748.8111
	0.50	315.95	-627.16	0.00	-768.1817
23	0.00	315.95	-627.16	0.00	-768.1817
	0.50	79.58	-317.13	0.00	-786.2132
24	0.00	79.58	-317.13	0.00	-786.2132
	0.50	0.00	0.00	0.00	-803.8673

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	5062.50	0.00	0.0000
	0.50	2531.25	5062.50	0.00	0.0000
2	0.00	2531.25	5062.50	0.00	0.0000
	0.50	5062.50	5062.50	0.00	0.0000
3	0.00	5062.50	5062.50	0.00	0.0000
	0.50	7593.75	5062.50	0.00	0.0000
4	0.00	7593.75	5062.50	0.00	0.0000
	0.50	10125.00	5062.50	0.00	0.0000
5	0.00	10125.00	5062.50	0.00	0.0000
	0.50	12656.25	5062.50	0.00	0.0000
6	0.00	12656.25	5062.50	0.00	5149.0460
	0.50	14700.99	3169.44	0.00	4352.1710
7	0.00	14700.99	3169.44	0.00	4352.1710
	0.50	15876.73	1582.56	0.00	3614.8920
8	0.00	15876.73	1582.56	0.00	3614.8920
	0.50	16330.44	277.03	0.00	2942.0480
9	0.00	16330.44	277.03	0.00	2942.0480
	0.50	16196.29	-773.33	0.00	2335.5340
10	0.00	16196.29	-773.33	0.00	2335.5340
	0.50	15595.24	-1594.94	0.00	1794.8430

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11	0.00	15595.24	-1594.94	0.00	1794.8430
	0.50	14635.17	-2213.63	0.00	1317.5640
12	0.00	14635.17	-2213.63	0.00	1317.5640
	0.50	13411.33	-2653.96	0.00	899.8173
13	0.00	13411.33	-2653.96	0.00	899.8173
	0.50	12007.12	-2938.73	0.00	536.6461
14	0.00	12007.12	-2938.73	0.00	536.6461
	0.50	10495.08	-3088.58	0.00	222.3541
15	0.00	10495.08	-3088.58	0.00	222.3541
	0.50	8937.97	-3121.80	0.00	-49.1971
16	0.00	8937.97	-3121.80	0.00	-49.1971
	0.50	7390.07	-3054.17	0.00	-284.3328
17	0.00	7390.07	-3054.17	0.00	-284.3328
	0.50	5898.38	-2898.97	0.00	-489.3429
18	0.00	5898.38	-2898.97	0.00	-489.3429
	0.50	4503.89	-2666.99	0.00	-670.2905
19	0.00	4503.89	-2666.99	0.00	-670.2905
	0.50	3242.77	-2366.68	0.00	-832.8444
20	0.00	3242.77	-2366.68	0.00	-832.8444
	0.50	2147.54	-2004.34	0.00	-982.1313
21	0.00	2147.54	-2004.34	0.00	-982.1313
	0.50	1248.03	-1584.34	0.00	-1122.6030
22	0.00	1248.03	-1584.34	0.00	-1122.6030
	0.50	572.34	-1109.45	0.00	-1257.9140
23	0.00	572.34	-1109.45	0.00	-1257.9140
	0.50	147.48	-581.14	0.00	-1390.8090
24	0.00	147.48	-581.14	0.00	-1390.8090
	0.50	0.00	0.00	0.00	-1523.0080

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
2	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
3	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
4	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
5	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000

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6	0.00	5315.60	0.00	0.00	799.8195
	0.50	5241.85	-283.33	0.00	624.4209
7	0.00	5241.85	-283.33	0.00	624.4209
	0.50	5043.21	-500.98	0.00	470.3348
8	0.00	5043.21	-500.98	0.00	470.3348
	0.50	4750.43	-661.28	0.00	336.7622
9	0.00	4750.43	-661.28	0.00	336.7622
	0.50	4390.16	-772.20	0.00	222.5196
10	0.00	4390.16	-772.20	0.00	222.5196
	0.50	3985.21	-841.17	0.00	126.1469
11	0.00	3985.21	-841.17	0.00	126.1469
	0.50	3554.84	-875.00	0.00	46.0010
12	0.00	3554.84	-875.00	0.00	46.0010
	0.50	3115.05	-879.80	0.00	-19.6660
13	0.00	3115.05	-879.80	0.00	-19.6660
	0.50	2678.97	-861.00	0.00	-72.6414
14	0.00	2678.97	-861.00	0.00	-72.6414
	0.50	2257.20	-823.30	0.00	-114.6980
15	0.00	2257.20	-823.30	0.00	-114.6980
	0.50	1858.15	-770.72	0.00	-147.5512
16	0.00	1858.15	-770.72	0.00	-147.5512
	0.50	1488.40	-706.59	0.00	-172.8246
17	0.00	1488.40	-706.59	0.00	-172.8246
	0.50	1153.02	-633.65	0.00	-192.0227
18	0.00	1153.02	-633.65	0.00	-192.0227
	0.50	855.86	-554.03	0.00	-206.5105
19	0.00	855.86	-554.03	0.00	-206.5105
	0.50	599.83	-469.37	0.00	-217.4977
20	0.00	599.83	-469.37	0.00	-217.4977
	0.50	387.13	-380.85	0.00	-226.0265
21	0.00	387.13	-380.85	0.00	-226.0265
	0.50	219.49	-289.26	0.00	-232.9629
22	0.00	219.49	-289.26	0.00	-232.9629
	0.50	98.29	-195.12	0.00	-238.9893
23	0.00	98.29	-195.12	0.00	-238.9893
	0.50	24.76	-98.66	0.00	-244.5990
24	0.00	24.76	-98.66	0.00	-244.5990
	0.50	0.00	0.00	0.00	-250.0914

Condizione : q

asta x M T N P

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1	0.00	0.00	0.00	0.00	0.0000			
	0.50	43.50	174.00	0.00	0.0000			
2	0.00	43.50	174.00	0.00	0.0000			
	0.50	174.00	348.00	0.00	0.0000			
3	0.00	174.00	348.00	0.00	0.0000			
	0.50	391.50	522.00	0.00	0.0000			
4	0.00	391.50	522.00	0.00	0.0000			
	0.50	696.00	696.00	0.00	0.0000			
5	0.00	696.00	696.00	0.00	0.0000			
	0.50	1103.00	932.00	0.00	0.0000			
6	0.00	1103.00	932.00	0.00	1354.9650			
	0.50	1496.46	648.89	0.00	1248.7490			
7	0.00	1496.46	648.89	0.00	1248.7490			
	0.50	1758.76	406.99	0.00	1148.5840			
8	0.00	1758.76	406.99	0.00	1148.5840			
	0.50	1909.87	203.64	0.00	1055.5470			
9	0.00	1909.87	203.64	0.00	1055.5470			
	0.50	1968.34	35.88	0.00	970.2591			
10	0.00	1968.34	35.88	0.00	970.2591			
	0.50	1951.16	-99.46	0.00	892.9643			
11	0.00	1951.16	-99.46	0.00	892.9643			
	0.50	1873.75	-205.55	0.00	823.5978			
12	0.00	1873.75	-205.55	0.00	823.5978			
	0.50	1749.96	-285.51	0.00	761.8491			
13	0.00	1749.96	-285.51	0.00	761.8491			
	0.50	1592.11	-342.27	0.00	707.2181			
14	0.00	1592.11	-342.27	0.00	707.2181			
	0.50	1411.10	-378.56	0.00	659.0652			
15	0.00	1411.10	-378.56	0.00	659.0652			
	0.50	1216.55	-396.81	0.00	616.6565			
16	0.00	1216.55	-396.81	0.00	616.6565			
	0.50	1016.94	-399.17	0.00	579.2022			
17	0.00	1016.94	-399.17	0.00	579.2022			
	0.50	819.73	-387.43	0.00	545.8916			
18	0.00	819.73	-387.43	0.00	545.8916			
	0.50	631.60	-363.10	0.00	515.9236			
19	0.00	631.60	-363.10	0.00	515.9236			
	0.50	458.53	-327.36	0.00	488.5338			
20	0.00	458.53	-327.36	0.00	488.5338			
	0.50	306.00	-281.09	0.00	463.0189			
21	0.00	306.00	-281.09	0.00	463.0189			
	0.50	179.10	-224.90	0.00	438.7594			

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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22	0.00	179.10	-224.90	0.00	438.7594
	0.50	82.68	-159.21	0.00	415.2398
23	0.00	82.68	-159.21	0.00	415.2398
	0.50	21.44	-84.21	0.00	392.0691
24	0.00	21.44	-84.21	0.00	392.0691
	0.50	0.00	0.00	0.00	368.9991

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	651.00	0.00	0.0000
	0.50	376.25	868.50	0.00	0.0000
2	0.00	376.25	868.50	0.00	0.0000
	0.50	810.50	868.50	0.00	0.0000
3	0.00	810.50	868.50	0.00	0.0000
	0.50	1244.75	868.50	0.00	0.0000
4	0.00	1244.75	868.50	0.00	0.0000
	0.50	1679.00	868.50	0.00	0.0000
5	0.00	1679.00	868.50	0.00	0.0000
	0.50	2113.25	868.50	0.00	0.0000
6	0.00	2113.25	868.50	0.00	874.6203
	0.50	2464.84	546.83	0.00	739.8259
7	0.00	2464.84	546.83	0.00	739.8259
	0.50	2668.71	276.96	0.00	615.0229
8	0.00	2668.71	276.96	0.00	615.0229
	0.50	2749.75	54.74	0.00	501.0503
9	0.00	2749.75	54.74	0.00	501.0503
	0.50	2730.66	-124.24	0.00	398.2458
10	0.00	2730.66	-124.24	0.00	398.2458
	0.50	2631.97	-264.44	0.00	306.5389
11	0.00	2631.97	-264.44	0.00	306.5389
	0.50	2471.96	-370.21	0.00	225.5334
12	0.00	2471.96	-370.21	0.00	225.5334
	0.50	2266.80	-445.70	0.00	154.5832
13	0.00	2266.80	-445.70	0.00	154.5832
	0.50	2030.66	-494.76	0.00	92.8572
14	0.00	2030.66	-494.76	0.00	92.8572
	0.50	1775.86	-520.88	0.00	39.3976
15	0.00	1775.86	-520.88	0.00	39.3976
	0.50	1513.08	-527.15	0.00	-6.8301
16	0.00	1513.08	-527.15	0.00	-6.8301
	0.50	1251.57	-516.25	0.00	-46.8931

GENERAL CONTRACTOR

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ALTA SORVEGLIANZA



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17	0.00	1251.57	-516.25	0.00	-46.8931
	0.50	999.32	-490.42	0.00	-81.8543
18	0.00	999.32	-490.42	0.00	-81.8543
	0.50	763.33	-451.49	0.00	-112.7388
19	0.00	763.33	-451.49	0.00	-112.7388
	0.50	549.77	-400.90	0.00	-140.5059
20	0.00	549.77	-400.90	0.00	-140.5059
	0.50	364.20	-339.70	0.00	-166.0238
21	0.00	364.20	-339.70	0.00	-166.0238
	0.50	211.71	-268.65	0.00	-190.0468
22	0.00	211.71	-268.65	0.00	-190.0468
	0.50	97.12	-188.20	0.00	-213.1945
23	0.00	97.12	-188.20	0.00	-213.1945
	0.50	25.03	-98.62	0.00	-235.9320
24	0.00	25.03	-98.62	0.00	-235.9320
	0.50	0.00	0.00	0.00	-258.5517

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.17	652.33	0.00	0.0000
2	0.00	326.16	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.50	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	0.0000
	0.50	1630.83	652.33	0.00	0.0000
6	0.00	1630.83	652.33	0.00	663.4818
	0.50	1894.30	408.40	0.00	560.8004
7	0.00	1894.30	408.40	0.00	560.8004
	0.50	2045.80	203.92	0.00	465.7981
8	0.00	2045.80	203.92	0.00	465.7981
	0.50	2104.26	35.70	0.00	379.0986
9	0.00	2104.26	35.70	0.00	379.0986
	0.50	2086.98	-99.65	0.00	300.9459
10	0.00	2086.98	-99.65	0.00	300.9459
	0.50	2009.53	-205.52	0.00	231.2750
11	0.00	2009.53	-205.52	0.00	231.2750
	0.50	1885.82	-285.24	0.00	169.7751

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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12	0.00	1885.82	-285.24	0.00	169.7751
	0.50	1728.12	-341.98	0.00	115.9462
13	0.00	1728.12	-341.98	0.00	115.9462
	0.50	1547.18	-378.67	0.00	69.1497
14	0.00	1547.18	-378.67	0.00	69.1497
	0.50	1352.35	-397.98	0.00	28.6515
15	0.00	1352.35	-397.98	0.00	28.6515
	0.50	1151.71	-402.26	0.00	-6.3393
16	0.00	1151.71	-402.26	0.00	-6.3393
	0.50	952.25	-393.55	0.00	-36.6378
17	0.00	952.25	-393.55	0.00	-36.6378
	0.50	760.04	-373.55	0.00	-63.0544
18	0.00	760.04	-373.55	0.00	-63.0544
	0.50	580.35	-343.66	0.00	-86.3705
19	0.00	580.35	-343.66	0.00	-86.3705
	0.50	417.85	-304.96	0.00	-107.3164
20	0.00	417.85	-304.96	0.00	-107.3164
	0.50	276.72	-258.27	0.00	-126.5528
21	0.00	276.72	-258.27	0.00	-126.5528
	0.50	160.82	-204.15	0.00	-144.6533
22	0.00	160.82	-204.15	0.00	-144.6533
	0.50	73.75	-142.96	0.00	-162.0889
23	0.00	73.75	-142.96	0.00	-162.0889
	0.50	19.00	-74.88	0.00	-179.2131
24	0.00	19.00	-74.88	0.00	-179.2131
	0.50	0.00	0.00	0.00	-196.2477

Condizione : Mg

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
6	0.00	326.20	0.00	0.00	49.0822
	0.50	321.67	-17.39	0.00	38.3186

GENERAL CONTRACTOR

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ALTA SORVEGLIANZA



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7	0.00	321.67	-17.39	0.00	38.3186			
	0.50	309.48	-30.74	0.00	28.8628			
8	0.00	309.48	-30.74	0.00	28.8628			
	0.50	291.52	-40.58	0.00	20.6659			
9	0.00	291.52	-40.58	0.00	20.6659			
	0.50	269.41	-47.39	0.00	13.6553			
10	0.00	269.41	-47.39	0.00	13.6553			
	0.50	244.56	-51.62	0.00	7.7412			
11	0.00	244.56	-51.62	0.00	7.7412			
	0.50	218.15	-53.70	0.00	2.8229			
12	0.00	218.15	-53.70	0.00	2.8229			
	0.50	191.16	-53.99	0.00	-1.2068			
13	0.00	191.16	-53.99	0.00	-1.2068			
	0.50	164.40	-52.84	0.00	-4.4577			
14	0.00	164.40	-52.84	0.00	-4.4577			
	0.50	138.52	-50.52	0.00	-7.0386			
15	0.00	138.52	-50.52	0.00	-7.0386			
	0.50	114.03	-47.30	0.00	-9.0547			
16	0.00	114.03	-47.30	0.00	-9.0547			
	0.50	91.34	-43.36	0.00	-10.6056			
17	0.00	91.34	-43.36	0.00	-10.6056			
	0.50	70.76	-38.88	0.00	-11.7838			
18	0.00	70.76	-38.88	0.00	-11.7838			
	0.50	52.52	-34.00	0.00	-12.6728			
19	0.00	52.52	-34.00	0.00	-12.6728			
	0.50	36.81	-28.80	0.00	-13.3471			
20	0.00	36.81	-28.80	0.00	-13.3471			
	0.50	23.76	-23.37	0.00	-13.8705			
21	0.00	23.76	-23.37	0.00	-13.8705			
	0.50	13.47	-17.75	0.00	-14.2961			
22	0.00	13.47	-17.75	0.00	-14.2961			
	0.50	6.03	-11.97	0.00	-14.6659			
23	0.00	6.03	-11.97	0.00	-14.6659			
	0.50	1.52	-6.05	0.00	-15.0102			
24	0.00	1.52	-6.05	0.00	-15.0102			
	0.50	0.00	0.00	0.00	-15.3472			
Condizione : Mspinta attiva								
asta	x	M	T	N	P			
1	0.00	217.00	0.00	0.00	0.0000			
	0.50	217.00	0.00	0.00	0.0000			
2	0.00	217.00	0.00	0.00	0.0000			

GENERAL CONTRACTOR

Cepav due



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	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
6	0.00	217.00	0.00	0.00	32.6512
	0.50	213.99	-11.57	0.00	25.4909
7	0.00	213.99	-11.57	0.00	25.4909
	0.50	205.88	-20.45	0.00	19.2006
8	0.00	205.88	-20.45	0.00	19.2006
	0.50	193.93	-27.00	0.00	13.7477
9	0.00	193.93	-27.00	0.00	13.7477
	0.50	179.22	-31.52	0.00	9.0840
10	0.00	179.22	-31.52	0.00	9.0840
	0.50	162.69	-34.34	0.00	5.1497
11	0.00	162.69	-34.34	0.00	5.1497
	0.50	145.12	-35.72	0.00	1.8779
12	0.00	145.12	-35.72	0.00	1.8779
	0.50	127.17	-35.92	0.00	-0.8028
13	0.00	127.17	-35.92	0.00	-0.8028
	0.50	109.36	-35.15	0.00	-2.9655
14	0.00	109.36	-35.15	0.00	-2.9655
	0.50	92.15	-33.61	0.00	-4.6823
15	0.00	92.15	-33.61	0.00	-4.6823
	0.50	75.86	-31.46	0.00	-6.0235
16	0.00	75.86	-31.46	0.00	-6.0235
	0.50	60.76	-28.85	0.00	-7.0553
17	0.00	60.76	-28.85	0.00	-7.0553
	0.50	47.07	-25.87	0.00	-7.8390
18	0.00	47.07	-25.87	0.00	-7.8390
	0.50	34.94	-22.62	0.00	-8.4304
19	0.00	34.94	-22.62	0.00	-8.4304
	0.50	24.49	-19.16	0.00	-8.8790
20	0.00	24.49	-19.16	0.00	-8.8790
	0.50	15.80	-15.55	0.00	-9.2271
21	0.00	15.80	-15.55	0.00	-9.2271
	0.50	8.96	-11.81	0.00	-9.5103
22	0.00	8.96	-11.81	0.00	-9.5103
	0.50	4.01	-7.97	0.00	-9.7563

GENERAL CONTRACTOR

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23	0.00	4.01	-7.97	0.00	-9.7563
	0.50	1.01	-4.03	0.00	-9.9853

24	0.00	1.01	-4.03	0.00	-9.9853
	0.50	0.00	0.00	0.00	-10.2095

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1174.32	0.00	0.0000
	0.50	587.16	1174.32	0.00	0.0000
2	0.00	587.16	1174.32	0.00	0.0000
	0.50	1174.32	1174.32	0.00	0.0000
3	0.00	1174.32	1174.32	0.00	0.0000
	0.50	1761.48	1174.32	0.00	0.0000
4	0.00	1761.48	1174.32	0.00	0.0000
	0.50	2348.65	1174.32	0.00	0.0000
5	0.00	2348.65	1174.32	0.00	0.0000
	0.50	2935.81	1174.32	0.00	0.0000
6	0.00	2935.81	1174.32	0.00	1194.3990
	0.50	3410.12	735.20	0.00	1009.5520
7	0.00	3410.12	735.20	0.00	1009.5520
	0.50	3682.85	367.10	0.00	838.5288
8	0.00	3682.85	367.10	0.00	838.5288
	0.50	3788.09	64.26	0.00	682.4525
9	0.00	3788.09	64.26	0.00	682.4525
	0.50	3756.97	-179.39	0.00	541.7623
10	0.00	3756.97	-179.39	0.00	541.7623
	0.50	3617.55	-369.97	0.00	416.3409
11	0.00	3617.55	-369.97	0.00	416.3409
	0.50	3394.85	-513.48	0.00	305.6288
12	0.00	3394.85	-513.48	0.00	305.6288
	0.50	3110.96	-615.63	0.00	208.7262
13	0.00	3110.96	-615.63	0.00	208.7262
	0.50	2785.23	-681.68	0.00	124.4831
14	0.00	2785.23	-681.68	0.00	124.4831
	0.50	2434.49	-716.44	0.00	51.5784
15	0.00	2434.49	-716.44	0.00	51.5784
	0.50	2073.30	-724.15	0.00	-11.4120
16	0.00	2073.30	-724.15	0.00	-11.4120
	0.50	1714.24	-708.46	0.00	-65.9553
17	0.00	1714.24	-708.46	0.00	-65.9553
	0.50	1368.22	-672.46	0.00	-113.5105
18	0.00	1368.22	-672.46	0.00	-113.5105

GENERAL CONTRACTOR

Cepav due



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0.50 1044.74 -618.65 0.00 -155.4840

19 0.00 1044.74 -618.65 0.00 -155.4840

0.50 752.21 -548.99 0.00 -193.1908

20 0.00 752.21 -548.99 0.00 -193.1908

0.50 498.15 -464.94 0.00 -227.8202

21 0.00 498.15 -464.94 0.00 -227.8202

0.50 289.50 -367.51 0.00 -260.4047

22 0.00 289.50 -367.51 0.00 -260.4047

0.50 132.76 -257.35 0.00 -291.7921

23 0.00 132.76 -257.35 0.00 -291.7921

0.50 34.21 -134.80 0.00 -322.6190

24 0.00 34.21 -134.80 0.00 -322.6190

0.50 0.00 0.00 0.00 -353.2847

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.33	-1840.00	0.00	0.0000
3	0.00	-613.33	-1840.00	0.00	0.0000
	0.50	-2070.00	-4140.00	0.00	0.0000
4	0.00	-2070.00	-4140.00	0.00	0.0000
	0.50	-4906.67	-7360.00	0.00	0.0000
5	0.00	-4906.67	-7360.00	0.00	0.0000
	0.50	-9583.25	-11499.50	0.00	0.0000
6	0.00	-9583.25	-11499.50	0.00	-8812.3240
	0.50	-14493.79	-8220.96	0.00	-7634.6220
7	0.00	-14493.79	-8220.96	0.00	-7634.6220
	0.50	-17880.69	-5401.07	0.00	-6515.4490
8	0.00	-17880.69	-5401.07	0.00	-6515.4490
	0.50	-19966.94	-3013.53	0.00	-5468.6780
9	0.00	-19966.94	-3013.53	0.00	-5468.6780
	0.50	-20961.16	-1027.58	0.00	-4502.8810
10	0.00	-20961.16	-1027.58	0.00	-4502.8810
	0.50	-21055.91	590.03	0.00	-3622.1720
11	0.00	-21055.91	590.03	0.00	-3622.1720
	0.50	-20426.83	1873.44	0.00	-2826.9970
12	0.00	-20426.83	1873.44	0.00	-2826.9970
	0.50	-19232.54	2856.36	0.00	-2114.8470
13	0.00	-19232.54	2856.36	0.00	-2114.8470
	0.50	-17615.17	3571.00	0.00	-1480.9050

GENERAL CONTRACTOR

Cepav due



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14	0.00	-17615.17	3571.00	0.00	-1480.9050
	0.50	-15701.25	4047.30	0.00	-918.6246
15	0.00	-15701.25	4047.30	0.00	-918.6246
	0.50	-13603.06	4312.34	0.00	-420.2473
16	0.00	-13603.06	4312.34	0.00	-420.2473
	0.50	-11420.13	4389.93	0.00	22.7410
17	0.00	-11420.13	4389.93	0.00	22.7410
	0.50	-9240.97	4300.39	0.00	419.2036
18	0.00	-9240.97	4300.39	0.00	419.2036
	0.50	-7144.78	4060.51	0.00	777.9912
19	0.00	-7144.78	4060.51	0.00	777.9912
	0.50	-5203.28	3683.61	0.00	1107.6190
20	0.00	-5203.28	3683.61	0.00	1107.6190
	0.50	-3482.32	3179.72	0.00	1415.9740
21	0.00	-3482.32	3179.72	0.00	1415.9740
	0.50	-2043.54	2555.89	0.00	1710.0470
22	0.00	-2043.54	2555.89	0.00	1710.0470
	0.50	-945.66	1816.62	0.00	1995.6790
23	0.00	-945.66	1816.62	0.00	1995.6790
	0.50	-245.74	964.33	0.00	2277.3230
24	0.00	-245.74	964.33	0.00	2277.3230
	0.50	0.00	0.00	0.00	2557.8120

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	22944.70	7540.15	0.00	0.0000
	0.50	26732.36	7471.65	-607.23	0.0000
2	0.00	26732.36	7471.65	-607.23	0.0000
	0.50	30205.02	6265.65	-1214.45	0.0000
3	0.00	30205.02	6265.65	-1214.45	0.0000
	0.50	32844.68	4139.65	-1821.68	0.0000
4	0.00	32844.68	4139.65	-1821.68	0.0000
	0.50	34191.34	1093.65	-2428.90	0.0000
5	0.00	34191.34	1093.65	-2428.90	0.0000
	0.50	33800.58	-2809.85	-3036.13	0.0000
6	0.00	33800.58	-2809.85	-3036.13	3876.5950
	0.50	32099.28	-3935.22	-3643.35	2971.7790
7	0.00	32099.28	-3935.22	-3643.35	2971.7790
	0.50	29921.11	-4726.00	-4250.58	2197.5700
8	0.00	29921.11	-4726.00	-4250.58	2197.5700
	0.50	27420.63	-5232.56	-4857.80	1545.1470

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9	0.00	27420.63	-5232.56	-4857.80	1545.1470	
	0.50	24728.13	-5501.51	-5465.03	1004.3690	
10	0.00	24728.13	-5501.51	-5465.03	1004.3690	
	0.50	21951.64	-5575.20	-6072.25	564.3016	
11	0.00	21951.64	-5575.20	-6072.25	564.3016	
	0.50	19179.12	-5491.57	-6679.48	213.6649	
12	0.00	19179.12	-5491.57	-6679.48	213.6649	
	0.50	16480.69	-5284.05	-7286.70	-58.8127	
13	0.00	16480.69	-5284.05	-7286.70	-58.8127	
	0.50	13910.88	-4981.59	-7893.93	-264.1057	
14	0.00	13910.88	-4981.59	-7893.93	-264.1057	
	0.50	11510.79	-4608.89	-8501.15	-412.6696	
15	0.00	11510.79	-4608.89	-8501.15	-412.6696	
	0.50	9310.23	-4186.61	-9108.38	-514.2718	
16	0.00	9310.23	-4186.61	-9108.38	-514.2718	
	0.50	7329.60	-3731.67	-9715.60	-577.8703	
17	0.00	7329.60	-3731.67	-9715.60	-577.8703	
	0.50	5581.73	-3257.59	-10322.83	-611.5297	
18	0.00	5581.73	-3257.59	-10322.83	-611.5297	
	0.50	4073.44	-2774.85	-10930.05	-622.3684	
19	0.00	4073.44	-2774.85	-10930.05	-622.3684	
	0.50	2807.00	-2291.30	-11537.28	-616.5301	
20	0.00	2807.00	-2291.30	-11537.28	-616.5301	
	0.50	1781.34	-1812.53	-12144.50	-599.1746	
21	0.00	1781.34	-1812.53	-12144.50	-599.1746	
	0.50	993.05	-1342.27	-12751.73	-574.4815	
22	0.00	993.05	-1342.27	-12751.73	-574.4815	
	0.50	437.27	-882.77	-13358.95	-545.6638	
23	0.00	437.27	-882.77	-13358.95	-545.6638	
	0.50	108.28	-435.20	-13966.18	-514.9879	
24	0.00	108.28	-435.20	-13966.18	-514.9879	
	0.50	0.00	0.00	-14573.40	-483.7958	
Inviluppo sollecitazioni						
asta	x	M	T	N	P	
1	0.00	MAX	22944.70	7540.15	0.00	
		MIN	22944.70	7540.15	0.00	
	0.50	MAX	26732.36	7471.65	-607.23	
		MIN	26732.36	7471.65	-607.23	
2	0.00	MAX	26732.36	7471.65	-607.23	
		MIN	26732.36	7471.65	-607.23	
	0.50	MAX	30205.02	6265.65	-1214.45	
		MIN	30205.02	6265.65	-1214.45	

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3	0.00	MAX	30205.02	6265.65	-1214.45						
		MIN	30205.02	6265.65	-1214.45						
	0.50	MAX	32844.68	4139.65	-1821.68						
		MIN	32844.68	4139.65	-1821.68						
4	0.00	MAX	32844.68	4139.65	-1821.68						
		MIN	32844.68	4139.65	-1821.68						
	0.50	MAX	34191.34	1093.65	-2428.90						
		MIN	34191.34	1093.65	-2428.90						
5	0.00	MAX	34191.34	1093.65	-2428.90						
		MIN	34191.34	1093.65	-2428.90						
	0.50	MAX	33800.58	-2809.85	-3036.13						
		MIN	33800.58	-2809.85	-3036.13						
6	0.00	MAX	33800.58	-2809.85	-3036.13	3876.5950					
		MIN	33800.58	-2809.85	-3036.13	3876.5950					
	0.50	MAX	32099.28	-3935.22	-3643.35	2971.7790					
		MIN	32099.28	-3935.22	-3643.35	2971.7790					
7	0.00	MAX	32099.28	-3935.22	-3643.35	2971.7790					
		MIN	32099.28	-3935.22	-3643.35	2971.7790					
	0.50	MAX	29921.11	-4726.00	-4250.58	2197.5700					
		MIN	29921.11	-4726.00	-4250.58	2197.5700					
8	0.00	MAX	29921.11	-4726.00	-4250.58	2197.5700					
		MIN	29921.11	-4726.00	-4250.58	2197.5700					
	0.50	MAX	27420.63	-5232.56	-4857.80	1545.1470					
		MIN	27420.63	-5232.56	-4857.80	1545.1470					
9	0.00	MAX	27420.63	-5232.56	-4857.80	1545.1470					
		MIN	27420.63	-5232.56	-4857.80	1545.1470					
	0.50	MAX	24728.13	-5501.51	-5465.03	1004.3690					
		MIN	24728.13	-5501.51	-5465.03	1004.3690					
10	0.00	MAX	24728.13	-5501.51	-5465.03	1004.3690					
		MIN	24728.13	-5501.51	-5465.03	1004.3690					
	0.50	MAX	21951.64	-5575.20	-6072.25	564.3016					
		MIN	21951.64	-5575.20	-6072.25	564.3016					
11	0.00	MAX	21951.64	-5575.20	-6072.25	564.3016					
		MIN	21951.64	-5575.20	-6072.25	564.3016					
	0.50	MAX	19179.12	-5491.57	-6679.48	213.6649					
		MIN	19179.12	-5491.57	-6679.48	213.6649					
12	0.00	MAX	19179.12	-5491.57	-6679.48	213.6649					
		MIN	19179.12	-5491.57	-6679.48	213.6649					
	0.50	MAX	16480.69	-5284.05	-7286.70	-58.8127					
		MIN	16480.69	-5284.05	-7286.70	-58.8127					
13	0.00	MAX	16480.69	-5284.05	-7286.70	-58.8127					
		MIN	16480.69	-5284.05	-7286.70	-58.8127					
	0.50	MAX	13910.88	-4981.59	-7893.93	-264.1057					
		MIN	13910.88	-4981.59	-7893.93	-264.1057					
14	0.00	MAX	13910.88	-4981.59	-7893.93	-264.1057					
		MIN	13910.88	-4981.59	-7893.93	-264.1057					
	0.50	MAX	11510.79	-4608.89	-8501.15	-412.6696					
		MIN	11510.79	-4608.89	-8501.15	-412.6696					
15	0.00	MAX	11510.79	-4608.89	-8501.15	-412.6696					
		MIN	11510.79	-4608.89	-8501.15	-412.6696					

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	0.50	MAX	9310.23	-4186.61	-9108.38	-514.2718
		MIN	9310.23	-4186.61	-9108.38	-514.2718
16	0.00	MAX	9310.23	-4186.61	-9108.38	-514.2718
		MIN	9310.23	-4186.61	-9108.38	-514.2718
	0.50	MAX	7329.60	-3731.67	-9715.60	-577.8703
		MIN	7329.60	-3731.67	-9715.60	-577.8703
17	0.00	MAX	7329.60	-3731.67	-9715.60	-577.8703
		MIN	7329.60	-3731.67	-9715.60	-577.8703
	0.50	MAX	5581.73	-3257.59	-10322.83	-611.5297
		MIN	5581.73	-3257.59	-10322.83	-611.5297
18	0.00	MAX	5581.73	-3257.59	-10322.83	-611.5297
		MIN	5581.73	-3257.59	-10322.83	-611.5297
	0.50	MAX	4073.44	-2774.85	-10930.05	-622.3684
		MIN	4073.44	-2774.85	-10930.05	-622.3684
19	0.00	MAX	4073.44	-2774.85	-10930.05	-622.3684
		MIN	4073.44	-2774.85	-10930.05	-622.3684
	0.50	MAX	2807.00	-2291.30	-11537.28	-616.5301
		MIN	2807.00	-2291.30	-11537.28	-616.5301
20	0.00	MAX	2807.00	-2291.30	-11537.28	-616.5301
		MIN	2807.00	-2291.30	-11537.28	-616.5301
	0.50	MAX	1781.34	-1812.53	-12144.50	-599.1746
		MIN	1781.34	-1812.53	-12144.50	-599.1746
21	0.00	MAX	1781.34	-1812.53	-12144.50	-599.1746
		MIN	1781.34	-1812.53	-12144.50	-599.1746
	0.50	MAX	993.05	-1342.27	-12751.73	-574.4815
		MIN	993.05	-1342.27	-12751.73	-574.4815
22	0.00	MAX	993.05	-1342.27	-12751.73	-574.4815
		MIN	993.05	-1342.27	-12751.73	-574.4815
	0.50	MAX	437.27	-882.77	-13358.95	-545.6638
		MIN	437.27	-882.77	-13358.95	-545.6638
23	0.00	MAX	437.27	-882.77	-13358.95	-545.6638
		MIN	437.27	-882.77	-13358.95	-545.6638
	0.50	MAX	108.28	-435.20	-13966.18	-514.9879
		MIN	108.28	-435.20	-13966.18	-514.9879
24	0.00	MAX	108.28	-435.20	-13966.18	-514.9879
		MIN	108.28	-435.20	-13966.18	-514.9879
	0.50	MAX	0.00	0.00	-14573.40	-483.7958
		MIN	0.00	0.00	-14573.40	-483.7958

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	26732.36	0.50	1	22944.70	0.00	1
2	30205.02	0.50	1	26732.36	0.00	1
3	32844.68	0.50	1	30205.02	0.00	1
4	34191.34	0.50	1	32844.68	0.00	1
5	34275.85	0.15	1	33800.58	0.50	1
6	33800.58	0.00	1	32099.28	0.50	1
7	32099.28	0.00	1	29921.11	0.50	1
8	29921.11	0.00	1	27420.63	0.50	1
9	27420.63	0.00	1	24728.13	0.50	1
10	24728.13	0.00	1	21951.64	0.50	1
11	21951.64	0.00	1	19179.12	0.50	1

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12	19179.12	0.00	1	16480.69	0.50	1
13	16480.69	0.00	1	13910.88	0.50	1
14	13910.88	0.00	1	11510.79	0.50	1
15	11510.79	0.00	1	9310.23	0.50	1
16	9310.23	0.00	1	7329.60	0.50	1
17	7329.60	0.00	1	5581.73	0.50	1
18	5581.73	0.00	1	4073.44	0.50	1
19	4073.44	0.00	1	2807.00	0.50	1
20	2807.00	0.00	1	1781.34	0.50	1
21	1781.34	0.00	1	993.05	0.50	1
22	993.05	0.00	1	437.27	0.50	1
23	437.27	0.00	1	108.28	0.50	1
24	108.28	0.00	1	0.00	0.50	1

2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	0	0
22	0.00	-10.50	0	0	0
23	0.00	-11.00	0	0	0
24	0.00	-11.50	0	0	0
25	0.00	-12.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50

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10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50
20	20	21	0.50
21	21	22	0.50
22	22	23	0.50
23	23	24	0.50
24	24	25	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	0.0000	0.00
5	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
21	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
22	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
23	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
24	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23

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9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23
21	1214.45	607.23
22	1214.45	607.23
23	1214.45	607.23
24	1214.45	607.23

Peso totale struttura = 14573.40

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-17085.90

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	5062.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5315.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	472.00	472.00	LL
	6	0.00	0.00	472.00	472.00	LL
	7	0.00	0.00	472.00	472.00	LL
	8	0.00	0.00	472.00	472.00	LL
	9	0.00	0.00	472.00	472.00	LL
	10	0.00	0.00	472.00	472.00	LL
	11	0.00	0.00	472.00	472.00	LL
	12	0.00	0.00	472.00	472.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL



18	0.00	0.00	472.00	472.00	LL
19	0.00	0.00	472.00	472.00	LL
20	0.00	0.00	472.00	472.00	LL
21	0.00	0.00	472.00	472.00	LL
22	0.00	0.00	472.00	472.00	LL
23	0.00	0.00	472.00	472.00	LL
24	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3680.00	LL
	3	0.00	0.00	-3680.00	-5520.00	LL
	4	0.00	0.00	-5520.00	-7360.00	LL

Combinazioni di carico :

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combinazione P.P... M(250). T(250). Mtr(250) .q Spinta attiva.. Tq Mq Mspinta att..
 FESSURAZIONE 1.00 0.5 0.5 0.5 1.00 1.00 1.00 1.00 1.00

combinazione RITIRO + AT.. spinta passiva..
 FESSURAZIONE 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000

GENERAL CONTRACTOR

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18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000
21	0.00	0.00	0.00	-12144.50	0.0000
	0.50	0.00	0.00	-12751.73	0.0000
22	0.00	0.00	0.00	-12751.73	0.0000
	0.50	0.00	0.00	-13358.95	0.0000
23	0.00	0.00	0.00	-13358.95	0.0000
	0.50	0.00	0.00	-13966.18	0.0000
24	0.00	0.00	0.00	-13966.18	0.0000
	0.50	0.00	0.00	-14573.40	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
2	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
3	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
4	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
5	0.00	17085.90	0.00	0.00	2521.7630
	0.50	16853.55	-892.33	0.00	1963.9700
6	0.00	16853.55	-892.33	0.00	1963.9700
	0.50	16228.36	-1575.90	0.00	1474.7040
7	0.00	16228.36	-1575.90	0.00	1474.7040
	0.50	15307.95	-2077.58	0.00	1051.4500
8	0.00	15307.95	-2077.58	0.00	1051.4500
	0.50	14176.81	-2423.00	0.00	690.4879
9	0.00	14176.81	-2423.00	0.00	690.4879
	0.50	12907.00	-2636.10	0.00	387.2337
10	0.00	12907.00	-2636.10	0.00	387.2337
	0.50	11559.08	-2738.91	0.00	136.5349
11	0.00	11559.08	-2738.91	0.00	136.5349
	0.50	10183.15	-2751.28	0.00	-67.0828
12	0.00	10183.15	-2751.28	0.00	-67.0828
	0.50	8819.91	-2690.91	0.00	-229.2110

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13	0.00	8819.91	-2690.91	0.00	-229.2110			
	0.50	7501.79	-2573.21	0.00	-355.3924			
14	0.00	7501.79	-2573.21	0.00	-355.3924			
	0.50	6254.03	-2411.45	0.00	-450.9883			
15	0.00	6254.03	-2411.45	0.00	-450.9883			
	0.50	5095.80	-2216.82	0.00	-521.0755			
16	0.00	5095.80	-2216.82	0.00	-521.0755			
	0.50	4041.15	-1998.52	0.00	-570.3677			
17	0.00	4041.15	-1998.52	0.00	-570.3677			
	0.50	3099.98	-1763.99	0.00	-603.1580			
18	0.00	3099.98	-1763.99	0.00	-603.1580			
	0.50	2278.89	-1519.03	0.00	-623.2786			
19	0.00	2278.89	-1519.03	0.00	-623.2786			
	0.50	1581.96	-1268.00	0.00	-634.0730			
20	0.00	1581.96	-1268.00	0.00	-634.0730			
	0.50	1011.38	-1014.05	0.00	-638.3798			
21	0.00	1011.38	-1014.05	0.00	-638.3798			
	0.50	568.05	-759.27	0.00	-638.5231			
22	0.00	568.05	-759.27	0.00	-638.5231			
	0.50	252.02	-504.97	0.00	-636.3090			
23	0.00	252.02	-504.97	0.00	-636.3090			
	0.50	62.89	-251.79	0.00	-633.0252			
24	0.00	62.89	-251.79	0.00	-633.0252			
	0.50	0.00	0.00	0.00	-629.4422			
Condizione : T(250)								
asta	x	M	T	N	P			
1	0.00	0.00	5062.50	0.00	0.0000			
	0.50	2531.25	5062.50	0.00	0.0000			
2	0.00	2531.25	5062.50	0.00	0.0000			
	0.50	5062.50	5062.50	0.00	0.0000			
3	0.00	5062.50	5062.50	0.00	0.0000			
	0.50	7593.75	5062.50	0.00	0.0000			
4	0.00	7593.75	5062.50	0.00	0.0000			
	0.50	10125.00	5062.50	0.00	0.0000			
5	0.00	10125.00	5062.50	0.00	4679.3990			
	0.50	12213.35	3337.61	0.00	3976.8720			
6	0.00	12213.35	3337.61	0.00	3976.8720			
	0.50	13507.72	1883.30	0.00	3323.8320			
7	0.00	13507.72	1883.30	0.00	3323.8320			
	0.50	14138.28	678.68	0.00	2725.5960			
8	0.00	14138.28	678.68	0.00	2725.5960			

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	0.50	14224.28	-298.72	0.00	2184.7730			
9	0.00	14224.28	-298.72	0.00	2184.7730			
	0.50	13873.59	-1071.94	0.00	1701.7500			
10	0.00	13873.59	-1071.94	0.00	1701.7500			
	0.50	13182.56	-1663.82	0.00	1275.1310			
11	0.00	13182.56	-1663.82	0.00	1275.1310			
	0.50	12236.32	-2096.33	0.00	902.1300			
12	0.00	12236.32	-2096.33	0.00	902.1300			
	0.50	11109.34	-2390.13	0.00	578.9173			
13	0.00	11109.34	-2390.13	0.00	578.9173			
	0.50	9866.14	-2564.18	0.00	300.9237			
14	0.00	9866.14	-2564.18	0.00	300.9237			
	0.50	8562.26	-2635.53	0.00	63.1032			
15	0.00	8562.26	-2635.53	0.00	63.1032			
	0.50	7245.22	-2619.16	0.00	-139.8399			
16	0.00	7245.22	-2619.16	0.00	-139.8399			
	0.50	5955.57	-2527.90	0.00	-313.2574			
17	0.00	5955.57	-2527.90	0.00	-313.2574			
	0.50	4728.00	-2372.48	0.00	-462.3914			
18	0.00	4728.00	-2372.48	0.00	-462.3914			
	0.50	3592.33	-2161.59	0.00	-592.2327			
19	0.00	3592.33	-2161.59	0.00	-592.2327			
	0.50	2574.52	-1901.97	0.00	-707.3992			
20	0.00	2574.52	-1901.97	0.00	-707.3992			
	0.50	1697.63	-1598.65	0.00	-812.0295			
21	0.00	1697.63	-1598.65	0.00	-812.0295			
	0.50	982.58	-1255.09	0.00	-909.6889			
22	0.00	982.58	-1255.09	0.00	-909.6889			
	0.50	448.88	-873.47	0.00	-1003.2840			
23	0.00	448.88	-873.47	0.00	-1003.2840			
	0.50	115.25	-454.95	0.00	-1094.9820			
24	0.00	115.25	-454.95	0.00	-1094.9820			
	0.50	0.00	0.00	0.00	-1186.1370			
Condizione : Mtrasp (T250)								
asta	x	M	T	N	P			
1	0.00	5315.60	0.00	0.00	0.0000			
	0.50	5315.60	0.00	0.00	0.0000			
2	0.00	5315.60	0.00	0.00	0.0000			
	0.50	5315.60	0.00	0.00	0.0000			
3	0.00	5315.60	0.00	0.00	0.0000			
	0.50	5315.60	0.00	0.00	0.0000			

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4	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
5	0.00	5315.60	0.00	0.00	784.5465
	0.50	5243.31	-277.61	0.00	611.0114
6	0.00	5243.31	-277.61	0.00	611.0114
	0.50	5048.81	-490.28	0.00	458.7956
7	0.00	5048.81	-490.28	0.00	458.7956
	0.50	4762.46	-646.36	0.00	327.1170
8	0.00	4762.46	-646.36	0.00	327.1170
	0.50	4410.55	-753.82	0.00	214.8179
9	0.00	4410.55	-753.82	0.00	214.8179
	0.50	4015.50	-820.12	0.00	120.4724
10	0.00	4015.50	-820.12	0.00	120.4724
	0.50	3596.15	-852.10	0.00	42.4774
11	0.00	3596.15	-852.10	0.00	42.4774
	0.50	3168.08	-855.95	0.00	-20.8702
12	0.00	3168.08	-855.95	0.00	-20.8702
	0.50	2743.97	-837.17	0.00	-71.3099
13	0.00	2743.97	-837.17	0.00	-71.3099
	0.50	2333.88	-800.55	0.00	-110.5663
14	0.00	2333.88	-800.55	0.00	-110.5663
	0.50	1945.69	-750.23	0.00	-140.3071
15	0.00	1945.69	-750.23	0.00	-140.3071
	0.50	1585.36	-689.67	0.00	-162.1120
16	0.00	1585.36	-689.67	0.00	-162.1120
	0.50	1257.24	-621.76	0.00	-177.4473
17	0.00	1257.24	-621.76	0.00	-177.4473
	0.50	964.44	-548.80	0.00	-187.6487
18	0.00	964.44	-548.80	0.00	-187.6487
	0.50	708.99	-472.58	0.00	-193.9084
19	0.00	708.99	-472.58	0.00	-193.9084
	0.50	492.16	-394.49	0.00	-197.2667
20	0.00	492.16	-394.49	0.00	-197.2667
	0.50	314.65	-315.48	0.00	-198.6065
21	0.00	314.65	-315.48	0.00	-198.6065
	0.50	176.72	-236.22	0.00	-198.6511
22	0.00	176.72	-236.22	0.00	-198.6511
	0.50	78.41	-157.10	0.00	-197.9623
23	0.00	78.41	-157.10	0.00	-197.9623
	0.50	19.57	-78.33	0.00	-196.9407
24	0.00	19.57	-78.33	0.00	-196.9407

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0.50 0.00 0.00 0.00 -195.8260

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000
	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	0.0000
	0.50	696.00	696.00	0.00	0.0000
5	0.00	696.00	696.00	0.00	1132.2600
	0.50	992.57	495.21	0.00	1058.3980
6	0.00	992.57	495.21	0.00	1058.3980
	0.50	1195.99	323.11	0.00	988.5471
7	0.00	1195.99	323.11	0.00	988.5471
	0.50	1320.18	177.94	0.00	923.5421
8	0.00	1320.18	177.94	0.00	923.5421
	0.50	1378.08	57.63	0.00	863.8929
9	0.00	1378.08	57.63	0.00	863.8929
	0.50	1381.59	-39.99	0.00	809.8393
10	0.00	1381.59	-39.99	0.00	809.8393
	0.50	1341.49	-117.17	0.00	761.3995
11	0.00	1341.49	-117.17	0.00	761.3995
	0.50	1267.45	-176.13	0.00	718.4132
12	0.00	1267.45	-176.13	0.00	718.4132
	0.50	1168.05	-218.98	0.00	680.5818
13	0.00	1168.05	-218.98	0.00	680.5818
	0.50	1050.82	-247.71	0.00	647.5029
14	0.00	1050.82	-247.71	0.00	647.5029
	0.50	922.39	-264.11	0.00	618.7011
15	0.00	922.39	-264.11	0.00	618.7011
	0.50	788.50	-269.78	0.00	593.6552
16	0.00	788.50	-269.78	0.00	593.6552
	0.50	654.16	-266.13	0.00	571.8214
17	0.00	654.16	-266.13	0.00	571.8214
	0.50	523.73	-254.32	0.00	552.6540
18	0.00	523.73	-254.32	0.00	552.6540
	0.50	401.05	-235.30	0.00	535.6228
19	0.00	401.05	-235.30	0.00	535.6228
	0.50	289.51	-209.83	0.00	520.2293

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20	0.00	289.51	-209.83	0.00	520.2293
	0.50	192.19	-178.48	0.00	506.0200
21	0.00	192.19	-178.48	0.00	506.0200
	0.50	111.95	-141.62	0.00	492.5995
22	0.00	111.95	-141.62	0.00	492.5995
	0.50	51.45	-99.52	0.00	479.6417
23	0.00	51.45	-99.52	0.00	479.6417
	0.50	13.28	-52.29	0.00	466.9011
24	0.00	13.28	-52.29	0.00	466.9011
	0.50	0.00	0.00	0.00	454.2231

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	651.00	0.00	0.0000
	0.50	376.25	868.50	0.00	0.0000
2	0.00	376.25	868.50	0.00	0.0000
	0.50	810.50	868.50	0.00	0.0000
3	0.00	810.50	868.50	0.00	0.0000
	0.50	1244.75	868.50	0.00	0.0000
4	0.00	1244.75	868.50	0.00	0.0000
	0.50	1679.00	868.50	0.00	0.0000
5	0.00	1679.00	868.50	0.00	794.2164
	0.50	2038.06	575.61	0.00	675.5876
6	0.00	2038.06	575.61	0.00	675.5876
	0.50	2262.24	328.44	0.00	565.2158
7	0.00	2262.24	328.44	0.00	565.2158
	0.50	2373.54	123.48	0.00	464.0218
8	0.00	2373.54	123.48	0.00	464.0218
	0.50	2392.13	-43.02	0.00	372.4659
9	0.00	2392.13	-43.02	0.00	372.4659
	0.50	2336.28	-174.95	0.00	290.6301
10	0.00	2336.28	-174.95	0.00	290.6301
	0.50	2222.30	-276.14	0.00	218.2923
11	0.00	2222.30	-276.14	0.00	218.2923
	0.50	2064.64	-350.30	0.00	154.9931
12	0.00	2064.64	-350.30	0.00	154.9931
	0.50	1875.93	-400.90	0.00	100.0946
13	0.00	1875.93	-400.90	0.00	100.0946
	0.50	1667.13	-431.16	0.00	52.8315
14	0.00	1667.13	-431.16	0.00	52.8315
	0.50	1447.67	-443.95	0.00	12.3566

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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15	0.00	1447.67	-443.95	0.00	12.3566
	0.50	1225.66	-441.81	0.00	-22.2215
16	0.00	1225.66	-441.81	0.00	-22.2215
	0.50	1007.99	-426.89	0.00	-51.8049
17	0.00	1007.99	-426.89	0.00	-51.8049
	0.50	800.59	-401.02	0.00	-77.2783
18	0.00	800.59	-401.02	0.00	-77.2783
	0.50	608.55	-365.68	0.00	-99.4850
19	0.00	608.55	-365.68	0.00	-99.4850
	0.50	436.30	-321.99	0.00	-119.2058
20	0.00	436.30	-321.99	0.00	-119.2058
	0.50	287.80	-270.81	0.00	-137.1411
21	0.00	287.80	-270.81	0.00	-137.1411
	0.50	166.64	-212.74	0.00	-153.8946
22	0.00	166.64	-212.74	0.00	-153.8946
	0.50	76.15	-148.13	0.00	-169.9589
23	0.00	76.15	-148.13	0.00	-169.9589
	0.50	19.56	-77.19	0.00	-185.7014
24	0.00	19.56	-77.19	0.00	-185.7014
	0.50	0.00	0.00	0.00	-201.3516

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.16	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.49	652.33	0.00	0.0000
4	0.00	978.49	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	602.9653
	0.50	1573.75	430.07	0.00	512.4411
6	0.00	1573.75	430.07	0.00	512.4411
	0.50	1740.54	242.67	0.00	428.2934
7	0.00	1740.54	242.67	0.00	428.2934
	0.50	1821.79	87.45	0.00	351.2075
8	0.00	1821.79	87.45	0.00	351.2075
	0.50	1832.87	-38.49	0.00	281.5195
9	0.00	1832.87	-38.49	0.00	281.5195
	0.50	1787.69	-138.13	0.00	219.2795
10	0.00	1787.69	-138.13	0.00	219.2795

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	1698.64	-214.39	0.00	164.3074
11	0.00	1698.64	-214.39	0.00	164.3074
	0.50	1576.72	-270.12	0.00	116.2442
12	0.00	1576.72	-270.12	0.00	116.2442
	0.50	1431.50	-307.98	0.00	74.5966
13	0.00	1431.50	-307.98	0.00	74.5966
	0.50	1271.30	-330.41	0.00	38.7756
14	0.00	1271.30	-330.41	0.00	38.7756
	0.50	1103.29	-339.60	0.00	8.1312
15	0.00	1103.29	-339.60	0.00	8.1312
	0.50	933.58	-337.49	0.00	-18.0191
16	0.00	933.58	-337.49	0.00	-18.0191
	0.50	767.41	-325.73	0.00	-40.3649
17	0.00	767.41	-325.73	0.00	-40.3649
	0.50	609.23	-305.71	0.00	-59.5816
18	0.00	609.23	-305.71	0.00	-59.5816
	0.50	462.89	-278.53	0.00	-76.3123
19	0.00	462.89	-278.53	0.00	-76.3123
	0.50	331.74	-245.08	0.00	-91.1521
20	0.00	331.74	-245.08	0.00	-91.1521
	0.50	218.75	-205.99	0.00	-104.6343
21	0.00	218.75	-205.99	0.00	-104.6343
	0.50	126.61	-161.72	0.00	-117.2182
22	0.00	126.61	-161.72	0.00	-117.2182
	0.50	57.84	-112.55	0.00	-129.2784
23	0.00	57.84	-112.55	0.00	-129.2784
	0.50	14.85	-58.62	0.00	-141.0942
24	0.00	14.85	-58.62	0.00	-141.0942
	0.50	0.00	0.00	0.00	-152.8400

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	48.1449
	0.50	321.76	-17.04	0.00	37.4957

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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6	0.00	321.76	-17.04	0.00	37.4957
	0.50	309.83	-30.09	0.00	28.1547
7	0.00	309.83	-30.09	0.00	28.1547
	0.50	292.26	-39.66	0.00	20.0740
8	0.00	292.26	-39.66	0.00	20.0740
	0.50	270.66	-46.26	0.00	13.1826
9	0.00	270.66	-46.26	0.00	13.1826
	0.50	246.42	-50.33	0.00	7.3930
10	0.00	246.42	-50.33	0.00	7.3930
	0.50	220.68	-52.29	0.00	2.6067
11	0.00	220.68	-52.29	0.00	2.6067
	0.50	194.41	-52.53	0.00	-1.2807
12	0.00	194.41	-52.53	0.00	-1.2807
	0.50	168.39	-51.37	0.00	-4.3760
13	0.00	168.39	-51.37	0.00	-4.3760
	0.50	143.22	-49.13	0.00	-6.7851
14	0.00	143.22	-49.13	0.00	-6.7851
	0.50	119.40	-46.04	0.00	-8.6102
15	0.00	119.40	-46.04	0.00	-8.6102
	0.50	97.29	-42.32	0.00	-9.9483
16	0.00	97.29	-42.32	0.00	-9.9483
	0.50	77.15	-38.16	0.00	-10.8893
17	0.00	77.15	-38.16	0.00	-10.8893
	0.50	59.18	-33.68	0.00	-11.5154
18	0.00	59.18	-33.68	0.00	-11.5154
	0.50	43.51	-29.00	0.00	-11.8995
19	0.00	43.51	-29.00	0.00	-11.8995
	0.50	30.20	-24.21	0.00	-12.1056
20	0.00	30.20	-24.21	0.00	-12.1056
	0.50	19.31	-19.36	0.00	-12.1878
21	0.00	19.31	-19.36	0.00	-12.1878
	0.50	10.84	-14.50	0.00	-12.1905
22	0.00	10.84	-14.50	0.00	-12.1905
	0.50	4.81	-9.64	0.00	-12.1483
23	0.00	4.81	-9.64	0.00	-12.1483
	0.50	1.20	-4.81	0.00	-12.0856
24	0.00	1.20	-4.81	0.00	-12.0856
	0.50	0.00	0.00	0.00	-12.0172

Condizione : Mspinta attiva

asta x M T N P

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Cepav due



ALTA SORVEGLIANZA



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1	0.00	217.00	0.00	0.00	0.0000			
	0.50	217.00	0.00	0.00	0.0000			
2	0.00	217.00	0.00	0.00	0.0000			
	0.50	217.00	0.00	0.00	0.0000			
3	0.00	217.00	0.00	0.00	0.0000			
	0.50	217.00	0.00	0.00	0.0000			
4	0.00	217.00	0.00	0.00	0.0000			
	0.50	217.00	0.00	0.00	0.0000			
5	0.00	217.00	0.00	0.00	32.0277			
	0.50	214.05	-11.33	0.00	24.9435			
6	0.00	214.05	-11.33	0.00	24.9435			
	0.50	206.11	-20.01	0.00	18.7295			
7	0.00	206.11	-20.01	0.00	18.7295			
	0.50	194.42	-26.39	0.00	13.3540			
8	0.00	194.42	-26.39	0.00	13.3540			
	0.50	180.05	-30.77	0.00	8.7696			
9	0.00	180.05	-30.77	0.00	8.7696			
	0.50	163.93	-33.48	0.00	4.9181			
10	0.00	163.93	-33.48	0.00	4.9181			
	0.50	146.81	-34.79	0.00	1.7341			
11	0.00	146.81	-34.79	0.00	1.7341			
	0.50	129.33	-34.94	0.00	-0.8520			
12	0.00	129.33	-34.94	0.00	-0.8520			
	0.50	112.02	-34.18	0.00	-2.9111			
13	0.00	112.02	-34.18	0.00	-2.9111			
	0.50	95.28	-32.68	0.00	-4.5137			
14	0.00	95.28	-32.68	0.00	-4.5137			
	0.50	79.43	-30.63	0.00	-5.7278			
15	0.00	79.43	-30.63	0.00	-5.7278			
	0.50	64.72	-28.15	0.00	-6.6179			
16	0.00	64.72	-28.15	0.00	-6.6179			
	0.50	51.32	-25.38	0.00	-7.2440			
17	0.00	51.32	-25.38	0.00	-7.2440			
	0.50	39.37	-22.40	0.00	-7.6604			
18	0.00	39.37	-22.40	0.00	-7.6604			
	0.50	28.94	-19.29	0.00	-7.9160			
19	0.00	28.94	-19.29	0.00	-7.9160			
	0.50	20.09	-16.10	0.00	-8.0531			
20	0.00	20.09	-16.10	0.00	-8.0531			
	0.50	12.85	-12.88	0.00	-8.1078			
21	0.00	12.85	-12.88	0.00	-8.1078			
	0.50	7.21	-9.64	0.00	-8.1096			

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22	0.00	7.21	-9.64	0.00	-8.1096
	0.50	3.20	-6.41	0.00	-8.0815
23	0.00	3.20	-6.41	0.00	-8.0815
	0.50	0.80	-3.20	0.00	-8.0398
24	0.00	0.80	-3.20	0.00	-8.0398
	0.50	0.00	0.00	0.00	-7.9943

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1460.66	0.00	0.0000
	0.50	730.33	1460.66	0.00	0.0000
2	0.00	730.33	1460.66	0.00	0.0000
	0.50	1460.66	1460.66	0.00	0.0000
3	0.00	1460.66	1460.66	0.00	0.0000
	0.50	2191.00	1460.66	0.00	0.0000
4	0.00	2191.00	1460.66	0.00	0.0000
	0.50	2921.33	1460.66	0.00	0.0000
5	0.00	2921.33	1460.66	0.00	1350.1290
	0.50	3523.87	962.99	0.00	1147.4320
6	0.00	3523.87	962.99	0.00	1147.4320
	0.50	3897.33	543.38	0.00	959.0126
7	0.00	3897.33	543.38	0.00	959.0126
	0.50	4079.26	195.82	0.00	786.4058
8	0.00	4079.26	195.82	0.00	786.4058
	0.50	4104.08	-86.19	0.00	630.3641
9	0.00	4104.08	-86.19	0.00	630.3641
	0.50	4002.89	-309.28	0.00	490.9994
10	0.00	4002.89	-309.28	0.00	490.9994
	0.50	3803.51	-480.05	0.00	367.9087
11	0.00	3803.51	-480.05	0.00	367.9087
	0.50	3530.50	-604.85	0.00	260.2881
12	0.00	3530.50	-604.85	0.00	260.2881
	0.50	3205.34	-689.61	0.00	167.0328
13	0.00	3205.34	-689.61	0.00	167.0328
	0.50	2846.64	-739.83	0.00	86.8244
14	0.00	2846.64	-739.83	0.00	86.8244
	0.50	2470.44	-760.42	0.00	18.2069
15	0.00	2470.44	-760.42	0.00	18.2069
	0.50	2090.44	-755.70	0.00	-40.3475
16	0.00	2090.44	-755.70	0.00	-40.3475
	0.50	1718.34	-729.37	0.00	-90.3830

GENERAL CONTRACTOR

Cepav due



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17	0.00	1718.34	-729.37	0.00	-90.3830
	0.50	1364.15	-684.52	0.00	-133.4120
18	0.00	1364.15	-684.52	0.00	-133.4120
	0.50	1036.48	-623.67	0.00	-170.8746
19	0.00	1036.48	-623.67	0.00	-170.8746
	0.50	742.82	-548.77	0.00	-204.1032
20	0.00	742.82	-548.77	0.00	-204.1032
	0.50	489.81	-461.25	0.00	-234.2918
21	0.00	489.81	-461.25	0.00	-234.2918
	0.50	283.50	-362.13	0.00	-262.4691
22	0.00	283.50	-362.13	0.00	-262.4691
	0.50	129.51	-252.02	0.00	-289.4736
23	0.00	129.51	-252.02	0.00	-289.4736
	0.50	33.25	-131.27	0.00	-315.9310
24	0.00	33.25	-131.27	0.00	-315.9310
	0.50	0.00	0.00	0.00	-342.2315

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.33	-1840.00	0.00	0.0000
3	0.00	-613.33	-1840.00	0.00	0.0000
	0.50	-2070.00	-4140.00	0.00	0.0000
4	0.00	-2070.00	-4140.00	0.00	0.0000
	0.50	-4906.67	-7360.00	0.00	0.0000
5	0.00	-4906.67	-7360.00	0.00	-5354.6550
	0.50	-8076.22	-5364.82	0.00	-4653.6730
6	0.00	-8076.22	-5364.82	0.00	-4653.6730
	0.50	-10317.09	-3643.12	0.00	-3985.2770
7	0.00	-10317.09	-3643.12	0.00	-3985.2770
	0.50	-11762.45	-2179.95	0.00	-3358.6420
8	0.00	-11762.45	-2179.95	0.00	-3358.6420
	0.50	-12537.15	-957.37	0.00	-2779.6980
9	0.00	-12537.15	-957.37	0.00	-2779.6980
	0.50	-12756.63	44.37	0.00	-2251.6410
10	0.00	-12756.63	44.37	0.00	-2251.6410
	0.50	-12526.17	845.80	0.00	-1775.4010
11	0.00	-12526.17	845.80	0.00	-1775.4010
	0.50	-11940.78	1467.49	0.00	-1350.0700
12	0.00	-11940.78	1467.49	0.00	-1350.0700

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	0.50	-11085.32	1929.30	0.00	-973.2937
13	0.00	-11085.32	1929.30	0.00	-973.2937
	0.50	-10034.99	2249.95	0.00	-641.6116
14	0.00	-10034.99	2249.95	0.00	-641.6116
	0.50	-8856.03	2446.59	0.00	-350.7675
15	0.00	-8856.03	2446.59	0.00	-350.7675
	0.50	-7606.51	2534.57	0.00	-95.9780
16	0.00	-7606.51	2534.57	0.00	-95.9780
	0.50	-6337.33	2527.28	0.00	127.8299
17	0.00	-6337.33	2527.28	0.00	127.8299
	0.50	-5093.21	2436.03	0.00	325.8117
18	0.00	-5093.21	2436.03	0.00	325.8117
	0.50	-3913.73	2270.12	0.00	503.0222
19	0.00	-3913.73	2270.12	0.00	503.0222
	0.50	-2834.31	2036.86	0.00	664.2546
20	0.00	-2834.31	2036.86	0.00	664.2546
	0.50	-1887.18	1741.74	0.00	813.8954
21	0.00	-1887.18	1741.74	0.00	813.8954
	0.50	-1102.24	1388.59	0.00	955.7929
22	0.00	-1102.24	1388.59	0.00	955.7929
	0.50	-507.85	979.84	0.00	1093.1350
23	0.00	-507.85	979.84	0.00	1093.1350
	0.50	-131.44	516.81	0.00	1228.3350
24	0.00	-131.44	516.81	0.00	1228.3350
	0.50	0.00	0.00	0.00	1362.9160

Combinazione : FESSURAZIONE

asta	x	M	T	N	P
1	0.00	11743.95	5295.24	0.00	0.0000
	0.50	14409.16	5226.74	-607.23	0.0000
2	0.00	14409.16	5226.74	-607.23	0.0000
	0.50	16759.36	4020.74	-1214.45	0.0000
3	0.00	16759.36	4020.74	-1214.45	0.0000
	0.50	18276.57	1894.74	-1821.68	0.0000
4	0.00	18276.57	1894.74	-1821.68	0.0000
	0.50	18500.77	-1151.26	-2428.90	0.0000
5	0.00	18500.77	-1151.26	-2428.90	2597.9430
	0.50	17742.96	-1845.48	-3036.13	2078.5510
6	0.00	17742.96	-1845.48	-3036.13	2078.5510
	0.50	16687.39	-2347.05	-3643.35	1631.3420
7	0.00	16687.39	-2347.05	-3643.35	1631.3420
	0.50	15423.34	-2683.94	-4250.58	1252.0450

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8	0.00	15423.34	-2683.94	-4250.58	1252.0450
	0.50	14026.54	-2882.24	-4857.80	935.5358
9	0.00	14026.54	-2882.24	-4857.80	935.5358
	0.50	12560.20	-2965.87	-5465.03	676.1461
10	0.00	12560.20	-2965.87	-5465.03	676.1461
	0.50	11076.17	-2956.44	-6072.25	467.9194
11	0.00	11076.17	-2956.44	-6072.25	467.9194
	0.50	9616.06	-2873.16	-6679.48	304.8242
12	0.00	9616.06	-2873.16	-6679.48	304.8242
	0.50	8212.50	-2732.83	-7286.70	180.9230
13	0.00	8212.50	-2732.83	-7286.70	180.9230
	0.50	6890.31	-2549.94	-7893.93	90.5065
14	0.00	6890.31	-2549.94	-7893.93	90.5065
	0.50	5667.59	-2336.77	-8501.15	28.1942
15	0.00	5667.59	-2336.77	-8501.15	28.1942
	0.50	4556.87	-2103.51	-9108.38	-10.9908
16	0.00	4556.87	-2103.51	-9108.38	-10.9908
	0.50	3566.04	-1858.47	-9715.60	-31.5709
17	0.00	3566.04	-1858.47	-9715.60	-31.5709
	0.50	2699.26	-1608.26	-10322.83	-37.5811
18	0.00	2699.26	-1608.26	-10322.83	-37.5811
	0.50	1957.79	-1357.96	-10930.05	-32.5523
19	0.00	1957.79	-1357.96	-10930.05	-32.5523
	0.50	1340.68	-1111.35	-11537.28	-19.5054
20	0.00	1340.68	-1111.35	-11537.28	-19.5054
	0.50	845.37	-871.13	-12144.50	-0.9553
21	0.00	845.37	-871.13	-12144.50	-0.9553
	0.50	468.19	-639.05	-12751.73	21.0787
22	0.00	468.19	-639.05	-12751.73	21.0787
	0.50	204.78	-416.20	-13358.95	45.0588
23	0.00	204.78	-416.20	-13358.95	45.0588
	0.50	50.36	-203.11	-13966.18	69.9101
24	0.00	50.36	-203.11	-13966.18	69.9101
	0.50	0.00	0.00	-14573.40	95.0019

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	11743.95	5295.24	0.00	
		MIN	11743.95	5295.24	0.00	
	0.50	MAX	14409.16	5226.74	-607.23	
		MIN	14409.16	5226.74	-607.23	
2	0.00	MAX	14409.16	5226.74	-607.23	

GENERAL CONTRACTOR

Cepav due



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		MIN	14409.16	5226.74	-607.23	
	0.50	MAX	16759.36	4020.74	-1214.45	
		MIN	16759.36	4020.74	-1214.45	
3	0.00	MAX	16759.36	4020.74	-1214.45	
		MIN	16759.36	4020.74	-1214.45	
	0.50	MAX	18276.57	1894.74	-1821.68	
		MIN	18276.57	1894.74	-1821.68	
4	0.00	MAX	18276.57	1894.74	-1821.68	
		MIN	18276.57	1894.74	-1821.68	
	0.50	MAX	18500.77	-1151.26	-2428.90	
		MIN	18500.77	-1151.26	-2428.90	
5	0.00	MAX	18500.77	-1151.26	-2428.90	2597.9430
		MIN	18500.77	-1151.26	-2428.90	2597.9430
	0.50	MAX	17742.96	-1845.48	-3036.13	2078.5510
		MIN	17742.96	-1845.48	-3036.13	2078.5510
6	0.00	MAX	17742.96	-1845.48	-3036.13	2078.5510
		MIN	17742.96	-1845.48	-3036.13	2078.5510
	0.50	MAX	16687.39	-2347.05	-3643.35	1631.3420
		MIN	16687.39	-2347.05	-3643.35	1631.3420
7	0.00	MAX	16687.39	-2347.05	-3643.35	1631.3420
		MIN	16687.39	-2347.05	-3643.35	1631.3420
	0.50	MAX	15423.34	-2683.94	-4250.58	1252.0450
		MIN	15423.34	-2683.94	-4250.58	1252.0450
8	0.00	MAX	15423.34	-2683.94	-4250.58	1252.0450
		MIN	15423.34	-2683.94	-4250.58	1252.0450
	0.50	MAX	14026.54	-2882.24	-4857.80	935.5358
		MIN	14026.54	-2882.24	-4857.80	935.5358
9	0.00	MAX	14026.54	-2882.24	-4857.80	935.5358
		MIN	14026.54	-2882.24	-4857.80	935.5358
	0.50	MAX	12560.20	-2965.87	-5465.03	676.1461
		MIN	12560.20	-2965.87	-5465.03	676.1461
10	0.00	MAX	12560.20	-2965.87	-5465.03	676.1461
		MIN	12560.20	-2965.87	-5465.03	676.1461
	0.50	MAX	11076.17	-2956.44	-6072.25	467.9194
		MIN	11076.17	-2956.44	-6072.25	467.9194
11	0.00	MAX	11076.17	-2956.44	-6072.25	467.9194
		MIN	11076.17	-2956.44	-6072.25	467.9194
	0.50	MAX	9616.06	-2873.16	-6679.48	304.8242
		MIN	9616.06	-2873.16	-6679.48	304.8242
12	0.00	MAX	9616.06	-2873.16	-6679.48	304.8242
		MIN	9616.06	-2873.16	-6679.48	304.8242
	0.50	MAX	8212.50	-2732.83	-7286.70	180.9230
		MIN	8212.50	-2732.83	-7286.70	180.9230
13	0.00	MAX	8212.50	-2732.83	-7286.70	180.9230
		MIN	8212.50	-2732.83	-7286.70	180.9230
	0.50	MAX	6890.31	-2549.94	-7893.93	90.5065
		MIN	6890.31	-2549.94	-7893.93	90.5065
14	0.00	MAX	6890.31	-2549.94	-7893.93	90.5065
		MIN	6890.31	-2549.94	-7893.93	90.5065
	0.50	MAX	5667.59	-2336.77	-8501.15	28.1942

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ALTA SORVEGLIANZA



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		MIN	5667.59	-2336.77	-8501.15	28.1942
15	0.00	MAX	5667.59	-2336.77	-8501.15	28.1942
		MIN	5667.59	-2336.77	-8501.15	28.1942
	0.50	MAX	4556.87	-2103.51	-9108.38	-10.9908
		MIN	4556.87	-2103.51	-9108.38	-10.9908
16	0.00	MAX	4556.87	-2103.51	-9108.38	-10.9908
		MIN	4556.87	-2103.51	-9108.38	-10.9908
	0.50	MAX	3566.04	-1858.47	-9715.60	-31.5709
		MIN	3566.04	-1858.47	-9715.60	-31.5709
17	0.00	MAX	3566.04	-1858.47	-9715.60	-31.5709
		MIN	3566.04	-1858.47	-9715.60	-31.5709
	0.50	MAX	2699.26	-1608.26	-10322.83	-37.5811
		MIN	2699.26	-1608.26	-10322.83	-37.5811
18	0.00	MAX	2699.26	-1608.26	-10322.83	-37.5811
		MIN	2699.26	-1608.26	-10322.83	-37.5811
	0.50	MAX	1957.79	-1357.96	-10930.05	-32.5523
		MIN	1957.79	-1357.96	-10930.05	-32.5523
19	0.00	MAX	1957.79	-1357.96	-10930.05	-32.5523
		MIN	1957.79	-1357.96	-10930.05	-32.5523
	0.50	MAX	1340.68	-1111.35	-11537.28	-19.5054
		MIN	1340.68	-1111.35	-11537.28	-19.5054
20	0.00	MAX	1340.68	-1111.35	-11537.28	-19.5054
		MIN	1340.68	-1111.35	-11537.28	-19.5054
	0.50	MAX	845.37	-871.13	-12144.50	-0.9553
		MIN	845.37	-871.13	-12144.50	-0.9553
21	0.00	MAX	845.37	-871.13	-12144.50	-0.9553
		MIN	845.37	-871.13	-12144.50	-0.9553
	0.50	MAX	468.19	-639.05	-12751.73	21.0787
		MIN	468.19	-639.05	-12751.73	21.0787
22	0.00	MAX	468.19	-639.05	-12751.73	21.0787
		MIN	468.19	-639.05	-12751.73	21.0787
	0.50	MAX	204.78	-416.20	-13358.95	45.0588
		MIN	204.78	-416.20	-13358.95	45.0588
23	0.00	MAX	204.78	-416.20	-13358.95	45.0588
		MIN	204.78	-416.20	-13358.95	45.0588
	0.50	MAX	50.36	-203.11	-13966.18	69.9101
		MIN	50.36	-203.11	-13966.18	69.9101
24	0.00	MAX	50.36	-203.11	-13966.18	69.9101
		MIN	50.36	-203.11	-13966.18	69.9101
	0.50	MAX	0.00	0.00	-14573.40	95.0019
		MIN	0.00	0.00	-14573.40	95.0019

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	14409.16	0.50	1	11743.95	0.00	1
2	16759.36	0.50	1	14409.16	0.00	1
3	18276.57	0.50	1	16759.36	0.00	1
4	18598.19	0.33	1	18276.57	0.00	1
5	18500.77	0.00	1	17742.96	0.50	1
6	17742.96	0.00	1	16687.39	0.50	1
7	16687.39	0.00	1	15423.34	0.50	1

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8	15423.34	0.00	1	14026.54	0.50	1
9	14026.54	0.00	1	12560.20	0.50	1
10	12560.20	0.00	1	11076.17	0.50	1
11	11076.17	0.00	1	9616.06	0.50	1
12	9616.06	0.00	1	8212.50	0.50	1
13	8212.50	0.00	1	6890.31	0.50	1
14	6890.31	0.00	1	5667.59	0.50	1
15	5667.59	0.00	1	4556.87	0.50	1
16	4556.87	0.00	1	3566.04	0.50	1
17	3566.04	0.00	1	2699.26	0.50	1
18	2699.26	0.00	1	1957.79	0.50	1
19	1957.79	0.00	1	1340.68	0.50	1
20	1340.68	0.00	1	845.37	0.50	1
21	845.37	0.00	1	468.19	0.50	1
22	468.19	0.00	1	204.78	0.50	1
23	204.78	0.00	1	50.36	0.50	1
24	50.36	0.00	1	0.00	0.50	1

**ALLEGATO N°2****Fondazioni su pali per Barriere di h=5.75m con rilevato di H=3.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"**

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50



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19	19	20	0.50
20	20	21	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	0.0000	0.00
5	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23

Peso totale struttura = 12144.50

M(250)

Carichi nodali :



descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-12398.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	4312.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-4528.13

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	472.00	472.00	LL
	6	0.00	0.00	472.00	472.00	LL
	7	0.00	0.00	472.00	472.00	LL
	8	0.00	0.00	472.00	472.00	LL
	9	0.00	0.00	472.00	472.00	LL
	10	0.00	0.00	472.00	472.00	LL
	11	0.00	0.00	472.00	472.00	LL
	12	0.00	0.00	472.00	472.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00



Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.16

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3679.00	LL
	3	0.00	0.00	-3679.00	-5519.00	LL
	4	0.00	0.00	-5519.00	-7358.00	LL

Combinazioni di carico :

combinazione	P.P...	M(250)	T(250)	Mtrasp(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione RITIRO + AT.. spinta passiva..

ESERCIZIO 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
2	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
3	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
4	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
5	0.00	12398.50	0.00	0.00	2086.5210

GENERAL CONTRACTOR

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	0.50	12205.57	-742.28	0.00	1643.6700
6	0.00	12205.57	-742.28	0.00	1643.6700
	0.50	11684.00	-1317.86	0.00	1250.4320
7	0.00	11684.00	-1317.86	0.00	1250.4320
	0.50	10912.25	-1746.15	0.00	904.7091
8	0.00	10912.25	-1746.15	0.00	904.7091
	0.50	9959.33	-2045.51	0.00	603.3800
9	0.00	9959.33	-2045.51	0.00	603.3800
	0.50	8885.39	-2232.90	0.00	342.5831
10	0.00	8885.39	-2232.90	0.00	342.5831
	0.50	7742.53	-2323.62	0.00	117.9611
11	0.00	7742.53	-2323.62	0.00	117.9611
	0.50	6575.62	-2331.20	0.00	-75.1267
12	0.00	6575.62	-2331.20	0.00	-75.1267
	0.50	5423.24	-2267.25	0.00	-241.4211
13	0.00	5423.24	-2267.25	0.00	-241.4211
	0.50	4318.65	-2141.54	0.00	-385.6055
14	0.00	4318.65	-2141.54	0.00	-385.6055
	0.50	3290.67	-1961.97	0.00	-512.1701
15	0.00	3290.67	-1961.97	0.00	-512.1701
	0.50	2364.62	-1734.73	0.00	-625.2942
16	0.00	2364.62	-1734.73	0.00	-625.2942
	0.50	1563.11	-1464.42	0.00	-728.7428
17	0.00	1563.11	-1464.42	0.00	-728.7428
	0.50	906.84	-1154.22	0.00	-825.7741
18	0.00	906.84	-1154.22	0.00	-825.7741
	0.50	415.20	-806.14	0.00	-919.0551
19	0.00	415.20	-806.14	0.00	-919.0551
	0.50	106.83	-421.26	0.00	-1010.5820
20	0.00	106.83	-421.26	0.00	-1010.5820
	0.50	0.00	0.00	0.00	-1101.6060

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	4312.50	0.00	0.0000
	0.50	2156.25	4312.50	0.00	0.0000
2	0.00	2156.25	4312.50	0.00	0.0000
	0.50	4312.50	4312.50	0.00	0.0000
3	0.00	4312.50	4312.50	0.00	0.0000
	0.50	6468.75	4312.50	0.00	0.0000
4	0.00	6468.75	4312.50	0.00	0.0000
	0.50	8625.00	4312.50	0.00	0.0000

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5	0.00	8625.00	4312.50	0.00	4468.8190
	0.50	10358.20	2664.81	0.00	3799.2440
6	0.00	10358.20	2664.81	0.00	3799.2440
	0.50	11332.97	1276.01	0.00	3171.6090
7	0.00	11332.97	1276.01	0.00	3171.6090
	0.50	11674.43	128.49	0.00	2589.9290
8	0.00	11674.43	128.49	0.00	2589.9290
	0.50	11498.56	-796.45	0.00	2055.6340
9	0.00	11498.56	-796.45	0.00	2055.6340
	0.50	10911.94	-1517.63	0.00	1568.0440
10	0.00	10911.94	-1517.63	0.00	1568.0440
	0.50	10011.84	-2053.28	0.00	1124.8010
11	0.00	10011.84	-2053.28	0.00	1124.8010
	0.50	8886.74	-2420.37	0.00	722.2694
12	0.00	8886.74	-2420.37	0.00	722.2694
	0.50	7616.99	-2634.29	0.00	355.8923
13	0.00	7616.99	-2634.29	0.00	355.8923
	0.50	6275.74	-2708.42	0.00	20.5219
14	0.00	6275.74	-2708.42	0.00	20.5219
	0.50	4929.98	-2654.06	0.00	-289.2833
15	0.00	4929.98	-2654.06	0.00	-289.2833
	0.50	3641.57	-2480.31	0.00	-578.9847
16	0.00	3641.57	-2480.31	0.00	-578.9847
	0.50	2468.39	-2194.14	0.00	-853.8116
17	0.00	2468.39	-2194.14	0.00	-853.8116
	0.50	1465.33	-1800.51	0.00	-1118.5250
18	0.00	1465.33	-1800.51	0.00	-1118.5250
	0.50	685.25	-1302.62	0.00	-1377.1930
19	0.00	685.25	-1302.62	0.00	-1377.1930
	0.50	179.79	-702.22	0.00	-1632.9760
20	0.00	179.79	-702.22	0.00	-1632.9760
	0.50	0.00	0.00	0.00	-1887.9150

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
2	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
3	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000

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4	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
5	0.00	4528.13	0.00	0.00	762.0306
	0.50	4457.67	-271.09	0.00	600.2945
6	0.00	4457.67	-271.09	0.00	600.2945
	0.50	4267.18	-481.30	0.00	456.6778
7	0.00	4267.18	-481.30	0.00	456.6778
	0.50	3985.33	-637.72	0.00	330.4142
8	0.00	3985.33	-637.72	0.00	330.4142
	0.50	3637.31	-747.05	0.00	220.3640
9	0.00	3637.31	-747.05	0.00	220.3640
	0.50	3245.09	-815.49	0.00	125.1168
10	0.00	3245.09	-815.49	0.00	125.1168
	0.50	2827.70	-848.62	0.00	43.0813
11	0.00	2827.70	-848.62	0.00	43.0813
	0.50	2401.52	-851.39	0.00	-27.4375
12	0.00	2401.52	-851.39	0.00	-27.4375
	0.50	1980.66	-828.04	0.00	-88.1708
13	0.00	1980.66	-828.04	0.00	-88.1708
	0.50	1577.24	-782.12	0.00	-140.8293
14	0.00	1577.24	-782.12	0.00	-140.8293
	0.50	1201.81	-716.54	0.00	-187.0527
15	0.00	1201.81	-716.54	0.00	-187.0527
	0.50	863.60	-633.55	0.00	-228.3674
16	0.00	863.60	-633.55	0.00	-228.3674
	0.50	570.87	-534.83	0.00	-266.1485
17	0.00	570.87	-534.83	0.00	-266.1485
	0.50	331.19	-421.54	0.00	-301.5859
18	0.00	331.19	-421.54	0.00	-301.5859
	0.50	151.64	-294.42	0.00	-335.6536
19	0.00	151.64	-294.42	0.00	-335.6536
	0.50	39.02	-153.85	0.00	-369.0808
20	0.00	39.02	-153.85	0.00	-369.0808
	0.50	0.00	0.00	0.00	-402.3242

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000

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	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	0.0000
	0.50	696.00	696.00	0.00	0.0000
5	0.00	696.00	696.00	0.00	1195.7540
	0.50	986.55	471.75	0.00	1112.5510
6	0.00	986.55	471.75	0.00	1112.5510
	0.50	1173.15	279.92	0.00	1033.3310
7	0.00	1173.15	279.92	0.00	1033.3310
	0.50	1271.58	118.76	0.00	958.8599
8	0.00	1271.58	118.76	0.00	958.8599
	0.50	1296.69	-13.71	0.00	889.5447
9	0.00	1296.69	-13.71	0.00	889.5447
	0.50	1262.30	-119.59	0.00	825.4918
10	0.00	1262.30	-119.59	0.00	825.4918
	0.50	1181.19	-200.94	0.00	766.5657
11	0.00	1181.19	-200.94	0.00	766.5657
	0.50	1065.12	-259.76	0.00	712.4397
12	0.00	1065.12	-259.76	0.00	712.4397
	0.50	924.88	-297.88	0.00	662.6447
13	0.00	924.88	-297.88	0.00	662.6447
	0.50	770.42	-316.90	0.00	616.6127
14	0.00	770.42	-316.90	0.00	616.6127
	0.50	610.93	-318.20	0.00	573.7177
15	0.00	610.93	-318.20	0.00	573.7177
	0.50	454.98	-302.92	0.00	533.3127
16	0.00	454.98	-302.92	0.00	533.3127
	0.50	310.63	-271.91	0.00	494.7652
17	0.00	310.63	-271.91	0.00	494.7652
	0.50	185.59	-225.79	0.00	457.4897
18	0.00	185.59	-225.79	0.00	457.4897
	0.50	87.29	-164.98	0.00	420.9794
19	0.00	87.29	-164.98	0.00	420.9794
	0.50	23.02	-89.68	0.00	384.8362
20	0.00	23.02	-89.68	0.00	384.8362
	0.50	0.00	0.00	0.00	348.8008

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	376.91	869.83	0.00	0.0000
2	0.00	376.92	869.83	0.00	0.0000
	0.50	811.83	869.83	0.00	0.0000

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3	0.00	811.83	869.83	0.00	0.0000
	0.50	1246.74	869.83	0.00	0.0000
4	0.00	1246.75	869.83	0.00	0.0000
	0.50	1681.66	869.83	0.00	0.0000
5	0.00	1681.66	869.83	0.00	891.5988
	0.50	2032.15	540.96	0.00	758.6173
6	0.00	2032.15	540.96	0.00	758.6173
	0.50	2231.20	263.54	0.00	633.8632
7	0.00	2231.20	263.54	0.00	633.8632
	0.50	2303.68	34.09	0.00	518.1558
8	0.00	2303.68	34.09	0.00	518.1558
	0.50	2272.67	-151.07	0.00	411.7982
9	0.00	2272.67	-151.07	0.00	411.7982
	0.50	2159.37	-295.66	0.00	314.6714
10	0.00	2159.37	-295.66	0.00	314.6714
	0.50	1983.17	-403.28	0.00	226.3203
11	0.00	1983.17	-403.28	0.00	226.3203
	0.50	1761.69	-477.28	0.00	146.0330
12	0.00	1761.69	-477.28	0.00	146.0330
	0.50	1510.97	-520.73	0.00	72.9127
13	0.00	1510.97	-520.73	0.00	72.9127
	0.50	1245.61	-536.27	0.00	5.9431
14	0.00	1245.61	-536.27	0.00	5.9431
	0.50	978.98	-526.14	0.00	-55.9524
15	0.00	978.98	-526.14	0.00	-55.9524
	0.50	723.44	-492.16	0.00	-113.8559
16	0.00	723.44	-492.16	0.00	-113.8559
	0.50	490.56	-435.71	0.00	-168.8045
17	0.00	490.56	-435.71	0.00	-168.8045
	0.50	291.31	-357.76	0.00	-221.7432
18	0.00	291.31	-357.76	0.00	-221.7432
	0.50	136.27	-258.97	0.00	-273.4800
19	0.00	136.27	-258.97	0.00	-273.4800
	0.50	35.76	-139.67	0.00	-324.6432
20	0.00	35.76	-139.67	0.00	-324.6432
	0.50	0.00	0.00	0.00	-375.6387

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.17	652.33	0.00	0.0000

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2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.49	652.33	0.00	0.0000
4	0.00	978.50	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	675.9756
	0.50	1566.83	403.09	0.00	574.6924
6	0.00	1566.83	403.09	0.00	574.6924
	0.50	1714.28	193.02	0.00	479.7533
7	0.00	1714.28	193.02	0.00	479.7533
	0.50	1765.93	19.44	0.00	391.7655
8	0.00	1765.93	19.44	0.00	391.7655
	0.50	1739.33	-120.47	0.00	310.9454
9	0.00	1739.33	-120.47	0.00	310.9454
	0.50	1650.59	-229.56	0.00	237.1900
10	0.00	1650.59	-229.56	0.00	237.1900
	0.50	1514.44	-310.59	0.00	170.1430
11	0.00	1514.44	-310.59	0.00	170.1430
	0.50	1344.25	-366.12	0.00	109.2540
12	0.00	1344.25	-366.12	0.00	109.2540
	0.50	1152.18	-398.47	0.00	53.8340
13	0.00	1152.18	-398.47	0.00	53.8340
	0.50	949.30	-409.69	0.00	3.1042
14	0.00	949.30	-409.69	0.00	3.1042
	0.50	745.73	-401.47	0.00	-43.7584
15	0.00	745.73	-401.47	0.00	-43.7584
	0.50	550.84	-375.18	0.00	-87.5801
16	0.00	550.84	-375.18	0.00	-87.5801
	0.50	373.38	-331.90	0.00	-129.1518
17	0.00	373.38	-331.90	0.00	-129.1518
	0.50	221.65	-272.35	0.00	-169.1936
18	0.00	221.65	-272.35	0.00	-169.1936
	0.50	103.65	-197.04	0.00	-208.3209
19	0.00	103.65	-197.04	0.00	-208.3209
	0.50	27.20	-106.22	0.00	-247.0119
20	0.00	27.20	-106.22	0.00	-247.0119
	0.50	0.00	0.00	0.00	-285.5754
Condizione : Mq					
asta	x	M	T	N	P
1	0.00	326.16	0.00	0.00	0.0000

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	0.50	326.16	0.00	0.00	0.0000
2	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
3	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
4	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
5	0.00	326.16	0.00	0.00	54.8889
	0.50	321.08	-19.53	0.00	43.2391
6	0.00	321.08	-19.53	0.00	43.2391
	0.50	307.36	-34.67	0.00	32.8944
7	0.00	307.36	-34.67	0.00	32.8944
	0.50	287.06	-45.93	0.00	23.7996
8	0.00	287.06	-45.93	0.00	23.7996
	0.50	261.99	-53.81	0.00	15.8728
9	0.00	261.99	-53.81	0.00	15.8728
	0.50	233.74	-58.74	0.00	9.0121
10	0.00	233.74	-58.74	0.00	9.0121
	0.50	203.68	-61.13	0.00	3.1031
11	0.00	203.68	-61.13	0.00	3.1031
	0.50	172.98	-61.33	0.00	-1.9763
12	0.00	172.98	-61.33	0.00	-1.9763
	0.50	142.67	-59.64	0.00	-6.3509
13	0.00	142.67	-59.64	0.00	-6.3509
	0.50	113.61	-56.34	0.00	-10.1439
14	0.00	113.61	-56.34	0.00	-10.1439
	0.50	86.57	-51.61	0.00	-13.4734
15	0.00	86.57	-51.61	0.00	-13.4734
	0.50	62.20	-45.63	0.00	-16.4492
16	0.00	62.20	-45.63	0.00	-16.4492
	0.50	41.12	-38.52	0.00	-19.1706
17	0.00	41.12	-38.52	0.00	-19.1706
	0.50	23.86	-30.36	0.00	-21.7232
18	0.00	23.86	-30.36	0.00	-21.7232
	0.50	10.92	-21.21	0.00	-24.1770
19	0.00	10.92	-21.21	0.00	-24.1770
	0.50	2.81	-11.08	0.00	-26.5848
20	0.00	2.81	-11.08	0.00	-26.5848
	0.50	0.00	0.00	0.00	-28.9793

Condizione : Mspinta attiva

asta x M T N P

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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60001-00	IN05	00	DE2CLIM0006-007	0	125 di 394
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	36.5185
	0.50	213.62	-12.99	0.00	28.7677
6	0.00	213.62	-12.99	0.00	28.7677
	0.50	204.49	-23.07	0.00	21.8852
7	0.00	204.49	-23.07	0.00	21.8852
	0.50	190.99	-30.56	0.00	15.8343
8	0.00	190.99	-30.56	0.00	15.8343
	0.50	174.31	-35.80	0.00	10.5604
9	0.00	174.31	-35.80	0.00	10.5604
	0.50	155.51	-39.08	0.00	5.9959
10	0.00	155.51	-39.08	0.00	5.9959
	0.50	135.51	-40.67	0.00	2.0646
11	0.00	135.51	-40.67	0.00	2.0646
	0.50	115.09	-40.80	0.00	-1.3149
12	0.00	115.09	-40.80	0.00	-1.3149
	0.50	94.92	-39.68	0.00	-4.2254
13	0.00	94.92	-39.68	0.00	-4.2254
	0.50	75.59	-37.48	0.00	-6.7489
14	0.00	75.59	-37.48	0.00	-6.7489
	0.50	57.59	-34.34	0.00	-8.9641
15	0.00	57.59	-34.34	0.00	-8.9641
	0.50	41.39	-30.36	0.00	-10.9440
16	0.00	41.39	-30.36	0.00	-10.9440
	0.50	27.36	-25.63	0.00	-12.7545
17	0.00	27.36	-25.63	0.00	-12.7545
	0.50	15.87	-20.20	0.00	-14.4528
18	0.00	15.87	-20.20	0.00	-14.4528
	0.50	7.27	-14.11	0.00	-16.0854
19	0.00	7.27	-14.11	0.00	-16.0854
	0.50	1.87	-7.37	0.00	-17.6873
20	0.00	1.87	-7.37	0.00	-17.6873
	0.50	0.00	0.00	0.00	-19.2804

Condizione : RITIRO+AT

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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asta	x	M	T	N	P
1	0.00	0.00	1309.45	0.00	0.0000
	0.50	654.73	1309.45	0.00	0.0000
2	0.00	654.73	1309.45	0.00	0.0000
	0.50	1309.45	1309.45	0.00	0.0000
3	0.00	1309.45	1309.45	0.00	0.0000
	0.50	1964.18	1309.45	0.00	0.0000
4	0.00	1964.18	1309.45	0.00	0.0000
	0.50	2618.90	1309.45	0.00	0.0000
5	0.00	2618.90	1309.45	0.00	1356.9170
	0.50	3145.17	809.15	0.00	1153.6070
6	0.00	3145.17	809.15	0.00	1153.6070
	0.50	3441.16	387.45	0.00	963.0310
7	0.00	3441.16	387.45	0.00	963.0310
	0.50	3544.84	39.02	0.00	786.4090
8	0.00	3544.84	39.02	0.00	786.4090
	0.50	3491.44	-241.83	0.00	624.1751
9	0.00	3491.44	-241.83	0.00	624.1751
	0.50	3313.31	-460.82	0.00	476.1226
10	0.00	3313.31	-460.82	0.00	476.1226
	0.50	3040.01	-623.46	0.00	341.5359
11	0.00	3040.01	-623.46	0.00	341.5359
	0.50	2698.38	-734.93	0.00	219.3107
12	0.00	2698.38	-734.93	0.00	219.3107
	0.50	2312.83	-799.88	0.00	108.0635
13	0.00	2312.83	-799.88	0.00	108.0635
	0.50	1905.57	-822.39	0.00	6.2313
14	0.00	1905.57	-822.39	0.00	6.2313
	0.50	1496.94	-805.88	0.00	-87.8383
15	0.00	1496.94	-805.88	0.00	-87.8383
	0.50	1105.73	-753.12	0.00	-175.8036
16	0.00	1105.73	-753.12	0.00	-175.8036
	0.50	749.51	-666.23	0.00	-259.2523
17	0.00	749.51	-666.23	0.00	-259.2523
	0.50	444.94	-546.71	0.00	-339.6301
18	0.00	444.94	-546.71	0.00	-339.6301
	0.50	208.07	-395.53	0.00	-418.1723
19	0.00	208.07	-395.53	0.00	-418.1723
	0.50	54.59	-213.22	0.00	-495.8385
20	0.00	54.59	-213.22	0.00	-495.8385
	0.50	0.00	0.00	0.00	-573.2487

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Cepav due



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Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.29	-1839.75	0.00	0.0000
3	0.00	-613.29	-1839.75	0.00	0.0000
	0.50	-2069.71	-4139.25	0.00	0.0000
4	0.00	-2069.71	-4139.25	0.00	0.0000
	0.50	-4905.83	-7358.50	0.00	0.0000
5	0.00	-4905.83	-7358.50	0.00	-5974.1270
	0.50	-8015.89	-5134.39	0.00	-5182.0540
6	0.00	-8015.89	-5134.39	0.00	-5182.0540
	0.50	-10091.89	-3220.13	0.00	-4422.2860
7	0.00	-10091.89	-3220.13	0.00	-4422.2860
	0.50	-11285.23	-1601.01	0.00	-3703.3320
8	0.00	-11285.23	-1601.01	0.00	-3703.3320
	0.50	-11739.21	-259.66	0.00	-3030.1020
9	0.00	-11739.21	-259.66	0.00	-3030.1020
	0.50	-11588.07	822.63	0.00	-2404.4900
10	0.00	-11588.07	822.63	0.00	-2404.4900
	0.50	-10956.59	1664.82	0.00	-1825.9250
11	0.00	-10956.59	1664.82	0.00	-1825.9250
	0.50	-9960.21	2285.21	0.00	-1291.8710
12	0.00	-9960.21	2285.21	0.00	-1291.8710
	0.50	-8705.50	2700.81	0.00	-798.3069
13	0.00	-8705.50	2700.81	0.00	-798.3069
	0.50	-7290.99	2926.78	0.00	-340.1538
14	0.00	-7290.99	2926.78	0.00	-340.1538
	0.50	-5808.14	2976.12	0.00	88.3197
15	0.00	-5808.14	2976.12	0.00	88.3197
	0.50	-4342.52	2859.47	0.00	493.1255
16	0.00	-4342.52	2859.47	0.00	493.1255
	0.50	-2974.95	2585.08	0.00	880.2070
17	0.00	-2974.95	2585.08	0.00	880.2070
	0.50	-1782.73	2158.89	0.00	1255.1090
18	0.00	-1782.73	2158.89	0.00	1255.1090
	0.50	-840.70	1584.77	0.00	1622.6640
19	0.00	-840.70	1584.77	0.00	1622.6640
	0.50	-222.25	864.85	0.00	1986.6840

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20	0.00	-222.25	864.85	0.00	1986.6840
	0.50	0.00	0.00	0.00	2349.6640

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	17469.79	6926.61	0.00	0.0000
	0.50	20950.68	6858.11	-607.23	0.0000
2	0.00	20950.68	6858.11	-607.23	0.0000
	0.50	24116.61	5652.36	-1214.45	0.0000
3	0.00	24116.61	5652.36	-1214.45	0.0000
	0.50	26449.75	3526.86	-1821.68	0.0000
4	0.00	26449.75	3526.86	-1821.68	0.0000
	0.50	27490.18	481.61	-2428.90	0.0000
5	0.00	27490.18	481.61	-2428.90	5554.8960
	0.50	27270.96	-1290.53	-3036.13	4532.6280
6	0.00	27270.96	-1290.53	-3036.13	4532.6280
	0.50	26263.91	-2677.10	-3643.35	3621.1910
7	0.00	26263.91	-2677.10	-3643.35	3621.1910
	0.50	24650.86	-3721.59	-4250.58	2816.5450
8	0.00	24650.86	-3721.59	-4250.58	2816.5450
	0.50	22592.41	-4465.38	-4857.80	2112.1730
9	0.00	22592.41	-4465.38	-4857.80	2112.1730
	0.50	20229.18	-4946.84	-5465.03	1499.7370
10	0.00	20229.18	-4946.84	-5465.03	1499.7370
	0.50	17683.48	-5200.76	-6072.25	969.6515
11	0.00	17683.48	-5200.76	-6072.25	969.6515
	0.50	15061.18	-5257.97	-6679.48	511.5804
12	0.00	15061.18	-5257.97	-6679.48	511.5804
	0.50	12453.84	-5145.04	-7286.70	114.8723
13	0.00	12453.84	-5145.04	-7286.70	114.8723
	0.50	9940.75	-4884.35	-7893.93	-231.0681
14	0.00	9940.75	-4884.35	-7893.93	-231.0681
	0.50	7591.06	-4494.09	-8501.15	-536.4552
15	0.00	7591.06	-4494.09	-8501.15	-536.4552
	0.50	5465.85	-3988.51	-9108.38	-810.8409
16	0.00	5465.85	-3988.51	-9108.38	-810.8409
	0.50	3619.99	-3378.20	-9715.60	-1062.8640
17	0.00	3619.99	-3378.20	-9715.60	-1062.8640
	0.50	2103.86	-2670.56	-10322.83	-1300.0280
18	0.00	2103.86	-2670.56	-10322.83	-1300.0280
	0.50	964.86	-1870.24	-10930.05	-1528.4940

GENERAL CONTRACTOR

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19	0.00	964.86	-1870.24	-10930.05	-1528.4940
	0.50	248.64	-979.72	-11537.28	-1752.8840
20	0.00	248.64	-979.72	-11537.28	-1752.8840
	0.50	0.00	0.00	-12144.50	-1976.1040

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	17469.79	6926.61	0.00	
		MIN	17469.79	6926.61	0.00	
	0.50	MAX	20950.68	6858.11	-607.23	
		MIN	20950.68	6858.11	-607.23	
2	0.00	MAX	20950.68	6858.11	-607.23	
		MIN	20950.68	6858.11	-607.23	
	0.50	MAX	24116.61	5652.36	-1214.45	
		MIN	24116.61	5652.36	-1214.45	
3	0.00	MAX	24116.61	5652.36	-1214.45	
		MIN	24116.61	5652.36	-1214.45	
	0.50	MAX	26449.75	3526.86	-1821.68	
		MIN	26449.75	3526.86	-1821.68	
4	0.00	MAX	26449.75	3526.86	-1821.68	
		MIN	26449.75	3526.86	-1821.68	
	0.50	MAX	27490.18	481.61	-2428.90	
		MIN	27490.18	481.61	-2428.90	
5	0.00	MAX	27490.18	481.61	-2428.90	5554.8960
		MIN	27490.18	481.61	-2428.90	5554.8960
	0.50	MAX	27270.96	-1290.53	-3036.13	4532.6280
		MIN	27270.96	-1290.53	-3036.13	4532.6280
6	0.00	MAX	27270.96	-1290.53	-3036.13	4532.6280
		MIN	27270.96	-1290.53	-3036.13	4532.6280
	0.50	MAX	26263.91	-2677.10	-3643.35	3621.1910
		MIN	26263.91	-2677.10	-3643.35	3621.1910
7	0.00	MAX	26263.91	-2677.10	-3643.35	3621.1910
		MIN	26263.91	-2677.10	-3643.35	3621.1910
	0.50	MAX	24650.86	-3721.59	-4250.58	2816.5450
		MIN	24650.86	-3721.59	-4250.58	2816.5450
8	0.00	MAX	24650.86	-3721.59	-4250.58	2816.5450
		MIN	24650.86	-3721.59	-4250.58	2816.5450
	0.50	MAX	22592.41	-4465.38	-4857.80	2112.1730
		MIN	22592.41	-4465.38	-4857.80	2112.1730
9	0.00	MAX	22592.41	-4465.38	-4857.80	2112.1730
		MIN	22592.41	-4465.38	-4857.80	2112.1730
	0.50	MAX	20229.18	-4946.84	-5465.03	1499.7370
		MIN	20229.18	-4946.84	-5465.03	1499.7370
10	0.00	MAX	20229.18	-4946.84	-5465.03	1499.7370
		MIN	20229.18	-4946.84	-5465.03	1499.7370
	0.50	MAX	17683.48	-5200.76	-6072.25	969.6515
		MIN	17683.48	-5200.76	-6072.25	969.6515
11	0.00	MAX	17683.48	-5200.76	-6072.25	969.6515
		MIN	17683.48	-5200.76	-6072.25	969.6515

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0.50	MAX	15061.18	-5257.97	-6679.48	511.5804
	MIN	15061.18	-5257.97	-6679.48	511.5804
12 0.00	MAX	15061.18	-5257.97	-6679.48	511.5804
	MIN	15061.18	-5257.97	-6679.48	511.5804
0.50	MAX	12453.84	-5145.04	-7286.70	114.8723
	MIN	12453.84	-5145.04	-7286.70	114.8723
13 0.00	MAX	12453.84	-5145.04	-7286.70	114.8723
	MIN	12453.84	-5145.04	-7286.70	114.8723
0.50	MAX	9940.75	-4884.35	-7893.93	-231.0681
	MIN	9940.75	-4884.35	-7893.93	-231.0681
14 0.00	MAX	9940.75	-4884.35	-7893.93	-231.0681
	MIN	9940.75	-4884.35	-7893.93	-231.0681
0.50	MAX	7591.06	-4494.09	-8501.15	-536.4552
	MIN	7591.06	-4494.09	-8501.15	-536.4552
15 0.00	MAX	7591.06	-4494.09	-8501.15	-536.4552
	MIN	7591.06	-4494.09	-8501.15	-536.4552
0.50	MAX	5465.85	-3988.51	-9108.38	-810.8409
	MIN	5465.85	-3988.51	-9108.38	-810.8409
16 0.00	MAX	5465.85	-3988.51	-9108.38	-810.8409
	MIN	5465.85	-3988.51	-9108.38	-810.8409
0.50	MAX	3619.99	-3378.20	-9715.60	-1062.8640
	MIN	3619.99	-3378.20	-9715.60	-1062.8640
17 0.00	MAX	3619.99	-3378.20	-9715.60	-1062.8640
	MIN	3619.99	-3378.20	-9715.60	-1062.8640
0.50	MAX	2103.86	-2670.56	-10322.83	-1300.0280
	MIN	2103.86	-2670.56	-10322.83	-1300.0280
18 0.00	MAX	2103.86	-2670.56	-10322.83	-1300.0280
	MIN	2103.86	-2670.56	-10322.83	-1300.0280
0.50	MAX	964.86	-1870.24	-10930.05	-1528.4940
	MIN	964.86	-1870.24	-10930.05	-1528.4940
19 0.00	MAX	964.86	-1870.24	-10930.05	-1528.4940
	MIN	964.86	-1870.24	-10930.05	-1528.4940
0.50	MAX	248.64	-979.72	-11537.28	-1752.8840
	MIN	248.64	-979.72	-11537.28	-1752.8840
20 0.00	MAX	248.64	-979.72	-11537.28	-1752.8840
	MIN	248.64	-979.72	-11537.28	-1752.8840
0.50	MAX	0.00	0.00	-12144.50	-1976.1040
	MIN	0.00	0.00	-12144.50	-1976.1040

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	20950.68	0.50	1	17469.79	0.00	1
2	24116.61	0.50	1	20950.68	0.00	1
3	26449.75	0.50	1	24116.61	0.00	1
4	27490.18	0.50	1	26449.75	0.00	1
5	27520.01	0.13	1	27270.96	0.50	1
6	27270.96	0.00	1	26263.91	0.50	1
7	26263.91	0.00	1	24650.86	0.50	1
8	24650.86	0.00	1	22592.41	0.50	1
9	22592.41	0.00	1	20229.18	0.50	1
10	20229.18	0.00	1	17683.48	0.50	1
11	17683.48	0.00	1	15061.18	0.50	1

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12	15061.18	0.00	1	12453.84	0.50	1
13	12453.84	0.00	1	9940.75	0.50	1
14	9940.75	0.00	1	7591.06	0.50	1
15	7591.06	0.00	1	5465.85	0.50	1
16	5465.85	0.00	1	3619.99	0.50	1
17	3619.99	0.00	1	2103.86	0.50	1
18	2103.86	0.00	1	964.86	0.50	1
19	964.86	0.00	1	248.64	0.50	1
20	248.64	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50
20	20	21	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
5	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80



7	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23

Peso totale struttura = 12144.50

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-12398.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	4312.50	0.00	0.00



Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-4528.13

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	472.00	472.00	LL
	6	0.00	0.00	472.00	472.00	LL
	7	0.00	0.00	472.00	472.00	LL
	8	0.00	0.00	472.00	472.00	LL
	9	0.00	0.00	472.00	472.00	LL
	10	0.00	0.00	472.00	472.00	LL
	11	0.00	0.00	472.00	472.00	LL
	12	0.00	0.00	472.00	472.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.16

Mspinta attiva



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Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3679.00	LL
	3	0.00	0.00	-3679.00	-5519.00	LL

Combinazioni di carico :

combinazione	Pes..	M(250).	T(250).	Mtr(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
FESSURAZIONE	1.00	0.5	0.5	0.5		1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
FESSURAZIONE	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000

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	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
2	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
3	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
4	0.00	12398.50	0.00	0.00	4139.2930
	0.50	12022.70	-1431.75	0.00	3064.5630
5	0.00	12022.70	-1431.75	0.00	1021.5210
	0.50	11215.64	-1775.93	0.00	712.1139
6	0.00	11215.64	-1775.93	0.00	712.1139
	0.50	10265.79	-2005.92	0.00	448.3498
7	0.00	10265.79	-2005.92	0.00	448.3498
	0.50	9225.83	-2139.17	0.00	226.3769
8	0.00	9225.83	-2139.17	0.00	226.3769
	0.50	8140.10	-2191.51	0.00	41.9736
9	0.00	8140.10	-2191.51	0.00	41.9736
	0.50	7045.44	-2177.06	0.00	-109.2706

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10	0.00	7045.44	-2177.06	0.00	-109.2706
	0.50	5972.10	-2108.16	0.00	-231.8052
11	0.00	5972.10	-2108.16	0.00	-231.8052
	0.50	4944.58	-1995.37	0.00	-329.9945
12	0.00	4944.58	-1995.37	0.00	-329.9945
	0.50	3982.55	-1847.58	0.00	-408.0177
13	0.00	3982.55	-1847.58	0.00	-408.0177
	0.50	3101.62	-1672.03	0.00	-469.7889
14	0.00	3101.62	-1672.03	0.00	-469.7889
	0.50	2314.18	-1474.48	0.00	-518.8926
15	0.00	2314.18	-1474.48	0.00	-518.8926
	0.50	1630.06	-1259.34	0.00	-558.5335
16	0.00	1630.06	-1259.34	0.00	-558.5335
	0.50	1057.23	-1029.79	0.00	-591.4959
17	0.00	1057.23	-1029.79	0.00	-591.4959
	0.50	602.30	-788.04	0.00	-620.1112
18	0.00	602.30	-788.04	0.00	-620.1112
	0.50	271.00	-535.42	0.00	-646.2308
19	0.00	271.00	-535.42	0.00	-646.2308
	0.50	68.57	-272.65	0.00	-671.2026
20	0.00	68.57	-272.65	0.00	-671.2026
	0.50	0.00	0.00	0.00	-695.8496

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	4312.50	0.00	0.0000
	0.50	2156.25	4312.50	0.00	0.0000
2	0.00	2156.25	4312.50	0.00	0.0000
	0.50	4312.50	4312.50	0.00	0.0000
3	0.00	4312.50	4312.50	0.00	0.0000
	0.50	6468.75	4312.50	0.00	0.0000
4	0.00	6468.75	4312.50	0.00	8076.7970
	0.50	7862.76	1348.43	0.00	6800.0030
5	0.00	7862.76	1348.43	0.00	2266.6680
	0.50	8324.31	523.96	0.00	1872.7890
6	0.00	8324.31	523.96	0.00	1872.7890
	0.50	8411.78	-150.11	0.00	1512.6960
7	0.00	8411.78	-150.11	0.00	1512.6960
	0.50	8197.00	-687.37	0.00	1186.7700
8	0.00	8197.00	-687.37	0.00	1186.7700
	0.50	7744.97	-1101.30	0.00	894.1562

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9	0.00	7744.97	-1101.30	0.00	894.1562
	0.50	7114.08	-1404.88	0.00	633.0343
10	0.00	7114.08	-1404.88	0.00	633.0343
	0.50	6356.46	-1610.17	0.00	400.8515
11	0.00	6356.46	-1610.17	0.00	400.8515
	0.50	5518.47	-1728.11	0.00	194.5371
12	0.00	5518.47	-1728.11	0.00	194.5371
	0.50	4641.30	-1768.35	0.00	10.6910
13	0.00	4641.30	-1768.35	0.00	10.6910
	0.50	3761.68	-1739.15	0.00	-154.2476
14	0.00	3761.68	-1739.15	0.00	-154.2476
	0.50	2912.58	-1647.33	0.00	-303.8512
15	0.00	2912.58	-1647.33	0.00	-303.8512
	0.50	2123.87	-1498.33	0.00	-441.5686
16	0.00	2123.87	-1498.33	0.00	-441.5686
	0.50	1423.09	-1296.22	0.00	-570.6038
17	0.00	1423.09	-1296.22	0.00	-570.6038
	0.50	836.02	-1043.89	0.00	-693.8027
18	0.00	836.02	-1043.89	0.00	-693.8027
	0.50	387.26	-743.19	0.00	-813.5489
19	0.00	387.26	-743.19	0.00	-813.5489
	0.50	100.73	-395.09	0.00	-931.6623
20	0.00	100.73	-395.09	0.00	-931.6623
	0.50	0.00	0.00	0.00	-1049.3020

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
2	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
3	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
4	0.00	4528.13	0.00	0.00	1511.7360
	0.50	4390.88	-522.90	0.00	1119.2270
5	0.00	4390.88	-522.90	0.00	373.0758
	0.50	4096.13	-648.60	0.00	260.0754
6	0.00	4096.13	-648.60	0.00	260.0754
	0.50	3749.23	-732.59	0.00	163.7445
7	0.00	3749.23	-732.59	0.00	163.7445
	0.50	3369.42	-781.26	0.00	82.6764
8	0.00	3369.42	-781.26	0.00	82.6764

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	0.50	2972.89	-800.38	0.00	15.3294
9	0.00	2972.89	-800.38	0.00	15.3294
	0.50	2573.11	-795.10	0.00	-39.9074
10	0.00	2573.11	-795.10	0.00	-39.9074
	0.50	2181.11	-769.93	0.00	-84.6590
11	0.00	2181.11	-769.93	0.00	-84.6590
	0.50	1805.84	-728.74	0.00	-120.5192
12	0.00	1805.84	-728.74	0.00	-120.5192
	0.50	1454.49	-674.77	0.00	-149.0146
13	0.00	1454.49	-674.77	0.00	-149.0146
	0.50	1132.76	-610.65	0.00	-171.5744
14	0.00	1132.76	-610.65	0.00	-171.5744
	0.50	845.17	-538.50	0.00	-189.5079
15	0.00	845.17	-538.50	0.00	-189.5079
	0.50	595.33	-459.93	0.00	-203.9853
16	0.00	595.33	-459.93	0.00	-203.9853
	0.50	386.12	-376.10	0.00	-216.0237
17	0.00	386.12	-376.10	0.00	-216.0237
	0.50	219.97	-287.80	0.00	-226.4745
18	0.00	219.97	-287.80	0.00	-226.4745
	0.50	98.97	-195.54	0.00	-236.0138
19	0.00	98.97	-195.54	0.00	-236.0138
	0.50	25.04	-99.58	0.00	-245.1339
20	0.00	25.04	-99.58	0.00	-245.1339
	0.50	0.00	0.00	0.00	-254.1354

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000
	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	1933.6500
	0.50	504.67	-66.45	0.00	1890.2690
5	0.00	504.67	-66.45	0.00	630.0896
	0.50	468.04	-79.23	0.00	617.6343
6	0.00	468.04	-79.23	0.00	617.6343
	0.50	426.20	-87.43	0.00	607.0841
7	0.00	426.20	-87.43	0.00	607.0841
	0.50	381.25	-91.77	0.00	598.2691

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8	0.00	381.25	-91.77	0.00	598.2691
	0.50	334.96	-92.91	0.00	591.0068
9	0.00	334.96	-92.91	0.00	591.0068
	0.50	288.77	-91.44	0.00	585.1091
10	0.00	288.77	-91.44	0.00	585.1091
	0.50	243.87	-87.85	0.00	580.3882
11	0.00	243.87	-87.85	0.00	580.3882
	0.50	201.20	-82.58	0.00	576.6617
12	0.00	201.20	-82.58	0.00	576.6617
	0.50	161.51	-76.00	0.00	573.7558
13	0.00	161.51	-76.00	0.00	573.7558
	0.50	125.38	-68.39	0.00	571.5092
14	0.00	125.38	-68.39	0.00	571.5092
	0.50	93.25	-59.99	0.00	569.7746
15	0.00	93.25	-59.99	0.00	569.7746
	0.50	65.48	-50.99	0.00	568.4214
16	0.00	65.48	-50.99	0.00	568.4214
	0.50	42.34	-41.50	0.00	567.3366
17	0.00	42.34	-41.50	0.00	567.3366
	0.50	24.05	-31.61	0.00	566.4259
18	0.00	24.05	-31.61	0.00	566.4259
	0.50	10.79	-21.38	0.00	565.6149
19	0.00	10.79	-21.38	0.00	565.6149
	0.50	2.72	-10.84	0.00	564.8497
20	0.00	2.72	-10.84	0.00	564.8497
	0.50	0.00	0.00	0.00	564.0973

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	376.91	869.83	0.00	0.0000
2	0.00	376.92	869.83	0.00	0.0000
	0.50	811.83	869.83	0.00	0.0000
3	0.00	811.83	869.83	0.00	0.0000
	0.50	1246.75	869.83	0.00	0.0000
4	0.00	1246.74	869.83	0.00	1609.7240
	0.50	1529.67	278.68	0.00	1357.2230
5	0.00	1529.67	278.68	0.00	452.4076
	0.50	1626.54	113.99	0.00	374.4098
6	0.00	1626.54	113.99	0.00	374.4098
	0.50	1648.63	-20.89	0.00	303.0131

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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7	0.00	1648.63	-20.89	0.00	303.0131
	0.50	1610.17	-128.63	0.00	238.3121
8	0.00	1610.17	-128.63	0.00	238.3121
	0.50	1524.08	-211.88	0.00	180.1547
9	0.00	1524.08	-211.88	0.00	180.1547
	0.50	1401.95	-273.18	0.00	128.1940
10	0.00	1401.95	-273.18	0.00	128.1940
	0.50	1254.16	-314.91	0.00	81.9360
11	0.00	1254.16	-314.91	0.00	81.9360
	0.50	1089.94	-339.22	0.00	40.7818
12	0.00	1089.94	-339.22	0.00	40.7818
	0.50	917.52	-348.03	0.00	4.0651
13	0.00	917.52	-348.03	0.00	4.0651
	0.50	744.22	-342.96	0.00	-28.9140
14	0.00	744.22	-342.96	0.00	-28.9140
	0.50	576.64	-325.37	0.00	-58.8593
15	0.00	576.64	-325.37	0.00	-58.8593
	0.50	420.76	-296.32	0.00	-86.4515
16	0.00	420.76	-296.32	0.00	-86.4515
	0.50	282.09	-256.63	0.00	-112.3236
17	0.00	282.09	-256.63	0.00	-112.3236
	0.50	165.81	-206.87	0.00	-137.0389
18	0.00	165.81	-206.87	0.00	-137.0389
	0.50	76.84	-147.40	0.00	-161.0695
19	0.00	76.84	-147.40	0.00	-161.0695
	0.50	20.00	-78.41	0.00	-184.7761
20	0.00	20.00	-78.41	0.00	-184.7761
	0.50	0.00	0.00	0.00	-208.3888

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.16	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.49	652.33	0.00	0.0000
4	0.00	978.49	652.33	0.00	1221.7360
	0.50	1189.36	203.97	0.00	1028.6020
5	0.00	1189.36	203.97	0.00	342.8673
	0.50	1259.18	79.26	0.00	283.2874
6	0.00	1259.18	79.26	0.00	283.2874

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	1272.41	-22.71	0.00	228.8179
7	0.00	1272.41	-22.71	0.00	228.8179
	0.50	1239.92	-103.97	0.00	179.5166
8	0.00	1239.92	-103.97	0.00	179.5166
	0.50	1171.54	-166.59	0.00	135.2545
9	0.00	1171.54	-166.59	0.00	135.2545
	0.50	1076.11	-212.51	0.00	95.7559
10	0.00	1076.11	-212.51	0.00	95.7559
	0.50	961.51	-243.56	0.00	60.6348
11	0.00	961.51	-243.56	0.00	60.6348
	0.50	834.75	-261.40	0.00	29.4266
12	0.00	834.75	-261.40	0.00	29.4266
	0.50	702.07	-267.49	0.00	1.6172
13	0.00	702.07	-267.49	0.00	1.6172
	0.50	569.01	-263.07	0.00	-23.3323
14	0.00	569.01	-263.07	0.00	-23.3323
	0.50	440.57	-249.18	0.00	-45.9620
15	0.00	440.57	-249.18	0.00	-45.9620
	0.50	321.27	-226.64	0.00	-66.7938
16	0.00	321.27	-226.64	0.00	-66.7938
	0.50	215.26	-196.07	0.00	-86.3123
17	0.00	215.26	-196.07	0.00	-86.3123
	0.50	126.46	-157.90	0.00	-104.9480
18	0.00	126.46	-157.90	0.00	-104.9480
	0.50	58.58	-112.42	0.00	-123.0614
19	0.00	58.58	-112.42	0.00	-123.0614
	0.50	15.24	-59.76	0.00	-140.9278
20	0.00	15.24	-59.76	0.00	-140.9278
	0.50	0.00	0.00	0.00	-158.7226
Condizione : Mq					
asta	x	M	T	N	P
1	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
2	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
3	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
4	0.00	326.16	0.00	0.00	108.8899
	0.50	316.27	-37.66	0.00	80.6177
5	0.00	316.27	-37.66	0.00	26.8726
	0.50	295.04	-46.72	0.00	18.7332

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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6	0.00	295.04	-46.72	0.00	18.7332
	0.50	270.06	-52.77	0.00	11.7945
7	0.00	270.06	-52.77	0.00	11.7945
	0.50	242.70	-56.27	0.00	5.9552
8	0.00	242.70	-56.27	0.00	5.9552
	0.50	214.14	-57.65	0.00	1.1042
9	0.00	214.14	-57.65	0.00	1.1042
	0.50	185.34	-57.27	0.00	-2.8745
10	0.00	185.34	-57.27	0.00	-2.8745
	0.50	157.10	-55.46	0.00	-6.0980
11	0.00	157.10	-55.46	0.00	-6.0980
	0.50	130.07	-52.49	0.00	-8.6810
12	0.00	130.07	-52.49	0.00	-8.6810
	0.50	104.77	-48.60	0.00	-10.7335
13	0.00	104.77	-48.60	0.00	-10.7335
	0.50	81.59	-43.99	0.00	-12.3585
14	0.00	81.59	-43.99	0.00	-12.3585
	0.50	60.88	-38.79	0.00	-13.6502
15	0.00	60.88	-38.79	0.00	-13.6502
	0.50	42.88	-33.13	0.00	-14.6930
16	0.00	42.88	-33.13	0.00	-14.6930
	0.50	27.81	-27.09	0.00	-15.5601
17	0.00	27.81	-27.09	0.00	-15.5601
	0.50	15.84	-20.73	0.00	-16.3129
18	0.00	15.84	-20.73	0.00	-16.3129
	0.50	7.13	-14.08	0.00	-17.0000
19	0.00	7.13	-14.08	0.00	-17.0000
	0.50	1.80	-7.17	0.00	-17.6569
20	0.00	1.80	-7.17	0.00	-17.6569
	0.50	0.00	0.00	0.00	-18.3053

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	72.4464
	0.50	210.42	-25.06	0.00	53.6363

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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5	0.00	210.42	-25.06	0.00	17.8788						
	0.50	196.30	-31.08	0.00	12.4635						
6	0.00	196.30	-31.08	0.00	12.4635						
	0.50	179.67	-35.11	0.00	7.8471						
7	0.00	179.67	-35.11	0.00	7.8471						
	0.50	161.47	-37.44	0.00	3.9621						
8	0.00	161.47	-37.44	0.00	3.9621						
	0.50	142.47	-38.36	0.00	0.7346						
9	0.00	142.47	-38.36	0.00	0.7346						
	0.50	123.31	-38.10	0.00	-1.9125						
10	0.00	123.31	-38.10	0.00	-1.9125						
	0.50	104.52	-36.90	0.00	-4.0571						
11	0.00	104.52	-36.90	0.00	-4.0571						
	0.50	86.54	-34.92	0.00	-5.7756						
12	0.00	86.54	-34.92	0.00	-5.7756						
	0.50	69.70	-32.34	0.00	-7.1412						
13	0.00	69.70	-32.34	0.00	-7.1412						
	0.50	54.28	-29.26	0.00	-8.2223						
14	0.00	54.28	-29.26	0.00	-8.2223						
	0.50	40.50	-25.81	0.00	-9.0817						
15	0.00	40.50	-25.81	0.00	-9.0817						
	0.50	28.53	-22.04	0.00	-9.7755						
16	0.00	28.53	-22.04	0.00	-9.7755						
	0.50	18.50	-18.02	0.00	-10.3524						
17	0.00	18.50	-18.02	0.00	-10.3524						
	0.50	10.54	-13.79	0.00	-10.8533						
18	0.00	10.54	-13.79	0.00	-10.8533						
	0.50	4.74	-9.37	0.00	-11.3104						
19	0.00	4.74	-9.37	0.00	-11.3104						
	0.50	1.20	-4.77	0.00	-11.7475						
20	0.00	1.20	-4.77	0.00	-11.7475						
	0.50	0.00	0.00	0.00	-12.1788						
Condizione : RITIRO+AT											
asta	x	M	T	N	P						
1	0.00	0.00	2371.68	0.00	0.0000						
	0.50	1185.84	2371.68	0.00	0.0000						
2	0.00	1185.84	2371.68	0.00	0.0000						
	0.50	2371.68	2371.68	0.00	0.0000						
3	0.00	2371.68	2371.68	0.00	0.0000						
	0.50	3557.52	2371.68	0.00	0.0000						
4	0.00	3557.52	2371.68	0.00	4441.8730						

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	4324.16	741.58	0.00	3739.6940
5	0.00	4324.16	741.58	0.00	1246.5650
	0.50	4577.99	288.15	0.00	1029.9490
6	0.00	4577.99	288.15	0.00	1029.9490
	0.50	4626.10	-82.55	0.00	831.9145
7	0.00	4626.10	-82.55	0.00	831.9145
	0.50	4507.98	-378.02	0.00	652.6696
8	0.00	4507.98	-378.02	0.00	652.6696
	0.50	4259.38	-605.67	0.00	491.7454
9	0.00	4259.38	-605.67	0.00	491.7454
	0.50	3912.42	-772.62	0.00	348.1402
10	0.00	3912.42	-772.62	0.00	348.1402
	0.50	3495.77	-885.52	0.00	220.4502
11	0.00	3495.77	-885.52	0.00	220.4502
	0.50	3034.91	-950.38	0.00	106.9866
12	0.00	3034.91	-950.38	0.00	106.9866
	0.50	2552.50	-972.51	0.00	5.8796
13	0.00	2552.50	-972.51	0.00	5.8796
	0.50	2068.76	-956.45	0.00	-84.8292
14	0.00	2068.76	-956.45	0.00	-84.8292
	0.50	1601.79	-905.96	0.00	-167.1044
15	0.00	1601.79	-905.96	0.00	-167.1044
	0.50	1168.03	-824.01	0.00	-242.8427
16	0.00	1168.03	-824.01	0.00	-242.8427
	0.50	782.64	-712.86	0.00	-313.8062
17	0.00	782.64	-712.86	0.00	-313.8062
	0.50	459.77	-574.09	0.00	-381.5601
18	0.00	459.77	-574.09	0.00	-381.5601
	0.50	212.97	-408.72	0.00	-447.4151
19	0.00	212.97	-408.72	0.00	-447.4151
	0.50	55.40	-217.28	0.00	-512.3721
20	0.00	55.40	-217.28	0.00	-512.3721
	0.50	0.00	0.00	0.00	-577.0688

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.29	-1839.75	0.00	0.0000
3	0.00	-613.29	-1839.75	0.00	0.0000
	0.50	-2069.71	-4139.25	0.00	0.0000

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Cepav due



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4	0.00	-2069.71	-4139.25	0.00	-6370.4420
	0.50	-3533.17	-1772.24	0.00	-5503.7340
5	0.00	-3533.17	-1772.24	0.00	-1834.5780
	0.50	-4245.61	-1095.79	0.00	-1559.8170
6	0.00	-4245.61	-1095.79	0.00	-1559.8170
	0.50	-4646.68	-525.59	0.00	-1302.2470
7	0.00	-4646.68	-525.59	0.00	-1302.2470
	0.50	-4787.70	-54.40	0.00	-1063.5180
8	0.00	-4787.70	-54.40	0.00	-1063.5180
	0.50	-4716.30	325.44	0.00	-844.2218
9	0.00	-4716.30	325.44	0.00	-844.2218
	0.50	-4476.20	621.64	0.00	-644.0822
10	0.00	-4476.20	621.64	0.00	-644.0822
	0.50	-4107.35	841.68	0.00	-462.1346
11	0.00	-4107.35	841.68	0.00	-462.1346
	0.50	-3646.05	992.54	0.00	-296.8885
12	0.00	-3646.05	992.54	0.00	-296.8885
	0.50	-3125.29	1080.50	0.00	-146.4758
13	0.00	-3125.29	1080.50	0.00	-146.4758
	0.50	-2575.10	1111.08	0.00	-8.7854
14	0.00	-2575.10	1111.08	0.00	-8.7854
	0.50	-2022.99	1088.91	0.00	118.4150
15	0.00	-2022.99	1088.91	0.00	118.4150
	0.50	-1494.36	1017.71	0.00	237.3659
16	0.00	-1494.36	1017.71	0.00	237.3659
	0.50	-1012.97	900.36	0.00	350.2129
17	0.00	-1012.97	900.36	0.00	350.2129
	0.50	-601.36	738.88	0.00	458.9095
18	0.00	-601.36	738.88	0.00	458.9095
	0.50	-281.23	534.58	0.00	565.1251
19	0.00	-281.23	534.58	0.00	565.1251
	0.50	-73.79	288.19	0.00	670.1567
20	0.00	-73.79	288.19	0.00	670.1567
	0.50	0.00	0.00	0.00	774.8424

Combinazione : FESSURAZIONE

asta	x	M	T	N	P
1	0.00	9006.47	5832.59	0.00	0.0000
	0.50	11918.60	5677.09	0.00	0.0000
2	0.00	11918.60	5677.09	0.00	0.0000
	0.50	14472.27	4384.34	0.00	0.0000

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3	0.00	14472.27	4384.34	0.00	0.0000
	0.50	16149.65	2171.84	0.00	0.0000
4	0.00	16149.65	2171.84	0.00	8914.9650
	0.50	16427.22	-947.08	0.00	7193.0700
5	0.00	16427.22	-947.08	0.00	2397.6900
	0.50	15761.50	-1682.10	0.00	1890.3330
6	0.00	15761.50	-1682.10	0.00	1890.3330
	0.50	14776.69	-2227.64	0.00	1447.0780
7	0.00	14776.69	-2227.64	0.00	1447.0780
	0.50	13561.29	-2608.52	0.00	1063.9440
8	0.00	13561.29	-2608.52	0.00	1063.9440
	0.50	12191.77	-2847.76	0.00	736.0046
9	0.00	12191.77	-2847.76	0.00	736.0046
	0.50	10733.63	-2966.28	0.00	457.7036
10	0.00	10733.63	-2966.28	0.00	457.7036
	0.50	9242.48	-2982.71	0.00	223.1192
11	0.00	9242.48	-2982.71	0.00	223.1192
	0.50	7765.21	-2913.29	0.00	26.1925
12	0.00	7765.21	-2913.29	0.00	26.1925
	0.50	6341.19	-2771.82	0.00	-139.0814
13	0.00	6341.19	-2771.82	0.00	-139.0814
	0.50	5003.48	-2569.77	0.00	-278.4925
14	0.00	5003.48	-2569.77	0.00	-278.4925
	0.50	3779.97	-2316.36	0.00	-397.4811
15	0.00	3779.97	-2316.36	0.00	-397.4811
	0.50	2694.48	-2018.72	0.00	-501.0236
16	0.00	2694.48	-2018.72	0.00	-501.0236
	0.50	1767.73	-1682.12	0.00	-593.5352
17	0.00	1767.73	-1682.12	0.00	-593.5352
	0.50	1018.24	-1310.19	0.00	-678.7850
18	0.00	1018.24	-1310.19	0.00	-678.7850
	0.50	463.05	-905.17	0.00	-759.8206
19	0.00	463.05	-905.17	0.00	-759.8206
	0.50	118.38	-468.29	0.00	-838.8983
20	0.00	118.38	-468.29	0.00	-838.8983
	0.50	0.00	0.00	0.00	-917.4169

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	9006.47	5832.59	0.00	
		MIN	9006.47	5832.59	0.00	
	0.50	MAX	11918.60	5677.09	0.00	
		MIN	11918.60	5677.09	0.00	

GENERAL CONTRACTOR

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2	0.00	MAX	11918.60	5677.09	0.00	
		MIN	11918.60	5677.09	0.00	
	0.50	MAX	14472.27	4384.34	0.00	
		MIN	14472.27	4384.34	0.00	
3	0.00	MAX	14472.27	4384.34	0.00	
		MIN	14472.27	4384.34	0.00	
	0.50	MAX	16149.65	2171.84	0.00	
		MIN	16149.65	2171.84	0.00	
4	0.00	MAX	16149.65	2171.84	0.00	8914.9650
		MIN	16149.65	2171.84	0.00	8914.9650
	0.50	MAX	16427.22	-947.08	0.00	7193.0700
		MIN	16427.22	-947.08	0.00	7193.0700
5	0.00	MAX	16427.22	-947.08	0.00	2397.6900
		MIN	16427.22	-947.08	0.00	2397.6900
	0.50	MAX	15761.50	-1682.10	0.00	1890.3330
		MIN	15761.50	-1682.10	0.00	1890.3330
6	0.00	MAX	15761.50	-1682.10	0.00	1890.3330
		MIN	15761.50	-1682.10	0.00	1890.3330
	0.50	MAX	14776.69	-2227.64	0.00	1447.0780
		MIN	14776.69	-2227.64	0.00	1447.0780
7	0.00	MAX	14776.69	-2227.64	0.00	1447.0780
		MIN	14776.69	-2227.64	0.00	1447.0780
	0.50	MAX	13561.29	-2608.52	0.00	1063.9440
		MIN	13561.29	-2608.52	0.00	1063.9440
8	0.00	MAX	13561.29	-2608.52	0.00	1063.9440
		MIN	13561.29	-2608.52	0.00	1063.9440
	0.50	MAX	12191.77	-2847.76	0.00	736.0046
		MIN	12191.77	-2847.76	0.00	736.0046
9	0.00	MAX	12191.77	-2847.76	0.00	736.0046
		MIN	12191.77	-2847.76	0.00	736.0046
	0.50	MAX	10733.63	-2966.28	0.00	457.7036
		MIN	10733.63	-2966.28	0.00	457.7036
10	0.00	MAX	10733.63	-2966.28	0.00	457.7036
		MIN	10733.63	-2966.28	0.00	457.7036
	0.50	MAX	9242.48	-2982.71	0.00	223.1192
		MIN	9242.48	-2982.71	0.00	223.1192
11	0.00	MAX	9242.48	-2982.71	0.00	223.1192
		MIN	9242.48	-2982.71	0.00	223.1192
	0.50	MAX	7765.21	-2913.29	0.00	26.1925
		MIN	7765.21	-2913.29	0.00	26.1925
12	0.00	MAX	7765.21	-2913.29	0.00	26.1925
		MIN	7765.21	-2913.29	0.00	26.1925
	0.50	MAX	6341.19	-2771.82	0.00	-139.0814
		MIN	6341.19	-2771.82	0.00	-139.0814
13	0.00	MAX	6341.19	-2771.82	0.00	-139.0814
		MIN	6341.19	-2771.82	0.00	-139.0814
	0.50	MAX	5003.48	-2569.77	0.00	-278.4925
		MIN	5003.48	-2569.77	0.00	-278.4925
14	0.00	MAX	5003.48	-2569.77	0.00	-278.4925

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		MIN	5003.48	-2569.77	0.00	-278.4925
	0.50	MAX	3779.97	-2316.36	0.00	-397.4811
		MIN	3779.97	-2316.36	0.00	-397.4811
15	0.00	MAX	3779.97	-2316.36	0.00	-397.4811
		MIN	3779.97	-2316.36	0.00	-397.4811
	0.50	MAX	2694.48	-2018.72	0.00	-501.0236
		MIN	2694.48	-2018.72	0.00	-501.0236
16	0.00	MAX	2694.48	-2018.72	0.00	-501.0236
		MIN	2694.48	-2018.72	0.00	-501.0236
	0.50	MAX	1767.73	-1682.12	0.00	-593.5352
		MIN	1767.73	-1682.12	0.00	-593.5352
17	0.00	MAX	1767.73	-1682.12	0.00	-593.5352
		MIN	1767.73	-1682.12	0.00	-593.5352
	0.50	MAX	1018.24	-1310.19	0.00	-678.7850
		MIN	1018.24	-1310.19	0.00	-678.7850
18	0.00	MAX	1018.24	-1310.19	0.00	-678.7850
		MIN	1018.24	-1310.19	0.00	-678.7850
	0.50	MAX	463.05	-905.17	0.00	-759.8206
		MIN	463.05	-905.17	0.00	-759.8206
19	0.00	MAX	463.05	-905.17	0.00	-759.8206
		MIN	463.05	-905.17	0.00	-759.8206
	0.50	MAX	118.38	-468.29	0.00	-838.8983
		MIN	118.38	-468.29	0.00	-838.8983
20	0.00	MAX	118.38	-468.29	0.00	-838.8983
		MIN	118.38	-468.29	0.00	-838.8983
	0.50	MAX	0.00	0.00	0.00	-917.4169
		MIN	0.00	0.00	0.00	-917.4169

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	11918.60	0.50	1	9006.47	0.00	1
2	14472.27	0.50	1	11918.60	0.00	1
3	16149.65	0.50	1	14472.27	0.00	1
4	16505.79	0.34	1	16149.65	0.00	1
5	16427.22	0.00	1	15761.50	0.50	1
6	15761.50	0.00	1	14776.69	0.50	1
7	14776.69	0.00	1	13561.29	0.50	1
8	13561.29	0.00	1	12191.77	0.50	1
9	12191.77	0.00	1	10733.63	0.50	1
10	10733.63	0.00	1	9242.48	0.50	1
11	9242.48	0.00	1	7765.21	0.50	1
12	7765.21	0.00	1	6341.19	0.50	1
13	6341.19	0.00	1	5003.48	0.50	1
14	5003.48	0.00	1	3779.97	0.50	1
15	3779.97	0.00	1	2694.48	0.50	1
16	2694.48	0.00	1	1767.73	0.50	1
17	1767.73	0.00	1	1018.24	0.50	1
18	1018.24	0.00	1	463.05	0.50	1
19	463.05	0.00	1	118.38	0.50	1
20	118.38	0.00	1	0.00	0.50	1

**ALLEGATO N°3****Fondazioni su pali per Barriere di h=4.75m con rilevato di H=3.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"**

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00

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5	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8461.00

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	3562.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

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descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-3741.00

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL
	4	0.00	0.00	261.00	261.00	LL
	5	0.00	0.00	261.00	261.00	LL
	6	0.00	0.00	261.00	261.00	LL
	7	0.00	0.00	261.00	261.00	LL
	8	0.00	0.00	261.00	261.00	LL
	9	0.00	0.00	261.00	261.00	LL
	10	0.00	0.00	261.00	261.00	LL
	11	0.00	0.00	261.00	261.00	LL
	12	0.00	0.00	261.00	261.00	LL
	13	0.00	0.00	354.00	354.00	LL
	14	0.00	0.00	354.00	354.00	LL
	15	0.00	0.00	354.00	354.00	LL
	16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx



SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL
	4	0.00	0.00	-4139.00	-5519.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250).	T(250).	Mtrasp(250)	q	Spinta attiva..	Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione RITIRO + AT.. spinta passiva..

ESERCIZIO	1.00	1.00
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Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000

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14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000
16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
2	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
3	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
4	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
5	0.00	8461.00	0.00	0.00	3134.0340
	0.50	8247.38	-814.26	0.00	2327.6040
6	0.00	8247.38	-814.26	0.00	2327.6040
	0.50	7684.28	-1403.22	0.00	1626.9900
7	0.00	7684.28	-1403.22	0.00	1626.9900
	0.50	6876.58	-1797.58	0.00	1025.0520
8	0.00	6876.58	-1797.58	0.00	1025.0520
	0.50	5914.45	-2025.36	0.00	511.4895
9	0.00	5914.45	-2025.36	0.00	511.4895
	0.50	4874.86	-2111.20	0.00	73.9958
10	0.00	4874.86	-2111.20	0.00	73.9958
	0.50	3823.42	-2075.89	0.00	-300.7438
11	0.00	3823.42	-2075.89	0.00	-300.7438
	0.50	2816.35	-1936.17	0.00	-626.2069
12	0.00	2816.35	-1936.17	0.00	-626.2069
	0.50	1902.50	-1704.84	0.00	-915.3078
13	0.00	1902.50	-1704.84	0.00	-915.3078
	0.50	1125.25	-1390.97	0.00	-1179.7660
14	0.00	1125.25	-1390.97	0.00	-1179.7660
	0.50	524.29	-1000.41	0.00	-1429.5470
15	0.00	524.29	-1000.41	0.00	-1429.5470
	0.50	137.08	-536.33	0.00	-1672.3480
16	0.00	137.08	-536.33	0.00	-1672.3480
	0.50	0.00	0.00	0.00	-1913.1160

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Condizione : T (250)

asta	x	M	T	N	P
1	0.00	0.00	3562.50	0.00	0.0000
	0.50	1781.25	3562.50	0.00	0.0000
2	0.00	1781.25	3562.50	0.00	0.0000
	0.50	3562.50	3562.50	0.00	0.0000
3	0.00	3562.50	3562.50	0.00	0.0000
	0.50	5343.75	3562.50	0.00	0.0000
4	0.00	5343.75	3562.50	0.00	0.0000
	0.50	7125.00	3562.50	0.00	0.0000
5	0.00	7125.00	3562.50	0.00	6962.1690
	0.50	8419.47	1681.96	0.00	5626.7700
6	0.00	8419.47	1681.96	0.00	5626.7700
	0.50	8870.93	185.12	0.00	4398.8720
7	0.00	8870.93	185.12	0.00	4398.8720
	0.50	8662.99	-961.33	0.00	3284.4850
8	0.00	8662.99	-961.33	0.00	3284.4850
	0.50	7962.37	-1791.15	0.00	2281.1100
9	0.00	7962.37	-1791.15	0.00	2281.1100
	0.50	6919.26	-2336.37	0.00	1379.8890
10	0.00	6919.26	-2336.37	0.00	1379.8890
	0.50	5668.63	-2625.64	0.00	567.5347
11	0.00	5668.63	-2625.64	0.00	567.5347
	0.50	4332.21	-2683.21	0.00	-171.9246
12	0.00	4332.21	-2683.21	0.00	-171.9246
	0.50	3020.80	-2528.34	0.00	-855.5772
13	0.00	3020.80	-2528.34	0.00	-855.5772
	0.50	1836.89	-2175.18	0.00	-1500.1980
14	0.00	1836.89	-2175.18	0.00	-1500.1980
	0.50	877.08	-1633.11	0.00	-2120.9280
15	0.00	877.08	-1633.11	0.00	-2120.9280
	0.50	234.38	-907.33	0.00	-2730.0240
16	0.00	234.38	-907.33	0.00	-2730.0240
	0.50	0.00	0.00	0.00	-3335.6640

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
2	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000

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3	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
4	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
5	0.00	3741.00	0.00	0.00	1385.7020
	0.50	3646.55	-360.02	0.00	1029.1420
6	0.00	3646.55	-360.02	0.00	1029.1420
	0.50	3397.58	-620.43	0.00	719.3675
7	0.00	3397.58	-620.43	0.00	719.3675
	0.50	3040.45	-794.79	0.00	453.2231
8	0.00	3040.45	-794.79	0.00	453.2231
	0.50	2615.05	-895.50	0.00	226.1532
9	0.00	2615.05	-895.50	0.00	226.1532
	0.50	2155.40	-933.46	0.00	32.7170
10	0.00	2155.40	-933.46	0.00	32.7170
	0.50	1690.51	-917.85	0.00	-132.9728
11	0.00	1690.51	-917.85	0.00	-132.9728
	0.50	1245.24	-856.07	0.00	-276.8751
12	0.00	1245.24	-856.07	0.00	-276.8751
	0.50	841.18	-753.79	0.00	-404.7000
13	0.00	841.18	-753.79	0.00	-404.7000
	0.50	497.53	-615.01	0.00	-521.6293
14	0.00	497.53	-615.01	0.00	-521.6293
	0.50	231.81	-442.33	0.00	-632.0690
15	0.00	231.81	-442.33	0.00	-632.0690
	0.50	60.61	-237.14	0.00	-739.4226
16	0.00	60.61	-237.14	0.00	-739.4226
	0.50	0.00	0.00	0.00	-845.8771

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.62	391.50	0.00	0.0000
4	0.00	293.63	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	1215.3320
	0.50	728.03	308.61	0.00	1085.0760
6	0.00	728.03	308.61	0.00	1085.0760

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	836.88	132.85	0.00	964.0904
7	0.00	836.88	132.85	0.00	964.0904
	0.50	866.64	-8.30	0.00	853.7950
8	0.00	866.64	-8.30	0.00	853.7950
	0.50	833.81	-118.11	0.00	754.5909
9	0.00	833.81	-118.11	0.00	754.5909
	0.50	753.21	-199.85	0.00	666.0714
10	0.00	753.21	-199.85	0.00	666.0714
	0.50	638.12	-256.60	0.00	587.2130
11	0.00	638.12	-256.60	0.00	587.2130
	0.50	500.33	-291.02	0.00	516.5464
12	0.00	500.33	-291.02	0.00	516.5464
	0.50	350.45	-305.30	0.00	452.3089
13	0.00	350.45	-305.30	0.00	452.3089
	0.50	209.74	-254.59	0.00	392.5936
14	0.00	209.74	-254.59	0.00	392.5936
	0.50	98.76	-186.47	0.00	335.6106
15	0.00	98.76	-186.47	0.00	335.6106
	0.50	26.07	-101.52	0.00	279.9404
16	0.00	26.07	-101.52	0.00	279.9404
	0.50	0.00	0.00	0.00	224.6559

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1274.1990
	0.50	1540.91	307.83	0.00	1029.7980
6	0.00	1540.91	307.83	0.00	1029.7980
	0.50	1623.54	33.88	0.00	805.0707
7	0.00	1623.54	33.88	0.00	805.0707
	0.50	1585.48	-175.94	0.00	601.1183
8	0.00	1585.48	-175.94	0.00	601.1183
	0.50	1457.25	-327.81	0.00	417.4832
9	0.00	1457.25	-327.81	0.00	417.4832
	0.50	1266.35	-427.60	0.00	252.5439

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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10	0.00	1266.35	-427.60	0.00	252.5439
	0.50	1037.46	-480.54	0.00	103.8688
11	0.00	1037.46	-480.54	0.00	103.8688
	0.50	792.87	-491.07	0.00	-31.4652
12	0.00	792.87	-491.07	0.00	-31.4652
	0.50	552.86	-462.73	0.00	-156.5856
13	0.00	552.86	-462.73	0.00	-156.5856
	0.50	336.18	-398.10	0.00	-274.5626
14	0.00	336.18	-398.10	0.00	-274.5626
	0.50	160.52	-298.89	0.00	-388.1670
15	0.00	160.52	-298.89	0.00	-388.1670
	0.50	42.90	-166.06	0.00	-499.6423
16	0.00	42.90	-166.06	0.00	-499.6423
	0.50	0.00	0.00	0.00	-610.4851

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.16	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.49	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	1274.8440
	0.50	1541.69	307.98	0.00	1030.3190
6	0.00	1541.69	307.98	0.00	1030.3190
	0.50	1624.36	33.90	0.00	805.4782
7	0.00	1624.36	33.90	0.00	805.4782
	0.50	1586.28	-176.03	0.00	601.4226
8	0.00	1586.28	-176.03	0.00	601.4226
	0.50	1457.99	-327.98	0.00	417.6945
9	0.00	1457.99	-327.98	0.00	417.6945
	0.50	1266.99	-427.81	0.00	252.6717
10	0.00	1266.99	-427.81	0.00	252.6717
	0.50	1037.98	-480.78	0.00	103.9214
11	0.00	1037.98	-480.78	0.00	103.9214
	0.50	793.27	-491.32	0.00	-31.4811
12	0.00	793.27	-491.32	0.00	-31.4811
	0.50	553.14	-462.96	0.00	-156.6649

GENERAL CONTRACTOR

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13	0.00	553.14	-462.96	0.00	-156.6649
	0.50	336.35	-398.30	0.00	-274.7016
14	0.00	336.35	-398.30	0.00	-274.7016
	0.50	160.60	-299.04	0.00	-388.3635
15	0.00	160.60	-299.04	0.00	-388.3635
	0.50	42.92	-166.14	0.00	-499.8952
16	0.00	42.92	-166.14	0.00	-499.8952
	0.50	0.00	0.00	0.00	-610.7941

Condizione : Mg

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	120.8276
	0.50	317.96	-31.39	0.00	89.7370
6	0.00	317.96	-31.39	0.00	89.7370
	0.50	296.25	-54.10	0.00	62.7259
7	0.00	296.25	-54.10	0.00	62.7259
	0.50	265.12	-69.30	0.00	39.5192
8	0.00	265.12	-69.30	0.00	39.5192
	0.50	228.02	-78.08	0.00	19.7196
9	0.00	228.02	-78.08	0.00	19.7196
	0.50	187.94	-81.39	0.00	2.8528
10	0.00	187.94	-81.39	0.00	2.8528
	0.50	147.41	-80.03	0.00	-11.5947
11	0.00	147.41	-80.03	0.00	-11.5947
	0.50	108.58	-74.65	0.00	-24.1424
12	0.00	108.58	-74.65	0.00	-24.1424
	0.50	73.35	-65.73	0.00	-35.2882
13	0.00	73.35	-65.73	0.00	-35.2882
	0.50	43.38	-53.63	0.00	-45.4840
14	0.00	43.38	-53.63	0.00	-45.4840
	0.50	20.21	-38.57	0.00	-55.1139
15	0.00	20.21	-38.57	0.00	-55.1139
	0.50	5.29	-20.68	0.00	-64.4746
16	0.00	5.29	-20.68	0.00	-64.4746

GENERAL CONTRACTOR

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ALTA SORVEGLIANZA



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0.50 0.00 0.00 0.00 -73.7571

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	80.3788
	0.50	211.52	-20.88	0.00	59.6963
6	0.00	211.52	-20.88	0.00	59.6963
	0.50	197.08	-35.99	0.00	41.7275
7	0.00	197.08	-35.99	0.00	41.7275
	0.50	176.36	-46.10	0.00	26.2896
8	0.00	176.36	-46.10	0.00	26.2896
	0.50	151.69	-51.94	0.00	13.1182
9	0.00	151.69	-51.94	0.00	13.1182
	0.50	125.03	-54.15	0.00	1.8978
10	0.00	125.03	-54.15	0.00	1.8978
	0.50	98.06	-53.24	0.00	-7.7132
11	0.00	98.06	-53.24	0.00	-7.7132
	0.50	72.23	-49.66	0.00	-16.0604
12	0.00	72.23	-49.66	0.00	-16.0604
	0.50	48.79	-43.72	0.00	-23.4750
13	0.00	48.79	-43.72	0.00	-23.4750
	0.50	28.86	-35.67	0.00	-30.2576
14	0.00	28.86	-35.67	0.00	-30.2576
	0.50	13.45	-25.66	0.00	-36.6637
15	0.00	13.45	-25.66	0.00	-36.6637
	0.50	3.52	-13.76	0.00	-42.8909
16	0.00	3.52	-13.76	0.00	-42.8909
	0.50	0.00	0.00	0.00	-49.0658

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	617.37	0.00	0.0000
	0.50	308.69	617.37	0.00	0.0000
2	0.00	308.69	617.37	0.00	0.0000

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	0.50	617.37	617.37	0.00	0.0000
3	0.00	617.37	617.37	0.00	0.0000
	0.50	926.06	617.37	0.00	0.0000
4	0.00	926.06	617.37	0.00	0.0000
	0.50	1234.75	617.37	0.00	0.0000
5	0.00	1234.75	617.37	0.00	1206.5270
	0.50	1459.07	291.48	0.00	975.1056
6	0.00	1459.07	291.48	0.00	975.1056
	0.50	1537.31	32.08	0.00	762.3138
7	0.00	1537.31	32.08	0.00	762.3138
	0.50	1501.28	-166.60	0.00	569.1932
8	0.00	1501.28	-166.60	0.00	569.1932
	0.50	1379.86	-310.40	0.00	395.3109
9	0.00	1379.86	-310.40	0.00	395.3109
	0.50	1199.09	-404.89	0.00	239.1314
10	0.00	1199.09	-404.89	0.00	239.1314
	0.50	982.36	-455.02	0.00	98.3524
11	0.00	982.36	-455.02	0.00	98.3524
	0.50	750.76	-464.99	0.00	-29.7941
12	0.00	750.76	-464.99	0.00	-29.7941
	0.50	523.50	-438.15	0.00	-148.2694
13	0.00	523.50	-438.15	0.00	-148.2694
	0.50	318.33	-376.95	0.00	-259.9807
14	0.00	318.33	-376.95	0.00	-259.9807
	0.50	152.00	-283.01	0.00	-367.5516
15	0.00	152.00	-283.01	0.00	-367.5516
	0.50	40.62	-157.24	0.00	-473.1066
16	0.00	40.62	-157.24	0.00	-473.1066
	0.50	0.00	0.00	0.00	-578.0626

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	-8059.6750
	0.50	-5870.27	-3313.71	0.00	-6692.3060

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6	0.00	-5870.27	-3313.71	0.00	-6692.3060
	0.50	-7059.36	-1507.12	0.00	-5399.4460
7	0.00	-7059.36	-1507.12	0.00	-5399.4460
	0.50	-7439.67	-74.09	0.00	-4196.6110
8	0.00	-7439.67	-74.09	0.00	-4196.6110
	0.50	-7191.05	1013.32	0.00	-3088.8920
9	0.00	-7191.05	1013.32	0.00	-3088.8920
	0.50	-6479.25	1783.27	0.00	-2073.2650
10	0.00	-6479.25	1783.27	0.00	-2073.2650
	0.50	-5456.29	2262.10	0.00	-1140.7290
11	0.00	-5456.29	2262.10	0.00	-1140.7290
	0.50	-4261.82	2472.79	0.00	-278.2621
12	0.00	-4261.82	2472.79	0.00	-278.2621
	0.50	-3025.04	2434.06	0.00	529.3769
13	0.00	-3025.04	2434.06	0.00	529.3769
	0.50	-1866.97	2159.94	0.00	1297.9820
14	0.00	-1866.97	2159.94	0.00	1297.9820
	0.50	-902.74	1659.85	0.00	2042.3410
15	0.00	-902.74	1659.85	0.00	2042.3410
	0.50	-243.87	939.14	0.00	2774.7490
16	0.00	-243.87	939.14	0.00	2774.7490
	0.50	0.00	0.00	0.00	3503.5710

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	12745.20	5484.20	0.00	0.0000
	0.50	15462.43	5269.70	-341.56	0.0000
2	0.00	15462.43	5269.70	-341.56	0.0000
	0.50	17899.94	4365.45	-683.13	0.0000
3	0.00	17899.94	4365.45	-683.13	0.0000
	0.50	19712.92	2771.45	-1024.69	0.0000
4	0.00	19712.92	2771.45	-1024.69	0.0000
	0.50	20556.40	487.45	-1366.26	0.0000
5	0.00	20556.40	487.45	-1366.26	8594.3390
	0.50	20242.31	-1642.40	-1707.82	6560.9410
6	0.00	20242.31	-1642.40	-1707.82	6560.9410
	0.50	19008.85	-3203.04	-2049.38	4787.1890
7	0.00	19008.85	-3203.04	-2049.38	4787.1890
	0.50	17121.51	-4270.05	-2390.95	3257.4870
8	0.00	17121.51	-4270.05	-2390.95	3257.4870
	0.50	14809.43	-4913.02	-2732.51	1947.7780

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Cepav due



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9	0.00	14809.43	-4913.02	-2732.51	1947.7780
	0.50	12268.87	-5193.45	-3074.08	828.5053
10	0.00	12268.87	-5193.45	-3074.08	828.5053
	0.50	9667.66	-5163.48	-3415.64	-132.8635
11	0.00	9667.66	-5163.48	-3415.64	-132.8635
	0.50	7150.02	-4865.37	-3757.21	-969.6656
12	0.00	7150.02	-4865.37	-3757.21	-969.6656
	0.50	4841.53	-4331.50	-4098.77	-1714.1820
13	0.00	4841.53	-4331.50	-4098.77	-1714.1820
	0.50	2865.54	-3538.47	-4440.33	-2396.0050
14	0.00	2865.54	-3538.47	-4440.33	-2396.0050
	0.50	1335.99	-2547.63	-4781.90	-3040.4520
15	0.00	1335.99	-2547.63	-4781.90	-3040.4520
	0.50	349.51	-1367.05	-5123.46	-3667.1150
16	0.00	349.51	-1367.05	-5123.46	-3667.1150
	0.50	0.00	0.00	-5465.03	-4288.5950

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	12745.20	5484.20	0.00	
		MIN	12745.20	5484.20	0.00	
	0.50	MAX	15462.43	5269.70	-341.56	
		MIN	15462.43	5269.70	-341.56	
2	0.00	MAX	15462.43	5269.70	-341.56	
		MIN	15462.43	5269.70	-341.56	
	0.50	MAX	17899.94	4365.45	-683.13	
		MIN	17899.94	4365.45	-683.13	
3	0.00	MAX	17899.94	4365.45	-683.13	
		MIN	17899.94	4365.45	-683.13	
	0.50	MAX	19712.92	2771.45	-1024.69	
		MIN	19712.92	2771.45	-1024.69	
4	0.00	MAX	19712.92	2771.45	-1024.69	
		MIN	19712.92	2771.45	-1024.69	
	0.50	MAX	20556.40	487.45	-1366.26	
		MIN	20556.40	487.45	-1366.26	
5	0.00	MAX	20556.40	487.45	-1366.26	8594.3390
		MIN	20556.40	487.45	-1366.26	8594.3390
	0.50	MAX	20242.31	-1642.40	-1707.82	6560.9410
		MIN	20242.31	-1642.40	-1707.82	6560.9410
6	0.00	MAX	20242.31	-1642.40	-1707.82	6560.9410
		MIN	20242.31	-1642.40	-1707.82	6560.9410
	0.50	MAX	19008.85	-3203.04	-2049.38	4787.1890
		MIN	19008.85	-3203.04	-2049.38	4787.1890
7	0.00	MAX	19008.85	-3203.04	-2049.38	4787.1890
		MIN	19008.85	-3203.04	-2049.38	4787.1890
	0.50	MAX	17121.51	-4270.05	-2390.95	3257.4870
		MIN	17121.51	-4270.05	-2390.95	3257.4870

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8	0.00	MAX	17121.51	-4270.05	-2390.95	3257.4870
		MIN	17121.51	-4270.05	-2390.95	3257.4870
	0.50	MAX	14809.43	-4913.02	-2732.51	1947.7780
		MIN	14809.43	-4913.02	-2732.51	1947.7780
9	0.00	MAX	14809.43	-4913.02	-2732.51	1947.7780
		MIN	14809.43	-4913.02	-2732.51	1947.7780
	0.50	MAX	12268.87	-5193.45	-3074.08	828.5053
		MIN	12268.87	-5193.45	-3074.08	828.5053
10	0.00	MAX	12268.87	-5193.45	-3074.08	828.5053
		MIN	12268.87	-5193.45	-3074.08	828.5053
	0.50	MAX	9667.66	-5163.48	-3415.64	-132.8635
		MIN	9667.66	-5163.48	-3415.64	-132.8635
11	0.00	MAX	9667.66	-5163.48	-3415.64	-132.8635
		MIN	9667.66	-5163.48	-3415.64	-132.8635
	0.50	MAX	7150.02	-4865.37	-3757.21	-969.6656
		MIN	7150.02	-4865.37	-3757.21	-969.6656
12	0.00	MAX	7150.02	-4865.37	-3757.21	-969.6656
		MIN	7150.02	-4865.37	-3757.21	-969.6656
	0.50	MAX	4841.53	-4331.50	-4098.77	-1714.1820
		MIN	4841.53	-4331.50	-4098.77	-1714.1820
13	0.00	MAX	4841.53	-4331.50	-4098.77	-1714.1820
		MIN	4841.53	-4331.50	-4098.77	-1714.1820
	0.50	MAX	2865.54	-3538.47	-4440.33	-2396.0050
		MIN	2865.54	-3538.47	-4440.33	-2396.0050
14	0.00	MAX	2865.54	-3538.47	-4440.33	-2396.0050
		MIN	2865.54	-3538.47	-4440.33	-2396.0050
	0.50	MAX	1335.99	-2547.63	-4781.90	-3040.4520
		MIN	1335.99	-2547.63	-4781.90	-3040.4520
15	0.00	MAX	1335.99	-2547.63	-4781.90	-3040.4520
		MIN	1335.99	-2547.63	-4781.90	-3040.4520
	0.50	MAX	349.51	-1367.05	-5123.46	-3667.1150
		MIN	349.51	-1367.05	-5123.46	-3667.1150
16	0.00	MAX	349.51	-1367.05	-5123.46	-3667.1150
		MIN	349.51	-1367.05	-5123.46	-3667.1150
	0.50	MAX	0.00	0.00	-5465.03	-4288.5950
		MIN	0.00	0.00	-5465.03	-4288.5950

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	15462.43	0.50	1	12745.20	0.00	1
2	17899.94	0.50	1	15462.43	0.00	1
3	19712.92	0.50	1	17899.94	0.00	1
4	20556.40	0.50	1	19712.92	0.00	1
5	20581.18	0.10	1	20242.31	0.50	1
6	20242.31	0.00	1	19008.85	0.50	1
7	19008.85	0.00	1	17121.51	0.50	1
8	17121.51	0.00	1	14809.43	0.50	1
9	14809.43	0.00	1	12268.87	0.50	1
10	12268.87	0.00	1	9667.66	0.50	1
11	9667.66	0.00	1	7150.02	0.50	1
12	7150.02	0.00	1	4841.53	0.50	1
13	4841.53	0.00	1	2865.54	0.50	1

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14	2865.54	0.00	1	1335.99	0.50	1
15	1335.99	0.00	1	349.51	0.50	1
16	349.51	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
5	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60



15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8461.00

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	3562.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-3741.00

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL

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4	0.00	0.00	261.00	261.00	LL
5	0.00	0.00	261.00	261.00	LL
6	0.00	0.00	261.00	261.00	LL
7	0.00	0.00	261.00	261.00	LL
8	0.00	0.00	261.00	261.00	LL
9	0.00	0.00	261.00	261.00	LL
10	0.00	0.00	261.00	261.00	LL
11	0.00	0.00	261.00	261.00	LL
12	0.00	0.00	261.00	261.00	LL
13	0.00	0.00	354.00	354.00	LL
14	0.00	0.00	354.00	354.00	LL
15	0.00	0.00	354.00	354.00	LL
16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL

Combinazioni di carico :

combinazione P.P.. M(250) . T(250) . Mtr(250) .q Spinta attiva.. Tq Mq Mspinta att..

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FESSURAZIONE 1.00 0.5 0.5 0.5 1.00 1.00 1.00 1.00 1.00

combinazione RITIRO + AT.. spinta passiva..

FESSURAZIONE 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000
16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

asta	x	M	T	N	P
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1	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
2	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
3	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
4	0.00	8461.00	0.00	0.00	2902.4750
	0.50	8263.42	-752.68	0.00	2147.4900
5	0.00	8263.42	-752.68	0.00	2147.4900
	0.50	7743.29	-1295.48	0.00	1498.5550
6	0.00	7743.29	-1295.48	0.00	1498.5550
	0.50	6997.77	-1659.23	0.00	949.0784
7	0.00	6997.77	-1659.23	0.00	949.0784
	0.50	6109.16	-1872.31	0.00	489.5485
8	0.00	6109.16	-1872.31	0.00	489.5485
	0.50	5146.34	-1959.97	0.00	108.5981
9	0.00	5146.34	-1959.97	0.00	108.5981
	0.50	4166.45	-1943.89	0.00	-206.1082
10	0.00	4166.45	-1943.89	0.00	-206.1082
	0.50	3216.73	-1842.01	0.00	-467.1365
11	0.00	3216.73	-1842.01	0.00	-467.1365
	0.50	2336.36	-1668.53	0.00	-686.6731
12	0.00	2336.36	-1668.53	0.00	-686.6731
	0.50	1558.33	-1434.16	0.00	-876.0177
13	0.00	1558.33	-1434.16	0.00	-876.0177
	0.50	911.08	-1146.40	0.00	-1045.1580
14	0.00	911.08	-1146.40	0.00	-1045.1580
	0.50	420.02	-810.00	0.00	-1202.3990
15	0.00	420.02	-810.00	0.00	-1202.3990
	0.50	108.75	-427.53	0.00	-1354.0400
16	0.00	108.75	-427.53	0.00	-1354.0400
	0.50	0.00	0.00	0.00	-1504.0630

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	3562.50	0.00	0.0000
	0.50	1781.25	3562.50	0.00	0.0000
2	0.00	1781.25	3562.50	0.00	0.0000
	0.50	3562.50	3562.50	0.00	0.0000
3	0.00	3562.50	3562.50	0.00	0.0000
	0.50	5343.75	3562.50	0.00	0.0000
4	0.00	5343.75	3562.50	0.00	5936.4170

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	0.50	6708.53	1950.72	0.00	4852.0470
5	0.00	6708.53	1950.72	0.00	4852.0470
	0.50	7346.47	650.85	0.00	3853.2750
6	0.00	7346.47	650.85	0.00	3853.2750
	0.50	7406.86	-364.18	0.00	2948.4730
7	0.00	7406.86	-364.18	0.00	2948.4730
	0.50	7025.03	-1122.77	0.00	2138.5640
8	0.00	7025.03	-1122.77	0.00	2138.5640
	0.50	6322.18	-1652.73	0.00	1418.7630
9	0.00	6322.18	-1652.73	0.00	1418.7630
	0.50	5406.10	-1979.75	0.00	780.1344
10	0.00	5406.10	-1979.75	0.00	780.1344
	0.50	4372.46	-2126.44	0.00	210.9869
11	0.00	4372.46	-2126.44	0.00	210.9869
	0.50	3306.56	-2111.60	0.00	-301.8970
12	0.00	3306.56	-2111.60	0.00	-301.8970
	0.50	2285.29	-1950.05	0.00	-772.1591
13	0.00	2285.29	-1950.05	0.00	-772.1591
	0.50	1379.15	-1652.55	0.00	-1212.8730
14	0.00	1379.15	-1652.55	0.00	-1212.8730
	0.50	654.21	-1226.15	0.00	-1635.6350
15	0.00	654.21	-1226.15	0.00	-1635.6350
	0.50	173.82	-674.76	0.00	-2049.7120
16	0.00	173.82	-674.76	0.00	-2049.7120
	0.50	0.00	0.00	0.00	-2461.2210

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
2	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
3	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
4	0.00	3741.00	0.00	0.00	1283.3190
	0.50	3653.64	-332.79	0.00	949.5048
5	0.00	3653.64	-332.79	0.00	949.5048
	0.50	3423.67	-572.79	0.00	662.5807
6	0.00	3423.67	-572.79	0.00	662.5807
	0.50	3094.04	-733.62	0.00	419.6315
7	0.00	3094.04	-733.62	0.00	419.6315
	0.50	2701.14	-827.84	0.00	216.4521

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8	0.00	2701.14	-827.84	0.00	216.4521
	0.50	2275.44	-866.60	0.00	48.0163
9	0.00	2275.44	-866.60	0.00	48.0163
	0.50	1842.18	-859.49	0.00	-91.1300
10	0.00	1842.18	-859.49	0.00	-91.1300
	0.50	1422.26	-814.44	0.00	-206.5427
11	0.00	1422.26	-814.44	0.00	-206.5427
	0.50	1033.01	-737.73	0.00	-303.6100
12	0.00	1033.01	-737.73	0.00	-303.6100
	0.50	689.01	-634.11	0.00	-387.3280
13	0.00	689.01	-634.11	0.00	-387.3280
	0.50	402.83	-506.88	0.00	-462.1126
14	0.00	402.83	-506.88	0.00	-462.1126
	0.50	185.71	-358.14	0.00	-531.6364
15	0.00	185.71	-358.14	0.00	-531.6364
	0.50	48.08	-189.03	0.00	-598.6838
16	0.00	48.08	-189.03	0.00	-598.6838
	0.50	0.00	0.00	0.00	-665.0159

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.62	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.63	391.50	0.00	0.0000
4	0.00	293.63	391.50	0.00	942.3127
	0.50	453.54	252.15	0.00	862.5234
5	0.00	453.54	252.15	0.00	862.5234
	0.50	549.62	135.85	0.00	788.5054
6	0.00	549.62	135.85	0.00	788.5054
	0.50	592.92	40.67	0.00	721.5074
7	0.00	592.92	40.67	0.00	721.5074
	0.50	593.45	-35.60	0.00	662.0977
8	0.00	593.45	-35.60	0.00	662.0977
	0.50	560.09	-95.24	0.00	610.2927
9	0.00	560.09	-95.24	0.00	610.2927
	0.50	500.61	-140.47	0.00	565.6711
10	0.00	500.61	-140.47	0.00	565.6711
	0.50	421.69	-173.33	0.00	527.4744

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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11	0.00	421.69	-173.33	0.00	527.4744
	0.50	329.04	-195.61	0.00	494.6924
12	0.00	329.04	-195.61	0.00	494.6924
	0.50	227.60	-208.74	0.00	466.1376
13	0.00	227.60	-208.74	0.00	466.1376
	0.50	133.27	-167.30	0.00	440.5209
14	0.00	133.27	-167.30	0.00	440.5209
	0.50	61.53	-118.49	0.00	416.6444
15	0.00	61.53	-118.49	0.00	416.6444
	0.50	15.95	-62.67	0.00	393.5882
16	0.00	15.95	-62.67	0.00	393.5882
	0.50	0.00	0.00	0.00	370.7691

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	1086.4680
	0.50	1227.78	357.02	0.00	888.0098
5	0.00	1227.78	357.02	0.00	888.0098
	0.50	1344.53	119.12	0.00	705.2169
6	0.00	1344.53	119.12	0.00	705.2169
	0.50	1355.59	-66.65	0.00	539.6222
7	0.00	1355.59	-66.65	0.00	539.6222
	0.50	1285.70	-205.49	0.00	391.3947
8	0.00	1285.70	-205.49	0.00	391.3947
	0.50	1157.07	-302.48	0.00	259.6585
9	0.00	1157.07	-302.48	0.00	259.6585
	0.50	989.41	-362.33	0.00	142.7783
10	0.00	989.41	-362.33	0.00	142.7783
	0.50	800.24	-389.17	0.00	38.6143
11	0.00	800.24	-389.17	0.00	38.6143
	0.50	605.16	-386.46	0.00	-55.2525
12	0.00	605.16	-386.46	0.00	-55.2525
	0.50	418.25	-356.89	0.00	-141.3187
13	0.00	418.25	-356.89	0.00	-141.3187
	0.50	252.41	-302.44	0.00	-221.9770
14	0.00	252.41	-302.44	0.00	-221.9770

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	119.73	-224.41	0.00	-299.3499
15	0.00	119.73	-224.41	0.00	-299.3499
	0.50	31.81	-123.49	0.00	-375.1332
16	0.00	31.81	-123.49	0.00	-375.1332
	0.50	0.00	0.00	0.00	-450.4466

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.17	652.33	0.00	0.0000
2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.50	652.33	0.00	1087.0180
	0.50	1228.40	357.20	0.00	888.4592
5	0.00	1228.40	357.20	0.00	888.4592
	0.50	1345.21	119.18	0.00	705.5738
6	0.00	1345.21	119.18	0.00	705.5738
	0.50	1356.27	-66.69	0.00	539.8953
7	0.00	1356.27	-66.69	0.00	539.8953
	0.50	1286.35	-205.59	0.00	391.5928
8	0.00	1286.35	-205.59	0.00	391.5928
	0.50	1157.66	-302.63	0.00	259.7899
9	0.00	1157.66	-302.63	0.00	259.7899
	0.50	989.91	-362.51	0.00	142.8505
10	0.00	989.91	-362.51	0.00	142.8505
	0.50	800.64	-389.37	0.00	38.6338
11	0.00	800.64	-389.37	0.00	38.6338
	0.50	605.47	-386.66	0.00	-55.2804
12	0.00	605.47	-386.66	0.00	-55.2804
	0.50	418.46	-357.07	0.00	-141.3902
13	0.00	418.46	-357.07	0.00	-141.3902
	0.50	252.54	-302.60	0.00	-222.0894
14	0.00	252.54	-302.60	0.00	-222.0894
	0.50	119.79	-224.52	0.00	-299.5014
15	0.00	119.79	-224.52	0.00	-299.5014
	0.50	31.83	-123.56	0.00	-375.3231
16	0.00	31.83	-123.56	0.00	-375.3231
	0.50	0.00	0.00	0.00	-450.6746

Condizione : Mq

GENERAL CONTRACTOR

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asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	111.9002
	0.50	318.58	-29.02	0.00	82.7930
5	0.00	318.58	-29.02	0.00	82.7930
	0.50	298.53	-49.95	0.00	57.7743
6	0.00	298.53	-49.95	0.00	57.7743
	0.50	269.79	-63.97	0.00	36.5902
7	0.00	269.79	-63.97	0.00	36.5902
	0.50	235.53	-72.18	0.00	18.8737
8	0.00	235.53	-72.18	0.00	18.8737
	0.50	198.41	-75.56	0.00	4.1868
9	0.00	198.41	-75.56	0.00	4.1868
	0.50	160.63	-74.94	0.00	-7.9462
10	0.00	160.63	-74.94	0.00	-7.9462
	0.50	124.02	-71.02	0.00	-18.0097
11	0.00	124.02	-71.02	0.00	-18.0097
	0.50	90.07	-64.33	0.00	-26.4736
12	0.00	90.07	-64.33	0.00	-26.4736
	0.50	60.08	-55.29	0.00	-33.7734
13	0.00	60.08	-55.29	0.00	-33.7734
	0.50	35.13	-44.20	0.00	-40.2943
14	0.00	35.13	-44.20	0.00	-40.2943
	0.50	16.19	-31.23	0.00	-46.3565
15	0.00	16.19	-31.23	0.00	-46.3565
	0.50	4.19	-16.48	0.00	-52.2028
16	0.00	4.19	-16.48	0.00	-52.2028
	0.50	0.00	0.00	0.00	-57.9867

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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4	0.00	217.00	0.00	0.00	74.4400
	0.50	211.93	-19.30	0.00	55.0769
5	0.00	211.93	-19.30	0.00	55.0769
	0.50	198.59	-33.23	0.00	38.4336
6	0.00	198.59	-33.23	0.00	38.4336
	0.50	179.47	-42.55	0.00	24.3411
7	0.00	179.47	-42.55	0.00	24.3411
	0.50	156.68	-48.02	0.00	12.5555
8	0.00	156.68	-48.02	0.00	12.5555
	0.50	131.99	-50.27	0.00	2.7852
9	0.00	131.99	-50.27	0.00	2.7852
	0.50	106.86	-49.86	0.00	-5.2861
10	0.00	106.86	-49.86	0.00	-5.2861
	0.50	82.50	-47.24	0.00	-11.9807
11	0.00	82.50	-47.24	0.00	-11.9807
	0.50	59.92	-42.79	0.00	-17.6112
12	0.00	59.92	-42.79	0.00	-17.6112
	0.50	39.97	-36.78	0.00	-22.4673
13	0.00	39.97	-36.78	0.00	-22.4673
	0.50	23.37	-29.40	0.00	-26.8052
14	0.00	23.37	-29.40	0.00	-26.8052
	0.50	10.77	-20.77	0.00	-30.8380
15	0.00	10.77	-20.77	0.00	-30.8380
	0.50	2.79	-10.96	0.00	-34.7272
16	0.00	2.79	-10.96	0.00	-34.7272
	0.50	0.00	0.00	0.00	-38.5748

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	843.48	0.00	0.0000
	0.50	421.74	843.48	0.00	0.0000
2	0.00	421.74	843.48	0.00	0.0000
	0.50	843.48	843.48	0.00	0.0000
3	0.00	843.48	843.48	0.00	0.0000
	0.50	1265.22	843.48	0.00	0.0000
4	0.00	1265.22	843.48	0.00	1405.5460
	0.50	1588.36	461.86	0.00	1148.8030
5	0.00	1588.36	461.86	0.00	1148.8030
	0.50	1739.40	154.10	0.00	912.3273
6	0.00	1739.40	154.10	0.00	912.3273
	0.50	1753.70	-86.23	0.00	698.1003

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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7	0.00	1753.70	-86.23	0.00	698.1003
	0.50	1663.29	-265.84	0.00	506.3409
8	0.00	1663.29	-265.84	0.00	506.3409
	0.50	1496.88	-391.31	0.00	335.9158
9	0.00	1496.88	-391.31	0.00	335.9158
	0.50	1279.99	-468.74	0.00	184.7099
10	0.00	1279.99	-468.74	0.00	184.7099
	0.50	1035.25	-503.47	0.00	49.9547
11	0.00	1035.25	-503.47	0.00	49.9547
	0.50	782.88	-499.96	0.00	-71.4792
12	0.00	782.88	-499.96	0.00	-71.4792
	0.50	541.08	-461.71	0.00	-182.8216
13	0.00	541.08	-461.71	0.00	-182.8216
	0.50	326.54	-391.27	0.00	-287.1680
14	0.00	326.54	-391.27	0.00	-287.1680
	0.50	154.89	-290.31	0.00	-387.2640
15	0.00	154.89	-290.31	0.00	-387.2640
	0.50	41.15	-159.76	0.00	-485.3036
16	0.00	41.15	-159.76	0.00	-485.3036
	0.50	0.00	0.00	0.00	-582.7353

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	-4107.9480
	0.50	-2813.93	-1975.93	0.00	-3440.0510
5	0.00	-2813.93	-1975.93	0.00	-3440.0510
	0.50	-3560.63	-1042.41	0.00	-2807.8330
6	0.00	-3560.63	-1042.41	0.00	-2807.8330
	0.50	-3886.77	-291.40	0.00	-2221.0090
7	0.00	-3886.77	-291.40	0.00	-2221.0090
	0.50	-3880.06	291.44	0.00	-1683.8720
8	0.00	-3880.06	291.44	0.00	-1683.8720
	0.50	-3620.86	721.06	0.00	-1196.4230
9	0.00	-3620.86	721.06	0.00	-1196.4230
	0.50	-3182.12	1011.92	0.00	-755.4013
10	0.00	-3182.12	1011.92	0.00	-755.4013

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	0.50	-2629.88	1177.11	0.00	-355.2301
11	0.00	-2629.88	1177.11	0.00	-355.2301
	0.50	-2024.07	1227.84	0.00	11.1373
12	0.00	-2024.07	1227.84	0.00	11.1373
	0.50	-1419.61	1173.05	0.00	351.4421
13	0.00	-1419.61	1173.05	0.00	351.4421
	0.50	-867.49	1019.39	0.00	673.4124
14	0.00	-867.49	1019.39	0.00	673.4124
	0.50	-415.96	771.25	0.00	984.1053
15	0.00	-415.96	771.25	0.00	984.1053
	0.50	-111.56	431.12	0.00	1289.2850
16	0.00	-111.56	431.12	0.00	1289.2850
	0.50	0.00	0.00	0.00	1592.8210

Combinazione : FESSURAZIONE

asta	x	M	T	N	P
1	0.00	6644.20	3929.06	0.00	0.0000
	0.50	8583.86	3714.56	0.00	0.0000
2	0.00	8583.86	3714.56	0.00	0.0000
	0.50	10243.80	2810.31	0.00	0.0000
3	0.00	10243.80	2810.31	0.00	0.0000
	0.50	11279.21	1216.31	0.00	0.0000
4	0.00	11279.21	1216.31	0.00	5660.8440
	0.50	11527.47	-163.41	0.00	4460.1360
5	0.00	11527.47	-163.41	0.00	4460.1360
	0.50	11171.98	-1206.05	0.00	3407.2040
6	0.00	11171.98	-1206.05	0.00	3407.2040
	0.50	10370.30	-1955.33	0.00	2497.6390
7	0.00	10370.30	-1955.33	0.00	2497.6390
	0.50	9258.61	-2452.74	0.00	1721.2660
8	0.00	9258.61	-2452.74	0.00	1721.2660
	0.50	7953.21	-2736.08	0.00	1063.8950
9	0.00	7953.21	-2736.08	0.00	1063.8950
	0.50	6552.66	-2838.49	0.00	508.8244
10	0.00	6552.66	-2838.49	0.00	508.8244
	0.50	5140.19	-2787.93	0.00	38.1106
11	0.00	5140.19	-2787.93	0.00	38.1106
	0.50	3786.44	-2606.90	0.00	-366.3571
12	0.00	3786.44	-2606.90	0.00	-366.3571
	0.50	2552.14	-2312.60	0.00	-721.9438
13	0.00	2552.14	-2312.60	0.00	-721.9438
	0.50	1502.28	-1870.73	0.00	-1044.4720

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14	0.00	1502.28	-1870.73	0.00	-1044.4720
	0.50	696.92	-1335.61	0.00	-1347.3960
15	0.00	696.92	-1335.61	0.00	-1347.3960
	0.50	181.49	-711.47	0.00	-1641.0350
16	0.00	181.49	-711.47	0.00	-1641.0350
	0.50	0.00	0.00	0.00	-1931.9780

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	6644.20	3929.06	0.00	
		MIN	6644.20	3929.06	0.00	
	0.50	MAX	8583.86	3714.56	0.00	
		MIN	8583.86	3714.56	0.00	
2	0.00	MAX	8583.86	3714.56	0.00	
		MIN	8583.86	3714.56	0.00	
	0.50	MAX	10243.80	2810.31	0.00	
		MIN	10243.80	2810.31	0.00	
3	0.00	MAX	10243.80	2810.31	0.00	
		MIN	10243.80	2810.31	0.00	
	0.50	MAX	11279.21	1216.31	0.00	
		MIN	11279.21	1216.31	0.00	
4	0.00	MAX	11279.21	1216.31	0.00	5660.8440
		MIN	11279.21	1216.31	0.00	5660.8440
	0.50	MAX	11527.47	-163.41	0.00	4460.1360
		MIN	11527.47	-163.41	0.00	4460.1360
5	0.00	MAX	11527.47	-163.41	0.00	4460.1360
		MIN	11527.47	-163.41	0.00	4460.1360
	0.50	MAX	11171.98	-1206.05	0.00	3407.2040
		MIN	11171.98	-1206.05	0.00	3407.2040
6	0.00	MAX	11171.98	-1206.05	0.00	3407.2040
		MIN	11171.98	-1206.05	0.00	3407.2040
	0.50	MAX	10370.30	-1955.33	0.00	2497.6390
		MIN	10370.30	-1955.33	0.00	2497.6390
7	0.00	MAX	10370.30	-1955.33	0.00	2497.6390
		MIN	10370.30	-1955.33	0.00	2497.6390
	0.50	MAX	9258.61	-2452.74	0.00	1721.2660
		MIN	9258.61	-2452.74	0.00	1721.2660
8	0.00	MAX	9258.61	-2452.74	0.00	1721.2660
		MIN	9258.61	-2452.74	0.00	1721.2660
	0.50	MAX	7953.21	-2736.08	0.00	1063.8950
		MIN	7953.21	-2736.08	0.00	1063.8950
9	0.00	MAX	7953.21	-2736.08	0.00	1063.8950
		MIN	7953.21	-2736.08	0.00	1063.8950
	0.50	MAX	6552.66	-2838.49	0.00	508.8244
		MIN	6552.66	-2838.49	0.00	508.8244
10	0.00	MAX	6552.66	-2838.49	0.00	508.8244
		MIN	6552.66	-2838.49	0.00	508.8244
	0.50	MAX	5140.19	-2787.93	0.00	38.1106

GENERAL CONTRACTOR

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		MIN	5140.19	-2787.93	0.00	38.1106
11	0.00	MAX	5140.19	-2787.93	0.00	38.1106
		MIN	5140.19	-2787.93	0.00	38.1106
	0.50	MAX	3786.44	-2606.90	0.00	-366.3571
		MIN	3786.44	-2606.90	0.00	-366.3571
12	0.00	MAX	3786.44	-2606.90	0.00	-366.3571
		MIN	3786.44	-2606.90	0.00	-366.3571
	0.50	MAX	2552.14	-2312.60	0.00	-721.9438
		MIN	2552.14	-2312.60	0.00	-721.9438
13	0.00	MAX	2552.14	-2312.60	0.00	-721.9438
		MIN	2552.14	-2312.60	0.00	-721.9438
	0.50	MAX	1502.28	-1870.73	0.00	-1044.4720
		MIN	1502.28	-1870.73	0.00	-1044.4720
14	0.00	MAX	1502.28	-1870.73	0.00	-1044.4720
		MIN	1502.28	-1870.73	0.00	-1044.4720
	0.50	MAX	696.92	-1335.61	0.00	-1347.3960
		MIN	696.92	-1335.61	0.00	-1347.3960
15	0.00	MAX	696.92	-1335.61	0.00	-1347.3960
		MIN	696.92	-1335.61	0.00	-1347.3960
	0.50	MAX	181.49	-711.47	0.00	-1641.0350
		MIN	181.49	-711.47	0.00	-1641.0350
16	0.00	MAX	181.49	-711.47	0.00	-1641.0350
		MIN	181.49	-711.47	0.00	-1641.0350
	0.50	MAX	0.00	0.00	0.00	-1931.9780
		MIN	0.00	0.00	0.00	-1931.9780

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	8583.86	0.50	1	6644.20	0.00	1
2	10243.80	0.50	1	8583.86	0.00	1
3	11279.21	0.50	1	10243.80	0.00	1
4	11532.94	0.43	1	11279.21	0.00	1
5	11527.47	0.00	1	11171.98	0.50	1
6	11171.98	0.00	1	10370.30	0.50	1
7	10370.30	0.00	1	9258.61	0.50	1
8	9258.61	0.00	1	7953.21	0.50	1
9	7953.21	0.00	1	6552.66	0.50	1
10	6552.66	0.00	1	5140.19	0.50	1
11	5140.19	0.00	1	3786.44	0.50	1
12	3786.44	0.00	1	2552.14	0.50	1
13	2552.14	0.00	1	1502.28	0.50	1
14	1502.28	0.00	1	696.92	0.50	1
15	696.92	0.00	1	181.49	0.50	1
16	181.49	0.00	1	0.00	0.50	1

**ALLEGATO N°4****Fondazioni su pali per Barriere di h=3.75m con rilevato di H=3.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"**

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00

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5	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5273.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	2812.00	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
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1 0.00 0.00 -2952.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL
	4	0.00	0.00	261.00	261.00	LL
	5	0.00	0.00	354.00	354.00	LL
	6	0.00	0.00	354.00	354.00	LL
	7	0.00	0.00	354.00	354.00	LL
	8	0.00	0.00	354.00	354.00	LL
	9	0.00	0.00	354.00	354.00	LL
	10	0.00	0.00	354.00	354.00	LL
	11	0.00	0.00	354.00	354.00	LL
	12	0.00	0.00	354.00	354.00	LL
	13	0.00	0.00	354.00	354.00	LL
	14	0.00	0.00	354.00	354.00	LL
	15	0.00	0.00	354.00	354.00	LL
	16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	392.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
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1 0.0023 Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL
	4	0.00	0.00	-4139.00	-5519.00	LL

Combinazioni di carico :

combinazione	P.P.	M(250)	T(250)	Mtrasp(250)	q	Spinta attiva.. Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione RITIRO + AT.. spinta passiva..

ESERCIZIO	1.00	1.00
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Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000

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13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000
16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
2	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
3	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
4	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
5	0.00	5273.50	0.00	0.00	1953.3540
	0.50	5140.36	-507.51	0.00	1450.7290
6	0.00	5140.36	-507.51	0.00	1450.7290
	0.50	4789.39	-874.59	0.00	1014.0560
7	0.00	4789.39	-874.59	0.00	1014.0560
	0.50	4285.98	-1120.38	0.00	638.8859
8	0.00	4285.98	-1120.38	0.00	638.8859
	0.50	3686.31	-1262.35	0.00	318.7968
9	0.00	3686.31	-1262.35	0.00	318.7968
	0.50	3038.36	-1315.85	0.00	46.1195
10	0.00	3038.36	-1315.85	0.00	46.1195
	0.50	2383.03	-1293.84	0.00	-187.4451
11	0.00	2383.03	-1293.84	0.00	-187.4451
	0.50	1755.35	-1206.76	0.00	-390.2969
12	0.00	1755.35	-1206.76	0.00	-390.2969
	0.50	1185.77	-1062.58	0.00	-570.4852
13	0.00	1185.77	-1062.58	0.00	-570.4852
	0.50	701.34	-866.95	0.00	-735.3147
14	0.00	701.34	-866.95	0.00	-735.3147
	0.50	326.78	-623.53	0.00	-890.9960
15	0.00	326.78	-623.53	0.00	-890.9960
	0.50	85.44	-334.28	0.00	-1042.3270

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16	0.00	85.44	-334.28	0.00	-1042.3270
	0.50	0.00	0.00	0.00	-1192.3910

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	2812.00	0.00	0.0000
	0.50	1406.00	2812.00	0.00	0.0000
2	0.00	1406.00	2812.00	0.00	0.0000
	0.50	2812.00	2812.00	0.00	0.0000
3	0.00	2812.00	2812.00	0.00	0.0000
	0.50	4218.00	2812.00	0.00	0.0000
4	0.00	4218.00	2812.00	0.00	0.0000
	0.50	5624.00	2812.00	0.00	0.0000
5	0.00	5624.00	2812.00	0.00	5495.4720
	0.50	6645.77	1327.63	0.00	4441.3970
6	0.00	6645.77	1327.63	0.00	4441.3970
	0.50	7002.12	146.12	0.00	3472.1760
7	0.00	7002.12	146.12	0.00	3472.1760
	0.50	6837.99	-758.81	0.00	2592.5530
8	0.00	6837.99	-758.81	0.00	2592.5530
	0.50	6284.96	-1413.81	0.00	1800.5560
9	0.00	6284.96	-1413.81	0.00	1800.5560
	0.50	5461.60	-1844.17	0.00	1089.1920
10	0.00	5461.60	-1844.17	0.00	1089.1920
	0.50	4474.44	-2072.50	0.00	447.9740
11	0.00	4474.44	-2072.50	0.00	447.9740
	0.50	3419.55	-2117.95	0.00	-135.7058
12	0.00	3419.55	-2117.95	0.00	-135.7058
	0.50	2384.42	-1995.70	0.00	-675.3356
13	0.00	2384.42	-1995.70	0.00	-675.3356
	0.50	1449.92	-1716.95	0.00	-1184.1560
14	0.00	1449.92	-1716.95	0.00	-1184.1560
	0.50	692.31	-1289.07	0.00	-1674.1190
15	0.00	692.31	-1289.07	0.00	-1674.1190
	0.50	185.01	-716.19	0.00	-2154.8990
16	0.00	185.01	-716.19	0.00	-2154.8990
	0.50	0.00	0.00	0.00	-2632.9510

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000

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2	0.00	2952.60	0.00	0.00	0.0000			
	0.50	2952.60	0.00	0.00	0.0000			
3	0.00	2952.60	0.00	0.00	0.0000			
	0.50	2952.60	0.00	0.00	0.0000			
4	0.00	2952.60	0.00	0.00	0.0000			
	0.50	2952.60	0.00	0.00	0.0000			
5	0.00	2952.60	0.00	0.00	1093.6710			
	0.50	2878.06	-284.15	0.00	812.2544			
6	0.00	2878.06	-284.15	0.00	812.2544			
	0.50	2681.55	-489.68	0.00	567.7638			
7	0.00	2681.55	-489.68	0.00	567.7638			
	0.50	2399.69	-627.29	0.00	357.7082			
8	0.00	2399.69	-627.29	0.00	357.7082			
	0.50	2063.94	-706.78	0.00	178.4924			
9	0.00	2063.94	-706.78	0.00	178.4924			
	0.50	1701.16	-736.74	0.00	25.8220			
10	0.00	1701.16	-736.74	0.00	25.8220			
	0.50	1334.24	-724.41	0.00	-104.9493			
11	0.00	1334.24	-724.41	0.00	-104.9493			
	0.50	982.81	-675.66	0.00	-218.5248			
12	0.00	982.81	-675.66	0.00	-218.5248			
	0.50	663.91	-594.93	0.00	-319.4112			
13	0.00	663.91	-594.93	0.00	-319.4112			
	0.50	392.67	-485.40	0.00	-411.6981			
14	0.00	392.67	-485.40	0.00	-411.6981			
	0.50	182.96	-349.11	0.00	-498.8632			
15	0.00	182.96	-349.11	0.00	-498.8632			
	0.50	47.84	-187.16	0.00	-583.5924			
16	0.00	47.84	-187.16	0.00	-583.5924			
	0.50	0.00	0.00	0.00	-667.6121			
Condizione : q								
asta	x	M	T	N	P			
1	0.00	0.00	0.00	0.00	0.0000			
	0.50	32.63	130.50	0.00	0.0000			
2	0.00	32.63	130.50	0.00	0.0000			
	0.50	130.50	261.00	0.00	0.0000			
3	0.00	130.50	261.00	0.00	0.0000			
	0.50	293.62	391.50	0.00	0.0000			
4	0.00	293.62	391.50	0.00	0.0000			
	0.50	522.00	522.00	0.00	0.0000			
5	0.00	522.00	522.00	0.00	1418.4420			

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	0.50	724.85	296.69	0.00	1272.5230
6	0.00	724.85	296.69	0.00	1272.5230
	0.50	825.74	113.70	0.00	1135.8280
7	0.00	825.74	113.70	0.00	1135.8280
	0.50	845.11	-29.96	0.00	1009.6770
8	0.00	845.11	-29.96	0.00	1009.6770
	0.50	801.81	-137.50	0.00	894.3408
9	0.00	801.81	-137.50	0.00	894.3408
	0.50	713.10	-212.09	0.00	789.2793
10	0.00	713.10	-212.09	0.00	789.2793
	0.50	594.72	-256.65	0.00	693.3675
11	0.00	594.72	-256.65	0.00	693.3675
	0.50	461.03	-273.71	0.00	605.0966
12	0.00	461.03	-273.71	0.00	605.0966
	0.50	325.25	-265.29	0.00	522.7596
13	0.00	325.25	-265.29	0.00	522.7596
	0.50	199.73	-232.91	0.00	444.6213
14	0.00	199.73	-232.91	0.00	444.6213
	0.50	96.17	-177.57	0.00	369.0783
15	0.00	96.17	-177.57	0.00	369.0783
	0.50	25.89	-99.86	0.00	294.8093
16	0.00	25.89	-99.86	0.00	294.8093
	0.50	0.00	0.00	0.00	220.9211

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	651.00	0.00	0.0000
	0.50	363.58	814.25	0.00	0.0000
2	0.00	363.58	814.25	0.00	0.0000
	0.50	770.71	814.25	0.00	0.0000
3	0.00	770.71	814.25	0.00	0.0000
	0.50	1177.83	814.25	0.00	0.0000
4	0.00	1177.83	814.25	0.00	0.0000
	0.50	1584.96	814.25	0.00	0.0000
5	0.00	1584.96	814.25	0.00	1575.1550
	0.50	1881.92	388.62	0.00	1274.0840
6	0.00	1881.92	388.62	0.00	1274.0840
	0.50	1988.01	49.53	0.00	997.0395
7	0.00	1988.01	49.53	0.00	997.0395
	0.50	1944.64	-210.47	0.00	745.4313
8	0.00	1944.64	-210.47	0.00	745.4313
	0.50	1789.45	-398.96	0.00	518.7416

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9	0.00	1789.45	-398.96	0.00	518.7416
	0.50	1556.39	-523.14	0.00	315.0086
10	0.00	1556.39	-523.14	0.00	315.0086
	0.50	1275.95	-589.44	0.00	131.2642
11	0.00	1275.95	-589.44	0.00	131.2642
	0.50	975.68	-603.31	0.00	-36.0728
12	0.00	975.68	-603.31	0.00	-36.0728
	0.50	680.65	-569.11	0.00	-190.8416
13	0.00	680.65	-569.11	0.00	-190.8416
	0.50	414.05	-490.00	0.00	-336.8161
14	0.00	414.05	-490.00	0.00	-336.8161
	0.50	197.77	-368.12	0.00	-477.4055
15	0.00	197.77	-368.12	0.00	-477.4055
	0.50	52.87	-204.62	0.00	-615.3720
16	0.00	52.87	-204.62	0.00	-615.3720
	0.50	0.00	0.00	0.00	-752.5589

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1274.1990
	0.50	1540.91	307.83	0.00	1029.7980
6	0.00	1540.91	307.83	0.00	1029.7980
	0.50	1623.54	33.88	0.00	805.0707
7	0.00	1623.54	33.88	0.00	805.0707
	0.50	1585.48	-175.94	0.00	601.1183
8	0.00	1585.48	-175.94	0.00	601.1183
	0.50	1457.25	-327.81	0.00	417.4832
9	0.00	1457.25	-327.81	0.00	417.4832
	0.50	1266.35	-427.60	0.00	252.5439
10	0.00	1266.35	-427.60	0.00	252.5439
	0.50	1037.46	-480.54	0.00	103.8688
11	0.00	1037.46	-480.54	0.00	103.8688
	0.50	792.87	-491.07	0.00	-31.4652

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12	0.00	792.87	-491.07	0.00	-31.4652
	0.50	552.86	-462.73	0.00	-156.5856
13	0.00	552.86	-462.73	0.00	-156.5856
	0.50	336.18	-398.10	0.00	-274.5626
14	0.00	336.18	-398.10	0.00	-274.5626
	0.50	160.52	-298.89	0.00	-388.1670
15	0.00	160.52	-298.89	0.00	-388.1670
	0.50	42.90	-166.06	0.00	-499.6423
16	0.00	42.90	-166.06	0.00	-499.6423
	0.50	0.00	0.00	0.00	-610.4851

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	120.8276
	0.50	317.96	-31.39	0.00	89.7370
6	0.00	317.96	-31.39	0.00	89.7370
	0.50	296.25	-54.10	0.00	62.7259
7	0.00	296.25	-54.10	0.00	62.7259
	0.50	265.12	-69.30	0.00	39.5192
8	0.00	265.12	-69.30	0.00	39.5192
	0.50	228.02	-78.08	0.00	19.7196
9	0.00	228.02	-78.08	0.00	19.7196
	0.50	187.94	-81.39	0.00	2.8528
10	0.00	187.94	-81.39	0.00	2.8528
	0.50	147.41	-80.03	0.00	-11.5947
11	0.00	147.41	-80.03	0.00	-11.5947
	0.50	108.58	-74.65	0.00	-24.1424
12	0.00	108.58	-74.65	0.00	-24.1424
	0.50	73.35	-65.73	0.00	-35.2882
13	0.00	73.35	-65.73	0.00	-35.2882
	0.50	43.38	-53.63	0.00	-45.4840
14	0.00	43.38	-53.63	0.00	-45.4840
	0.50	20.21	-38.57	0.00	-55.1139
15	0.00	20.21	-38.57	0.00	-55.1139

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0.50 5.29 -20.68 0.00 -64.4746

16 0.00 5.29 -20.68 0.00 -64.4746

0.50 0.00 0.00 0.00 -73.7571

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	80.3788
	0.50	211.52	-20.88	0.00	59.6963
6	0.00	211.52	-20.88	0.00	59.6963
	0.50	197.08	-35.99	0.00	41.7275
7	0.00	197.08	-35.99	0.00	41.7275
	0.50	176.36	-46.10	0.00	26.2896
8	0.00	176.36	-46.10	0.00	26.2896
	0.50	151.69	-51.94	0.00	13.1182
9	0.00	151.69	-51.94	0.00	13.1182
	0.50	125.03	-54.15	0.00	1.8978
10	0.00	125.03	-54.15	0.00	1.8978
	0.50	98.06	-53.24	0.00	-7.7132
11	0.00	98.06	-53.24	0.00	-7.7132
	0.50	72.23	-49.66	0.00	-16.0604
12	0.00	72.23	-49.66	0.00	-16.0604
	0.50	48.79	-43.72	0.00	-23.4750
13	0.00	48.79	-43.72	0.00	-23.4750
	0.50	28.86	-35.67	0.00	-30.2576
14	0.00	28.86	-35.67	0.00	-30.2576
	0.50	13.45	-25.66	0.00	-36.6637
15	0.00	13.45	-25.66	0.00	-36.6637
	0.50	3.52	-13.76	0.00	-42.8909
16	0.00	3.52	-13.76	0.00	-42.8909
	0.50	0.00	0.00	0.00	-49.0658

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	617.37	0.00	0.0000

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	0.50	308.69	617.37	0.00	0.0000
2	0.00	308.69	617.37	0.00	0.0000
	0.50	617.37	617.37	0.00	0.0000
3	0.00	617.37	617.37	0.00	0.0000
	0.50	926.06	617.37	0.00	0.0000
4	0.00	926.06	617.37	0.00	0.0000
	0.50	1234.75	617.37	0.00	0.0000
5	0.00	1234.75	617.37	0.00	1206.5270
	0.50	1459.07	291.48	0.00	975.1056
6	0.00	1459.07	291.48	0.00	975.1056
	0.50	1537.31	32.08	0.00	762.3138
7	0.00	1537.31	32.08	0.00	762.3138
	0.50	1501.28	-166.60	0.00	569.1932
8	0.00	1501.28	-166.60	0.00	569.1932
	0.50	1379.86	-310.40	0.00	395.3109
9	0.00	1379.86	-310.40	0.00	395.3109
	0.50	1199.09	-404.89	0.00	239.1314
10	0.00	1199.09	-404.89	0.00	239.1314
	0.50	982.36	-455.02	0.00	98.3524
11	0.00	982.36	-455.02	0.00	98.3524
	0.50	750.76	-464.99	0.00	-29.7941
12	0.00	750.76	-464.99	0.00	-29.7941
	0.50	523.50	-438.15	0.00	-148.2694
13	0.00	523.50	-438.15	0.00	-148.2694
	0.50	318.33	-376.95	0.00	-259.9807
14	0.00	318.33	-376.95	0.00	-259.9807
	0.50	152.00	-283.01	0.00	-367.5516
15	0.00	152.00	-283.01	0.00	-367.5516
	0.50	40.62	-157.24	0.00	-473.1066
16	0.00	40.62	-157.24	0.00	-473.1066
	0.50	0.00	0.00	0.00	-578.0626

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000

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5	0.00	-3679.21	-5518.75	0.00	-8059.6750
	0.50	-5870.27	-3313.71	0.00	-6692.3060
6	0.00	-5870.27	-3313.71	0.00	-6692.3060
	0.50	-7059.36	-1507.12	0.00	-5399.4460
7	0.00	-7059.36	-1507.12	0.00	-5399.4460
	0.50	-7439.67	-74.09	0.00	-4196.6110
8	0.00	-7439.67	-74.09	0.00	-4196.6110
	0.50	-7191.05	1013.32	0.00	-3088.8920
9	0.00	-7191.05	1013.32	0.00	-3088.8920
	0.50	-6479.25	1783.27	0.00	-2073.2650
10	0.00	-6479.25	1783.27	0.00	-2073.2650
	0.50	-5456.29	2262.10	0.00	-1140.7290
11	0.00	-5456.29	2262.10	0.00	-1140.7290
	0.50	-4261.82	2472.79	0.00	-278.2621
12	0.00	-4261.82	2472.79	0.00	-278.2621
	0.50	-3025.04	2434.06	0.00	529.3769
13	0.00	-3025.04	2434.06	0.00	529.3769
	0.50	-1866.97	2159.94	0.00	1297.9820
14	0.00	-1866.97	2159.94	0.00	1297.9820
	0.50	-902.74	1659.85	0.00	2042.3410
15	0.00	-902.74	1659.85	0.00	2042.3410
	0.50	-243.87	939.14	0.00	2774.7490
16	0.00	-243.87	939.14	0.00	2774.7490
	0.50	0.00	0.00	0.00	3503.5710

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	8769.30	4732.37	0.00	0.0000
	0.50	11148.69	4681.12	0.00	0.0000
2	0.00	11148.69	4681.12	0.00	0.0000
	0.50	13291.92	3776.87	0.00	0.0000
3	0.00	13291.92	3776.87	0.00	0.0000
	0.50	14810.61	2182.87	0.00	0.0000
4	0.00	14810.61	2182.87	0.00	0.0000
	0.50	15359.80	-101.13	0.00	0.0000
5	0.00	15359.80	-101.13	0.00	6158.3520
	0.50	14930.15	-1545.39	0.00	4713.0180
6	0.00	14930.15	-1545.39	0.00	4713.0180
	0.50	13881.64	-2586.16	0.00	3459.2560
7	0.00	13881.64	-2586.16	0.00	3459.2560
	0.50	12401.96	-3278.93	0.00	2383.7650

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8	0.00	12401.96	-3278.93	0.00	2383.7650
	0.50	10652.23	-3674.33	0.00	1467.6680
9	0.00	10652.23	-3674.33	0.00	1467.6680
	0.50	8769.76	-3816.74	0.00	688.5821
10	0.00	8769.76	-3816.74	0.00	688.5821
	0.50	6871.38	-3743.58	0.00	22.3954
11	0.00	6871.38	-3743.58	0.00	22.3954
	0.50	5057.05	-3484.97	0.00	-555.2279
12	0.00	5057.05	-3484.97	0.00	-555.2279
	0.50	3413.45	-3063.88	0.00	-1067.5550
13	0.00	3413.45	-3063.88	0.00	-1067.5550
	0.50	2017.50	-2496.63	0.00	-1535.6670
14	0.00	2017.50	-2496.63	0.00	-1535.6670
	0.50	939.42	-1793.67	0.00	-1977.4610
15	0.00	939.42	-1793.67	0.00	-1977.4610
	0.50	245.48	-960.70	0.00	-2406.7470
16	0.00	245.48	-960.70	0.00	-2406.7470
	0.50	0.00	0.00	0.00	-2832.3910

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	8769.30	4732.37	0.00	
		MIN	8769.30	4732.37	0.00	
	0.50	MAX	11148.69	4681.12	0.00	
		MIN	11148.69	4681.12	0.00	
2	0.00	MAX	11148.69	4681.12	0.00	
		MIN	11148.69	4681.12	0.00	
	0.50	MAX	13291.92	3776.87	0.00	
		MIN	13291.92	3776.87	0.00	
3	0.00	MAX	13291.92	3776.87	0.00	
		MIN	13291.92	3776.87	0.00	
	0.50	MAX	14810.61	2182.87	0.00	
		MIN	14810.61	2182.87	0.00	
4	0.00	MAX	14810.61	2182.87	0.00	
		MIN	14810.61	2182.87	0.00	
	0.50	MAX	15359.80	-101.13	0.00	
		MIN	15359.80	-101.13	0.00	
5	0.00	MAX	15359.80	-101.13	0.00	6158.3520
		MIN	15359.80	-101.13	0.00	6158.3520
	0.50	MAX	14930.15	-1545.39	0.00	4713.0180
		MIN	14930.15	-1545.39	0.00	4713.0180
6	0.00	MAX	14930.15	-1545.39	0.00	4713.0180
		MIN	14930.15	-1545.39	0.00	4713.0180
	0.50	MAX	13881.64	-2586.16	0.00	3459.2560
		MIN	13881.64	-2586.16	0.00	3459.2560
7	0.00	MAX	13881.64	-2586.16	0.00	3459.2560

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		MIN	13881.64	-2586.16	0.00	3459.2560
	0.50	MAX	12401.96	-3278.93	0.00	2383.7650
		MIN	12401.96	-3278.93	0.00	2383.7650
8	0.00	MAX	12401.96	-3278.93	0.00	2383.7650
		MIN	12401.96	-3278.93	0.00	2383.7650
	0.50	MAX	10652.23	-3674.33	0.00	1467.6680
		MIN	10652.23	-3674.33	0.00	1467.6680
9	0.00	MAX	10652.23	-3674.33	0.00	1467.6680
		MIN	10652.23	-3674.33	0.00	1467.6680
	0.50	MAX	8769.76	-3816.74	0.00	688.5821
		MIN	8769.76	-3816.74	0.00	688.5821
10	0.00	MAX	8769.76	-3816.74	0.00	688.5821
		MIN	8769.76	-3816.74	0.00	688.5821
	0.50	MAX	6871.38	-3743.58	0.00	22.3954
		MIN	6871.38	-3743.58	0.00	22.3954
11	0.00	MAX	6871.38	-3743.58	0.00	22.3954
		MIN	6871.38	-3743.58	0.00	22.3954
	0.50	MAX	5057.05	-3484.97	0.00	-555.2279
		MIN	5057.05	-3484.97	0.00	-555.2279
12	0.00	MAX	5057.05	-3484.97	0.00	-555.2279
		MIN	5057.05	-3484.97	0.00	-555.2279
	0.50	MAX	3413.45	-3063.88	0.00	-1067.5550
		MIN	3413.45	-3063.88	0.00	-1067.5550
13	0.00	MAX	3413.45	-3063.88	0.00	-1067.5550
		MIN	3413.45	-3063.88	0.00	-1067.5550
	0.50	MAX	2017.50	-2496.63	0.00	-1535.6670
		MIN	2017.50	-2496.63	0.00	-1535.6670
14	0.00	MAX	2017.50	-2496.63	0.00	-1535.6670
		MIN	2017.50	-2496.63	0.00	-1535.6670
	0.50	MAX	939.42	-1793.67	0.00	-1977.4610
		MIN	939.42	-1793.67	0.00	-1977.4610
15	0.00	MAX	939.42	-1793.67	0.00	-1977.4610
		MIN	939.42	-1793.67	0.00	-1977.4610
	0.50	MAX	245.48	-960.70	0.00	-2406.7470
		MIN	245.48	-960.70	0.00	-2406.7470
16	0.00	MAX	245.48	-960.70	0.00	-2406.7470
		MIN	245.48	-960.70	0.00	-2406.7470
	0.50	MAX	0.00	0.00	0.00	-2832.3910
		MIN	0.00	0.00	0.00	-2832.3910

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	11148.69	0.50	1	8769.30	0.00	1
2	13291.92	0.50	1	11148.69	0.00	1
3	14810.61	0.50	1	13291.92	0.00	1
4	15359.80	0.50	1	14810.61	0.00	1
5	15359.80	0.00	1	14930.15	0.50	1
6	14930.15	0.00	1	13881.64	0.50	1
7	13881.64	0.00	1	12401.96	0.50	1
8	12401.96	0.00	1	10652.23	0.50	1
9	10652.23	0.00	1	8769.76	0.50	1
10	8769.76	0.00	1	6871.38	0.50	1
11	6871.38	0.00	1	5057.05	0.50	1

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12	5057.05	0.00	1	3413.45	0.50	1
13	3413.45	0.00	1	2017.50	0.50	1
14	2017.50	0.00	1	939.42	0.50	1
15	939.42	0.00	1	245.48	0.50	1
16	245.48	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00
5	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60



15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5273.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	2812.00	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2952.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL

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4	0.00	0.00	261.00	261.00	LL
5	0.00	0.00	354.00	354.00	LL
6	0.00	0.00	354.00	354.00	LL
7	0.00	0.00	354.00	354.00	LL
8	0.00	0.00	354.00	354.00	LL
9	0.00	0.00	354.00	354.00	LL
10	0.00	0.00	354.00	354.00	LL
11	0.00	0.00	354.00	354.00	LL
12	0.00	0.00	354.00	354.00	LL
13	0.00	0.00	354.00	354.00	LL
14	0.00	0.00	354.00	354.00	LL
15	0.00	0.00	354.00	354.00	LL
16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	392.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL

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4 0.00 0.00 -4139.00 -5519.00 LL

Combinazioni di carico :

combinazione	P.P..	M(250)	T(250)	Mtr(250)	.q	Spinta attiva.. Tq	Mq	Mspinta att..
FESSURAZIONE	1.00	0.5	0.5	0.5	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
FESSURAZIONE	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000
16	0.00	0.00	0.00	-5123.46	0.0000

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0.50 0.00 0.00 -5465.03 0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
2	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
3	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
4	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
5	0.00	5273.50	0.00	0.00	1953.3540
	0.50	5140.36	-507.51	0.00	1450.7290
6	0.00	5140.36	-507.51	0.00	1450.7290
	0.50	4789.39	-874.59	0.00	1014.0560
7	0.00	4789.39	-874.59	0.00	1014.0560
	0.50	4285.98	-1120.38	0.00	638.8859
8	0.00	4285.98	-1120.38	0.00	638.8859
	0.50	3686.31	-1262.35	0.00	318.7968
9	0.00	3686.31	-1262.35	0.00	318.7968
	0.50	3038.36	-1315.85	0.00	46.1195
10	0.00	3038.36	-1315.85	0.00	46.1195
	0.50	2383.03	-1293.84	0.00	-187.4451
11	0.00	2383.03	-1293.84	0.00	-187.4451
	0.50	1755.35	-1206.76	0.00	-390.2969
12	0.00	1755.35	-1206.76	0.00	-390.2969
	0.50	1185.77	-1062.58	0.00	-570.4852
13	0.00	1185.77	-1062.58	0.00	-570.4852
	0.50	701.34	-866.95	0.00	-735.3147
14	0.00	701.34	-866.95	0.00	-735.3147
	0.50	326.78	-623.53	0.00	-890.9960
15	0.00	326.78	-623.53	0.00	-890.9960
	0.50	85.44	-334.28	0.00	-1042.3270
16	0.00	85.44	-334.28	0.00	-1042.3270
	0.50	0.00	0.00	0.00	-1192.3910

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	2812.00	0.00	0.0000
	0.50	1406.00	2812.00	0.00	0.0000
2	0.00	1406.00	2812.00	0.00	0.0000

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	0.50	2812.00	2812.00	0.00	0.0000
3	0.00	2812.00	2812.00	0.00	0.0000
	0.50	4218.00	2812.00	0.00	0.0000
4	0.00	4218.00	2812.00	0.00	0.0000
	0.50	5624.00	2812.00	0.00	0.0000
5	0.00	5624.00	2812.00	0.00	5495.4720
	0.50	6645.77	1327.63	0.00	4441.3970
6	0.00	6645.77	1327.63	0.00	4441.3970
	0.50	7002.12	146.12	0.00	3472.1760
7	0.00	7002.12	146.12	0.00	3472.1760
	0.50	6837.99	-758.81	0.00	2592.5530
8	0.00	6837.99	-758.81	0.00	2592.5530
	0.50	6284.96	-1413.81	0.00	1800.5560
9	0.00	6284.96	-1413.81	0.00	1800.5560
	0.50	5461.60	-1844.17	0.00	1089.1920
10	0.00	5461.60	-1844.17	0.00	1089.1920
	0.50	4474.44	-2072.50	0.00	447.9740
11	0.00	4474.44	-2072.50	0.00	447.9740
	0.50	3419.55	-2117.95	0.00	-135.7058
12	0.00	3419.55	-2117.95	0.00	-135.7058
	0.50	2384.42	-1995.70	0.00	-675.3356
13	0.00	2384.42	-1995.70	0.00	-675.3356
	0.50	1449.92	-1716.95	0.00	-1184.1560
14	0.00	1449.92	-1716.95	0.00	-1184.1560
	0.50	692.31	-1289.07	0.00	-1674.1190
15	0.00	692.31	-1289.07	0.00	-1674.1190
	0.50	185.01	-716.19	0.00	-2154.8990
16	0.00	185.01	-716.19	0.00	-2154.8990
	0.50	0.00	0.00	0.00	-2632.9510

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
2	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
3	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
4	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
5	0.00	2952.60	0.00	0.00	1093.6710
	0.50	2878.06	-284.15	0.00	812.2544

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6	0.00	2878.06	-284.15	0.00	812.2544
	0.50	2681.55	-489.68	0.00	567.7638
7	0.00	2681.55	-489.68	0.00	567.7638
	0.50	2399.69	-627.29	0.00	357.7082
8	0.00	2399.69	-627.29	0.00	357.7082
	0.50	2063.94	-706.78	0.00	178.4924
9	0.00	2063.94	-706.78	0.00	178.4924
	0.50	1701.16	-736.74	0.00	25.8220
10	0.00	1701.16	-736.74	0.00	25.8220
	0.50	1334.24	-724.41	0.00	-104.9493
11	0.00	1334.24	-724.41	0.00	-104.9493
	0.50	982.81	-675.66	0.00	-218.5248
12	0.00	982.81	-675.66	0.00	-218.5248
	0.50	663.91	-594.93	0.00	-319.4112
13	0.00	663.91	-594.93	0.00	-319.4112
	0.50	392.67	-485.40	0.00	-411.6981
14	0.00	392.67	-485.40	0.00	-411.6981
	0.50	182.96	-349.11	0.00	-498.8632
15	0.00	182.96	-349.11	0.00	-498.8632
	0.50	47.84	-187.16	0.00	-583.5924
16	0.00	47.84	-187.16	0.00	-583.5924
	0.50	0.00	0.00	0.00	-667.6121

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.63	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.62	391.50	0.00	0.0000
4	0.00	293.63	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	1418.4420
	0.50	724.85	296.69	0.00	1272.5230
6	0.00	724.85	296.69	0.00	1272.5230
	0.50	825.74	113.70	0.00	1135.8280
7	0.00	825.74	113.70	0.00	1135.8280
	0.50	845.11	-29.96	0.00	1009.6770
8	0.00	845.11	-29.96	0.00	1009.6770
	0.50	801.81	-137.50	0.00	894.3408

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9	0.00	801.81	-137.50	0.00	894.3408						
	0.50	713.10	-212.09	0.00	789.2793						
10	0.00	713.10	-212.09	0.00	789.2793						
	0.50	594.72	-256.65	0.00	693.3675						
11	0.00	594.72	-256.65	0.00	693.3675						
	0.50	461.03	-273.71	0.00	605.0966						
12	0.00	461.03	-273.71	0.00	605.0966						
	0.50	325.25	-265.29	0.00	522.7596						
13	0.00	325.25	-265.29	0.00	522.7596						
	0.50	199.73	-232.91	0.00	444.6213						
14	0.00	199.73	-232.91	0.00	444.6213						
	0.50	96.17	-177.57	0.00	369.0783						
15	0.00	96.17	-177.57	0.00	369.0783						
	0.50	25.89	-99.86	0.00	294.8093						
16	0.00	25.89	-99.86	0.00	294.8093						
	0.50	0.00	0.00	0.00	220.9211						
Condizione : Spinta attiva											
asta	x	M	T	N	P						
1	0.00	0.00	651.00	0.00	0.0000						
	0.50	363.58	814.25	0.00	0.0000						
2	0.00	363.58	814.25	0.00	0.0000						
	0.50	770.71	814.25	0.00	0.0000						
3	0.00	770.71	814.25	0.00	0.0000						
	0.50	1177.83	814.25	0.00	0.0000						
4	0.00	1177.83	814.25	0.00	0.0000						
	0.50	1584.96	814.25	0.00	0.0000						
5	0.00	1584.96	814.25	0.00	1575.1550						
	0.50	1881.92	388.62	0.00	1274.0840						
6	0.00	1881.92	388.62	0.00	1274.0840						
	0.50	1988.01	49.53	0.00	997.0395						
7	0.00	1988.01	49.53	0.00	997.0395						
	0.50	1944.64	-210.47	0.00	745.4313						
8	0.00	1944.64	-210.47	0.00	745.4313						
	0.50	1789.45	-398.96	0.00	518.7416						
9	0.00	1789.45	-398.96	0.00	518.7416						
	0.50	1556.39	-523.14	0.00	315.0086						
10	0.00	1556.39	-523.14	0.00	315.0086						
	0.50	1275.95	-589.44	0.00	131.2642						
11	0.00	1275.95	-589.44	0.00	131.2642						
	0.50	975.68	-603.31	0.00	-36.0728						
12	0.00	975.68	-603.31	0.00	-36.0728						

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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0.50 680.65 -569.11 0.00 -190.8416

13 0.00 680.65 -569.11 0.00 -190.8416

0.50 414.05 -490.00 0.00 -336.8161

14 0.00 414.05 -490.00 0.00 -336.8161

0.50 197.77 -368.12 0.00 -477.4055

15 0.00 197.77 -368.12 0.00 -477.4055

0.50 52.87 -204.62 0.00 -615.3720

16 0.00 52.87 -204.62 0.00 -615.3720

0.50 0.00 0.00 0.00 -752.5589

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1274.1990
	0.50	1540.91	307.83	0.00	1029.7980
6	0.00	1540.91	307.83	0.00	1029.7980
	0.50	1623.54	33.88	0.00	805.0707
7	0.00	1623.54	33.88	0.00	805.0707
	0.50	1585.48	-175.94	0.00	601.1183
8	0.00	1585.48	-175.94	0.00	601.1183
	0.50	1457.25	-327.81	0.00	417.4832
9	0.00	1457.25	-327.81	0.00	417.4832
	0.50	1266.35	-427.60	0.00	252.5439
10	0.00	1266.35	-427.60	0.00	252.5439
	0.50	1037.46	-480.54	0.00	103.8688
11	0.00	1037.46	-480.54	0.00	103.8688
	0.50	792.87	-491.07	0.00	-31.4652
12	0.00	792.87	-491.07	0.00	-31.4652
	0.50	552.86	-462.73	0.00	-156.5856
13	0.00	552.86	-462.73	0.00	-156.5856
	0.50	336.18	-398.10	0.00	-274.5626
14	0.00	336.18	-398.10	0.00	-274.5626
	0.50	160.52	-298.89	0.00	-388.1670
15	0.00	160.52	-298.89	0.00	-388.1670
	0.50	42.90	-166.06	0.00	-499.6423

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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16	0.00	42.90	-166.06	0.00	-499.6423
	0.50	0.00	0.00	0.00	-610.4851

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	120.8276
	0.50	317.96	-31.39	0.00	89.7370
6	0.00	317.96	-31.39	0.00	89.7370
	0.50	296.25	-54.10	0.00	62.7259
7	0.00	296.25	-54.10	0.00	62.7259
	0.50	265.12	-69.30	0.00	39.5192
8	0.00	265.12	-69.30	0.00	39.5192
	0.50	228.02	-78.08	0.00	19.7196
9	0.00	228.02	-78.08	0.00	19.7196
	0.50	187.94	-81.39	0.00	2.8528
10	0.00	187.94	-81.39	0.00	2.8528
	0.50	147.41	-80.03	0.00	-11.5947
11	0.00	147.41	-80.03	0.00	-11.5947
	0.50	108.58	-74.65	0.00	-24.1424
12	0.00	108.58	-74.65	0.00	-24.1424
	0.50	73.35	-65.73	0.00	-35.2882
13	0.00	73.35	-65.73	0.00	-35.2882
	0.50	43.38	-53.63	0.00	-45.4840
14	0.00	43.38	-53.63	0.00	-45.4840
	0.50	20.21	-38.57	0.00	-55.1139
15	0.00	20.21	-38.57	0.00	-55.1139
	0.50	5.29	-20.68	0.00	-64.4746
16	0.00	5.29	-20.68	0.00	-64.4746
	0.50	0.00	0.00	0.00	-73.7571

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000

GENERAL CONTRACTOR

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2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	80.3788
	0.50	211.52	-20.88	0.00	59.6963
6	0.00	211.52	-20.88	0.00	59.6963
	0.50	197.08	-35.99	0.00	41.7275
7	0.00	197.08	-35.99	0.00	41.7275
	0.50	176.36	-46.10	0.00	26.2896
8	0.00	176.36	-46.10	0.00	26.2896
	0.50	151.69	-51.94	0.00	13.1182
9	0.00	151.69	-51.94	0.00	13.1182
	0.50	125.03	-54.15	0.00	1.8978
10	0.00	125.03	-54.15	0.00	1.8978
	0.50	98.06	-53.24	0.00	-7.7132
11	0.00	98.06	-53.24	0.00	-7.7132
	0.50	72.23	-49.66	0.00	-16.0604
12	0.00	72.23	-49.66	0.00	-16.0604
	0.50	48.79	-43.72	0.00	-23.4750
13	0.00	48.79	-43.72	0.00	-23.4750
	0.50	28.86	-35.67	0.00	-30.2576
14	0.00	28.86	-35.67	0.00	-30.2576
	0.50	13.45	-25.66	0.00	-36.6637
15	0.00	13.45	-25.66	0.00	-36.6637
	0.50	3.52	-13.76	0.00	-42.8909
16	0.00	3.52	-13.76	0.00	-42.8909
	0.50	0.00	0.00	0.00	-49.0658

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	617.37	0.00	0.0000
	0.50	308.69	617.37	0.00	0.0000
2	0.00	308.69	617.37	0.00	0.0000
	0.50	617.37	617.37	0.00	0.0000
3	0.00	617.37	617.37	0.00	0.0000
	0.50	926.06	617.37	0.00	0.0000
4	0.00	926.06	617.37	0.00	0.0000
	0.50	1234.75	617.37	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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5	0.00	1234.75	617.37	0.00	1206.5270
	0.50	1459.07	291.48	0.00	975.1056
6	0.00	1459.07	291.48	0.00	975.1056
	0.50	1537.31	32.08	0.00	762.3138
7	0.00	1537.31	32.08	0.00	762.3138
	0.50	1501.28	-166.60	0.00	569.1932
8	0.00	1501.28	-166.60	0.00	569.1932
	0.50	1379.86	-310.40	0.00	395.3109
9	0.00	1379.86	-310.40	0.00	395.3109
	0.50	1199.09	-404.89	0.00	239.1314
10	0.00	1199.09	-404.89	0.00	239.1314
	0.50	982.36	-455.02	0.00	98.3524
11	0.00	982.36	-455.02	0.00	98.3524
	0.50	750.76	-464.99	0.00	-29.7941
12	0.00	750.76	-464.99	0.00	-29.7941
	0.50	523.50	-438.15	0.00	-148.2694
13	0.00	523.50	-438.15	0.00	-148.2694
	0.50	318.33	-376.95	0.00	-259.9807
14	0.00	318.33	-376.95	0.00	-259.9807
	0.50	152.00	-283.01	0.00	-367.5516
15	0.00	152.00	-283.01	0.00	-367.5516
	0.50	40.62	-157.24	0.00	-473.1066
16	0.00	40.62	-157.24	0.00	-473.1066
	0.50	0.00	0.00	0.00	-578.0626

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	-8059.6750
	0.50	-5870.27	-3313.71	0.00	-6692.3060
6	0.00	-5870.27	-3313.71	0.00	-6692.3060
	0.50	-7059.36	-1507.12	0.00	-5399.4460
7	0.00	-7059.36	-1507.12	0.00	-5399.4460
	0.50	-7439.67	-74.09	0.00	-4196.6110
8	0.00	-7439.67	-74.09	0.00	-4196.6110

GENERAL CONTRACTOR

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	0.50	-7191.05	1013.32	0.00	-3088.8920						
9	0.00	-7191.05	1013.32	0.00	-3088.8920						
	0.50	-6479.25	1783.27	0.00	-2073.2650						
10	0.00	-6479.25	1783.27	0.00	-2073.2650						
	0.50	-5456.29	2262.10	0.00	-1140.7290						
11	0.00	-5456.29	2262.10	0.00	-1140.7290						
	0.50	-4261.82	2472.79	0.00	-278.2621						
12	0.00	-4261.82	2472.79	0.00	-278.2621						
	0.50	-3025.04	2434.06	0.00	529.3769						
13	0.00	-3025.04	2434.06	0.00	529.3769						
	0.50	-1866.97	2159.94	0.00	1297.9820						
14	0.00	-1866.97	2159.94	0.00	1297.9820						
	0.50	-902.74	1659.85	0.00	2042.3410						
15	0.00	-902.74	1659.85	0.00	2042.3410						
	0.50	-243.87	939.14	0.00	2774.7490						
16	0.00	-243.87	939.14	0.00	2774.7490						
	0.50	0.00	0.00	0.00	3503.5710						
Combinazione : FESSURAZIONE											
asta	x	M	T	N	P						
1	0.00	4656.25	3326.37	0.00	0.0000						
	0.50	6332.64	3275.12	0.00	0.0000						
2	0.00	6332.64	3275.12	0.00	0.0000						
	0.50	7772.87	2370.87	0.00	0.0000						
3	0.00	7772.87	2370.87	0.00	0.0000						
	0.50	8588.56	776.87	0.00	0.0000						
4	0.00	8588.56	776.87	0.00	0.0000						
	0.50	8434.75	-1507.13	0.00	0.0000						
5	0.00	8434.75	-1507.13	0.00	1887.1030						
	0.50	7598.06	-1813.38	0.00	1360.8280						
6	0.00	7598.06	-1813.38	0.00	1360.8280						
	0.50	6645.11	-1977.09	0.00	932.2578						
7	0.00	6645.11	-1977.09	0.00	932.2578						
	0.50	5640.14	-2025.70	0.00	589.1916						
8	0.00	5640.14	-2025.70	0.00	589.1916						
	0.50	4634.63	-1982.86	0.00	318.7450						
9	0.00	4634.63	-1982.86	0.00	318.7450						
	0.50	3669.20	-1868.36	0.00	108.0152						
10	0.00	3669.20	-1868.36	0.00	108.0152						
	0.50	2775.52	-1698.20	0.00	-55.3945						
11	0.00	2775.52	-1698.20	0.00	-55.3945						
	0.50	1978.19	-1484.79	0.00	-182.9641						

GENERAL CONTRACTOR

Cepav due



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12	0.00	1978.19	-1484.79	0.00	-182.9641
	0.50	1296.40	-1237.28	0.00	-284.9394
13	0.00	1296.40	-1237.28	0.00	-284.9394
	0.50	745.53	-961.97	0.00	-370.0822
14	0.00	745.53	-961.97	0.00	-370.0822
	0.50	338.40	-662.81	0.00	-445.4716
15	0.00	338.40	-662.81	0.00	-445.4716
	0.50	86.34	-341.88	0.00	-516.3375
16	0.00	86.34	-341.88	0.00	-516.3375
	0.50	0.00	0.00	0.00	-585.9140

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	4656.25	3326.37	0.00	
		MIN	4656.25	3326.37	0.00	
	0.50	MAX	6332.64	3275.12	0.00	
		MIN	6332.64	3275.12	0.00	
2	0.00	MAX	6332.64	3275.12	0.00	
		MIN	6332.64	3275.12	0.00	
	0.50	MAX	7772.87	2370.87	0.00	
		MIN	7772.87	2370.87	0.00	
3	0.00	MAX	7772.87	2370.87	0.00	
		MIN	7772.87	2370.87	0.00	
	0.50	MAX	8588.56	776.87	0.00	
		MIN	8588.56	776.87	0.00	
4	0.00	MAX	8588.56	776.87	0.00	
		MIN	8588.56	776.87	0.00	
	0.50	MAX	8434.75	-1507.13	0.00	
		MIN	8434.75	-1507.13	0.00	
5	0.00	MAX	8434.75	-1507.13	0.00	1887.1030
		MIN	8434.75	-1507.13	0.00	1887.1030
	0.50	MAX	7598.06	-1813.38	0.00	1360.8280
		MIN	7598.06	-1813.38	0.00	1360.8280
6	0.00	MAX	7598.06	-1813.38	0.00	1360.8280
		MIN	7598.06	-1813.38	0.00	1360.8280
	0.50	MAX	6645.11	-1977.09	0.00	932.2578
		MIN	6645.11	-1977.09	0.00	932.2578
7	0.00	MAX	6645.11	-1977.09	0.00	932.2578
		MIN	6645.11	-1977.09	0.00	932.2578
	0.50	MAX	5640.14	-2025.70	0.00	589.1916
		MIN	5640.14	-2025.70	0.00	589.1916
8	0.00	MAX	5640.14	-2025.70	0.00	589.1916
		MIN	5640.14	-2025.70	0.00	589.1916
	0.50	MAX	4634.63	-1982.86	0.00	318.7450
		MIN	4634.63	-1982.86	0.00	318.7450
9	0.00	MAX	4634.63	-1982.86	0.00	318.7450
		MIN	4634.63	-1982.86	0.00	318.7450

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	MAX	3669.20	-1868.36	0.00	108.0152
		MIN	3669.20	-1868.36	0.00	108.0152
10	0.00	MAX	3669.20	-1868.36	0.00	108.0152
		MIN	3669.20	-1868.36	0.00	108.0152
	0.50	MAX	2775.52	-1698.20	0.00	-55.3945
		MIN	2775.52	-1698.20	0.00	-55.3945
11	0.00	MAX	2775.52	-1698.20	0.00	-55.3945
		MIN	2775.52	-1698.20	0.00	-55.3945
	0.50	MAX	1978.19	-1484.79	0.00	-182.9641
		MIN	1978.19	-1484.79	0.00	-182.9641
12	0.00	MAX	1978.19	-1484.79	0.00	-182.9641
		MIN	1978.19	-1484.79	0.00	-182.9641
	0.50	MAX	1296.40	-1237.28	0.00	-284.9394
		MIN	1296.40	-1237.28	0.00	-284.9394
13	0.00	MAX	1296.40	-1237.28	0.00	-284.9394
		MIN	1296.40	-1237.28	0.00	-284.9394
	0.50	MAX	745.53	-961.97	0.00	-370.0822
		MIN	745.53	-961.97	0.00	-370.0822
14	0.00	MAX	745.53	-961.97	0.00	-370.0822
		MIN	745.53	-961.97	0.00	-370.0822
	0.50	MAX	338.40	-662.81	0.00	-445.4716
		MIN	338.40	-662.81	0.00	-445.4716
15	0.00	MAX	338.40	-662.81	0.00	-445.4716
		MIN	338.40	-662.81	0.00	-445.4716
	0.50	MAX	86.34	-341.88	0.00	-516.3375
		MIN	86.34	-341.88	0.00	-516.3375
16	0.00	MAX	86.34	-341.88	0.00	-516.3375
		MIN	86.34	-341.88	0.00	-516.3375
	0.50	MAX	0.00	0.00	0.00	-585.9140
		MIN	0.00	0.00	0.00	-585.9140

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	6332.64	0.50	1	4656.25	0.00	1
2	7772.87	0.50	1	6332.64	0.00	1
3	8588.56	0.50	1	7772.87	0.00	1
4	8663.02	0.19	1	8434.75	0.50	1
5	8434.75	0.00	1	7598.06	0.50	1
6	7598.06	0.00	1	6645.11	0.50	1
7	6645.11	0.00	1	5640.14	0.50	1
8	5640.14	0.00	1	4634.63	0.50	1
9	4634.63	0.00	1	3669.20	0.50	1
10	3669.20	0.00	1	2775.52	0.50	1
11	2775.52	0.00	1	1978.19	0.50	1
12	1978.19	0.00	1	1296.40	0.50	1
13	1296.40	0.00	1	745.53	0.50	1
14	745.53	0.00	1	338.40	0.50	1
15	338.40	0.00	1	86.34	0.50	1
16	86.34	0.00	1	0.00	0.50	1

**ALLEGATO N°5****Fondazioni su pali per Barriere di h=6.75m con rilevato di H=7.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"**

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	0	0
22	0.00	-10.50	0	0	0
23	0.00	-11.00	0	0	0
24	0.00	-11.50	0	0	0
25	0.00	-12.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50

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15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50
20	20	21	0.50
21	21	22	0.50
22	22	23	0.50
23	23	24	0.50
24	24	25	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	0.0000	0.00
5	1	0.4952	0.019514	3.1447E9	0.0000	0.00
6	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
21	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
22	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
23	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
24	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23



14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23
21	1214.45	607.23
22	1214.45	607.23
23	1214.45	607.23
24	1214.45	607.23

Peso totale struttura = 14573.40

Mbp=Mb+Tb*(H+s)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-22401.50

Tbp

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	5062.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	0.00

qs

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	348.00	348.00	LL
	6	0.00	0.00	348.00	348.00	LL
	7	0.00	0.00	348.00	348.00	LL
	8	0.00	0.00	348.00	348.00	LL
	9	0.00	0.00	348.00	348.00	LL
	10	0.00	0.00	348.00	348.00	LL
	11	0.00	0.00	348.00	348.00	LL
	12	0.00	0.00	348.00	348.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL
	21	0.00	0.00	472.00	472.00	LL
	22	0.00	0.00	472.00	472.00	LL
	23	0.00	0.00	472.00	472.00	LL

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24 0.00 0.00 472.00 472.00 LL

Tsacpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.30	0.00	0.00

Tqpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	913.30	0.00	0.00

Mqpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-456.60

Msacpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.40

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3680.00	LL
	3	0.00	0.00	-3680.00	-5520.00	LL
	4	0.00	0.00	-5520.00	-7360.00	LL
	5	0.00	0.00	-7360.00	-9198.00	LL

Nbp

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	-4725.00	0.00

Combinazioni di carico :

combinazione	P.P..	Mbp	Tbp	. q	Tsacpv..	Tqpv	Mqpv	Msacpv..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
ESERCIZIO	1.00	1.00

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Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000

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	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000
21	0.00	0.00	0.00	-12144.50	0.0000
	0.50	0.00	0.00	-12751.73	0.0000
22	0.00	0.00	0.00	-12751.73	0.0000
	0.50	0.00	0.00	-13358.95	0.0000
23	0.00	0.00	0.00	-13358.95	0.0000
	0.50	0.00	0.00	-13966.18	0.0000
24	0.00	0.00	0.00	-13966.18	0.0000
	0.50	0.00	0.00	-14573.40	0.0000

Condizione : $Mbp = Mb + Tb * (H + s)$

asta	x	M	T	N	P
1	0.00	22401.50	0.00	0.00	0.0000
	0.50	22401.50	0.00	0.00	0.0000
2	0.00	22401.50	0.00	0.00	0.0000
	0.50	22401.50	0.00	0.00	0.0000
3	0.00	22401.50	0.00	0.00	0.0000
	0.50	22401.50	0.00	0.00	0.0000
4	0.00	22401.50	0.00	0.00	0.0000
	0.50	22401.50	0.00	0.00	0.0000
5	0.00	22401.50	0.00	0.00	0.0000
	0.50	22401.50	0.00	0.00	0.0000
6	0.00	22401.50	0.00	0.00	5794.9240
	0.50	21884.00	-1953.77	0.00	4046.6100
7	0.00	21884.00	-1953.77	0.00	4046.6100
	0.50	20555.01	-3263.73	0.00	2564.9320
8	0.00	20555.01	-3263.73	0.00	2564.9320
	0.50	18710.29	-4033.34	0.00	1333.9470
9	0.00	18710.29	-4033.34	0.00	1333.9470
	0.50	16595.73	-4358.29	0.00	331.3618
10	0.00	16595.73	-4358.29	0.00	331.3618
	0.50	14411.71	-4324.65	0.00	-468.4648
11	0.00	14411.71	-4324.65	0.00	-468.4648
	0.50	12318.19	-4007.99	0.00	-1092.0620
12	0.00	12318.19	-4007.99	0.00	-1092.0620
	0.50	10439.97	-3473.47	0.00	-1564.8900
13	0.00	10439.97	-3473.47	0.00	-521.6300
	0.50	8759.40	-3241.17	0.00	-636.6392
14	0.00	8759.40	-3241.17	0.00	-636.6392
	0.50	7205.21	-2970.34	0.00	-715.9206

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15	0.00	7205.21	-2970.34	0.00	-715.9206
	0.50	5793.31	-2673.94	0.00	-765.8004
16	0.00	5793.31	-2673.94	0.00	-765.8004
	0.50	4533.75	-2362.55	0.00	-792.0270
17	0.00	4533.75	-2362.55	0.00	-792.0270
	0.50	3431.85	-2044.55	0.00	-799.7299
18	0.00	3431.85	-2044.55	0.00	-799.7299
	0.50	2489.22	-1726.42	0.00	-793.3978
19	0.00	2489.22	-1726.42	0.00	-793.3978
	0.50	1704.65	-1412.96	0.00	-776.8712
20	0.00	1704.65	-1412.96	0.00	-776.8712
	0.50	1074.90	-1107.59	0.00	-753.3474
21	0.00	1074.90	-1107.59	0.00	-753.3474
	0.50	595.33	-812.55	0.00	-725.3936
22	0.00	595.33	-812.55	0.00	-725.3936
	0.50	260.39	-529.22	0.00	-694.9654
23	0.00	260.39	-529.22	0.00	-694.9654
	0.50	64.04	-258.28	0.00	-663.4293
24	0.00	64.04	-258.28	0.00	-663.4293
	0.50	0.00	0.00	0.00	-631.5874

Condizione : Tbp

asta	x	M	T	N	P
1	0.00	0.00	5062.50	0.00	0.0000
	0.50	2531.25	5062.50	0.00	0.0000
2	0.00	2531.25	5062.50	0.00	0.0000
	0.50	5062.50	5062.50	0.00	0.0000
3	0.00	5062.50	5062.50	0.00	0.0000
	0.50	7593.75	5062.50	0.00	0.0000
4	0.00	7593.75	5062.50	0.00	0.0000
	0.50	10125.00	5062.50	0.00	0.0000
5	0.00	10125.00	5062.50	0.00	0.0000
	0.50	12656.25	5062.50	0.00	0.0000
6	0.00	12656.25	5062.50	0.00	7444.2790
	0.50	14500.98	2425.33	0.00	5806.4790
7	0.00	14500.98	2425.33	0.00	5806.4790
	0.50	15184.72	406.84	0.00	4344.7240
8	0.00	15184.72	406.84	0.00	4344.7240
	0.50	14998.88	-1065.34	0.00	3067.6690
9	0.00	14998.88	-1065.34	0.00	3067.6690
	0.50	14198.17	-2064.76	0.00	1973.3000

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10	0.00	14198.17	-2064.76	0.00	1973.3000
	0.50	13001.02	-2662.60	0.00	1052.0550
11	0.00	13001.02	-2662.60	0.00	1052.0550
	0.50	11591.41	-2925.16	0.00	289.4895
12	0.00	11591.41	-2925.16	0.00	289.4895
	0.50	10121.71	-2912.38	0.00	-331.4693
13	0.00	10121.71	-2912.38	0.00	-110.4898
	0.50	8682.37	-2833.98	0.00	-276.2290
14	0.00	8682.37	-2833.98	0.00	-276.2290
	0.50	7297.53	-2696.72	0.00	-406.5786
15	0.00	7297.53	-2696.72	0.00	-406.5786
	0.50	5993.28	-2513.58	0.00	-507.1714
16	0.00	5993.28	-2513.58	0.00	-507.1714
	0.50	4789.78	-2295.36	0.00	-583.3138
17	0.00	4789.78	-2295.36	0.00	-583.3138
	0.50	3702.30	-2050.83	0.00	-639.9038
18	0.00	3702.30	-2050.83	0.00	-639.9038
	0.50	2742.18	-1786.88	0.00	-681.3677
19	0.00	2742.18	-1786.88	0.00	-681.3677
	0.50	1917.77	-1508.75	0.00	-711.6142
20	0.00	1917.77	-1508.75	0.00	-711.6142
	0.50	1235.16	-1220.22	0.00	-733.9996
21	0.00	1235.16	-1220.22	0.00	-733.9996
	0.50	698.85	-923.86	0.00	-751.3035
22	0.00	698.85	-923.86	0.00	-751.3035
	0.50	312.33	-621.24	0.00	-765.7096
23	0.00	312.33	-621.24	0.00	-765.7096
	0.50	78.51	-313.18	0.00	-778.7913
24	0.00	78.51	-313.18	0.00	-778.7913
	0.50	0.00	0.00	0.00	-791.5005

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
2	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
3	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
4	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
5	0.00	0.00	0.00	0.00	0.0000

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	0.50	0.00	0.00	0.00	0.0000
6	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
7	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
8	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
9	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
10	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
11	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
12	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
13	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
14	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
15	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
16	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
17	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
18	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
19	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
20	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
21	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
22	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
23	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
24	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000

Condizione : qs

asta x M T N P

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000
	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	0.0000
	0.50	696.00	696.00	0.00	0.0000
5	0.00	696.00	696.00	0.00	0.0000
	0.50	1087.50	870.00	0.00	0.0000
6	0.00	1087.50	870.00	0.00	1183.0040
	0.50	1451.24	591.15	0.00	1090.2310
7	0.00	1451.24	591.15	0.00	1090.2310
	0.50	1684.26	345.91	0.00	1015.0620
8	0.00	1684.26	345.91	0.00	1015.0620
	0.50	1801.48	126.64	0.00	960.3602
9	0.00	1801.48	126.64	0.00	960.3602
	0.50	1813.81	-75.15	0.00	927.5687
10	0.00	1813.81	-75.15	0.00	927.5687
	0.50	1727.77	-268.28	0.00	916.8449
11	0.00	1727.77	-268.28	0.00	916.8449
	0.50	1545.53	-461.38	0.00	927.1397
12	0.00	1545.53	-461.38	0.00	927.1397
	0.50	1265.06	-662.42	0.00	956.2236
13	0.00	1265.06	-662.42	0.00	318.7412
	0.50	960.61	-556.37	0.00	333.5814
14	0.00	960.61	-556.37	0.00	333.5814
	0.50	707.57	-457.06	0.00	352.3524
15	0.00	707.57	-457.06	0.00	352.3524
	0.50	502.20	-365.85	0.00	374.0222
16	0.00	502.20	-365.85	0.00	374.0222
	0.50	340.20	-283.72	0.00	397.7527
17	0.00	340.20	-283.72	0.00	397.7527
	0.50	216.85	-211.35	0.00	422.8822
18	0.00	216.85	-211.35	0.00	422.8822
	0.50	127.15	-149.19	0.00	448.9066
19	0.00	127.15	-149.19	0.00	448.9066
	0.50	65.91	-97.54	0.00	475.4586
20	0.00	65.91	-97.54	0.00	475.4586
	0.50	27.84	-56.53	0.00	502.2871
21	0.00	27.84	-56.53	0.00	502.2871

GENERAL CONTRACTOR

Cepav due



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	0.50	7.59	-26.26	0.00	529.2349
22	0.00	7.59	-26.26	0.00	529.2349
	0.50	-0.22	-6.74	0.00	556.2179
23	0.00	-0.22	-6.74	0.00	556.2179
	0.50	-0.95	2.01	0.00	583.2025
24	0.00	-0.95	2.01	0.00	583.2025
	0.50	0.00	0.00	0.00	610.1837
Condizione : Tsacpv					
asta	x	M	T	N	P
1	0.00	0.00	652.30	0.00	0.0000
	0.50	326.15	652.30	0.00	0.0000
2	0.00	326.15	652.30	0.00	0.0000
	0.50	652.30	652.30	0.00	0.0000
3	0.00	652.30	652.30	0.00	0.0000
	0.50	978.45	652.30	0.00	0.0000
4	0.00	978.45	652.30	0.00	0.0000
	0.50	1304.60	652.30	0.00	0.0000
5	0.00	1304.60	652.30	0.00	0.0000
	0.50	1630.75	652.30	0.00	0.0000
6	0.00	1630.75	652.30	0.00	959.1908
	0.50	1868.44	312.50	0.00	748.1612
7	0.00	1868.44	312.50	0.00	748.1612
	0.50	1956.54	52.42	0.00	559.8150
8	0.00	1956.54	52.42	0.00	559.8150
	0.50	1932.60	-137.27	0.00	395.2672
9	0.00	1932.60	-137.27	0.00	395.2672
	0.50	1829.42	-266.04	0.00	254.2585
10	0.00	1829.42	-266.04	0.00	254.2585
	0.50	1675.17	-343.07	0.00	135.5566
11	0.00	1675.17	-343.07	0.00	135.5566
	0.50	1493.55	-376.91	0.00	37.3005
12	0.00	1493.55	-376.91	0.00	37.3005
	0.50	1304.18	-375.26	0.00	-42.7096
13	0.00	1304.18	-375.26	0.00	-14.2365
	0.50	1118.72	-365.16	0.00	-35.5919
14	0.00	1118.72	-365.16	0.00	-35.5919
	0.50	940.28	-347.47	0.00	-52.3874
15	0.00	940.28	-347.47	0.00	-52.3874
	0.50	772.23	-323.87	0.00	-65.3487
16	0.00	772.23	-323.87	0.00	-65.3487
	0.50	617.16	-295.76	0.00	-75.1596

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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17	0.00	617.16	-295.76	0.00	-75.1596
	0.50	477.04	-264.25	0.00	-82.4512
18	0.00	477.04	-264.25	0.00	-82.4512
	0.50	353.33	-230.24	0.00	-87.7938
19	0.00	353.33	-230.24	0.00	-87.7938
	0.50	247.10	-194.40	0.00	-91.6910
20	0.00	247.10	-194.40	0.00	-91.6910
	0.50	159.15	-157.23	0.00	-94.5754
21	0.00	159.15	-157.23	0.00	-94.5754
	0.50	90.05	-119.04	0.00	-96.8050
22	0.00	90.05	-119.04	0.00	-96.8050
	0.50	40.24	-80.05	0.00	-98.6612
23	0.00	40.24	-80.05	0.00	-98.6612
	0.50	10.12	-40.35	0.00	-100.3468
24	0.00	10.12	-40.35	0.00	-100.3468
	0.50	0.00	0.00	0.00	-101.9844

Condizione : Tqpv

asta	x	M	T	N	P
1	0.00	0.00	913.30	0.00	0.0000
	0.50	456.65	913.30	0.00	0.0000
2	0.00	456.65	913.30	0.00	0.0000
	0.50	913.30	913.30	0.00	0.0000
3	0.00	913.30	913.30	0.00	0.0000
	0.50	1369.95	913.30	0.00	0.0000
4	0.00	1369.95	913.30	0.00	0.0000
	0.50	1826.60	913.30	0.00	0.0000
5	0.00	1826.60	913.30	0.00	0.0000
	0.50	2283.25	913.30	0.00	0.0000
6	0.00	2283.25	913.30	0.00	1342.9850
	0.50	2616.05	437.54	0.00	1047.5170
7	0.00	2616.05	437.54	0.00	1047.5170
	0.50	2739.40	73.40	0.00	783.8097
8	0.00	2739.40	73.40	0.00	783.8097
	0.50	2705.87	-192.19	0.00	553.4226
9	0.00	2705.87	-192.19	0.00	553.4226
	0.50	2561.42	-372.49	0.00	355.9931
10	0.00	2561.42	-372.49	0.00	355.9931
	0.50	2345.45	-480.35	0.00	189.7959
11	0.00	2345.45	-480.35	0.00	189.7959
	0.50	2091.15	-527.71	0.00	52.2253

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12	0.00	2091.15	-527.71	0.00	52.2253
	0.50	1826.01	-525.41	0.00	-59.7987
13	0.00	1826.01	-525.41	0.00	-19.9329
	0.50	1566.34	-511.26	0.00	-49.8331
14	0.00	1566.34	-511.26	0.00	-49.8331
	0.50	1316.51	-486.50	0.00	-73.3488
15	0.00	1316.51	-486.50	0.00	-73.3488
	0.50	1081.22	-453.46	0.00	-91.4962
16	0.00	1081.22	-453.46	0.00	-91.4962
	0.50	864.10	-414.09	0.00	-105.2327
17	0.00	864.10	-414.09	0.00	-105.2327
	0.50	667.91	-369.98	0.00	-115.4418
18	0.00	667.91	-369.98	0.00	-115.4418
	0.50	494.70	-322.36	0.00	-122.9221
19	0.00	494.70	-322.36	0.00	-122.9221
	0.50	345.98	-272.19	0.00	-128.3787
20	0.00	345.98	-272.19	0.00	-128.3787
	0.50	222.83	-220.13	0.00	-132.4172
21	0.00	222.83	-220.13	0.00	-132.4172
	0.50	126.08	-166.67	0.00	-135.5389
22	0.00	126.08	-166.67	0.00	-135.5389
	0.50	56.35	-112.08	0.00	-138.1378
23	0.00	56.35	-112.08	0.00	-138.1378
	0.50	14.16	-56.50	0.00	-140.4978
24	0.00	14.16	-56.50	0.00	-140.4978
	0.50	0.00	0.00	0.00	-142.7906

Condizione : Mqpv

asta	x	M	T	N	P
1	0.00	456.60	0.00	0.00	0.0000
	0.50	456.60	0.00	0.00	0.0000
2	0.00	456.60	0.00	0.00	0.0000
	0.50	456.60	0.00	0.00	0.0000
3	0.00	456.60	0.00	0.00	0.0000
	0.50	456.60	0.00	0.00	0.0000
4	0.00	456.60	0.00	0.00	0.0000
	0.50	456.60	0.00	0.00	0.0000
5	0.00	456.60	0.00	0.00	0.0000
	0.50	456.60	0.00	0.00	0.0000
6	0.00	456.60	0.00	0.00	118.1154
	0.50	446.05	-39.82	0.00	82.4803
7	0.00	446.05	-39.82	0.00	82.4803

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	0.50	418.96	-66.52	0.00	52.2799
8	0.00	418.96	-66.52	0.00	52.2799
	0.50	381.36	-82.21	0.00	27.1893
9	0.00	381.36	-82.21	0.00	27.1893
	0.50	338.26	-88.83	0.00	6.7540
10	0.00	338.26	-88.83	0.00	6.7540
	0.50	293.75	-88.15	0.00	-9.5485
11	0.00	293.75	-88.15	0.00	-9.5485
	0.50	251.08	-81.69	0.00	-22.2590
12	0.00	251.08	-81.69	0.00	-22.2590
	0.50	212.79	-70.80	0.00	-31.8965
13	0.00	212.79	-70.80	0.00	-10.6322
	0.50	178.54	-66.06	0.00	-12.9763
14	0.00	178.54	-66.06	0.00	-12.9763
	0.50	146.86	-60.54	0.00	-14.5923
15	0.00	146.86	-60.54	0.00	-14.5923
	0.50	118.08	-54.50	0.00	-15.6090
16	0.00	118.08	-54.50	0.00	-15.6090
	0.50	92.41	-48.15	0.00	-16.1435
17	0.00	92.41	-48.15	0.00	-16.1435
	0.50	69.95	-41.67	0.00	-16.3005
18	0.00	69.95	-41.67	0.00	-16.3005
	0.50	50.74	-35.19	0.00	-16.1715
19	0.00	50.74	-35.19	0.00	-16.1715
	0.50	34.75	-28.80	0.00	-15.8346
20	0.00	34.75	-28.80	0.00	-15.8346
	0.50	21.91	-22.58	0.00	-15.3552
21	0.00	21.91	-22.58	0.00	-15.3552
	0.50	12.13	-16.56	0.00	-14.7854
22	0.00	12.13	-16.56	0.00	-14.7854
	0.50	5.31	-10.79	0.00	-14.1652
23	0.00	5.31	-10.79	0.00	-14.1652
	0.50	1.31	-5.26	0.00	-13.5224
24	0.00	1.31	-5.26	0.00	-13.5224
	0.50	0.00	0.00	0.00	-12.8734
Condizione : Msacpv					
asta	x	M	T	N	P
1	0.00	217.40	0.00	0.00	0.0000
	0.50	217.40	0.00	0.00	0.0000
2	0.00	217.40	0.00	0.00	0.0000
	0.50	217.40	0.00	0.00	0.0000

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3	0.00	217.40	0.00	0.00	0.0000
	0.50	217.40	0.00	0.00	0.0000
4	0.00	217.40	0.00	0.00	0.0000
	0.50	217.40	0.00	0.00	0.0000
5	0.00	217.40	0.00	0.00	0.0000
	0.50	217.40	0.00	0.00	0.0000
6	0.00	217.40	0.00	0.00	56.2380
	0.50	212.38	-18.96	0.00	39.2712
7	0.00	212.38	-18.96	0.00	39.2712
	0.50	199.48	-31.67	0.00	24.8919
8	0.00	199.48	-31.67	0.00	24.8919
	0.50	181.58	-39.14	0.00	12.9456
9	0.00	181.58	-39.14	0.00	12.9456
	0.50	161.06	-42.30	0.00	3.2158
10	0.00	161.06	-42.30	0.00	3.2158
	0.50	139.86	-41.97	0.00	-4.5463
11	0.00	139.86	-41.97	0.00	-4.5463
	0.50	119.54	-38.90	0.00	-10.5981
12	0.00	119.54	-38.90	0.00	-10.5981
	0.50	101.32	-33.71	0.00	-15.1868
13	0.00	101.32	-33.71	0.00	-5.0623
	0.50	85.01	-31.45	0.00	-6.1784
14	0.00	85.01	-31.45	0.00	-6.1784
	0.50	69.92	-28.83	0.00	-6.9478
15	0.00	69.92	-28.83	0.00	-6.9478
	0.50	56.22	-25.95	0.00	-7.4319
16	0.00	56.22	-25.95	0.00	-7.4319
	0.50	44.00	-22.93	0.00	-7.6864
17	0.00	44.00	-22.93	0.00	-7.6864
	0.50	33.31	-19.84	0.00	-7.7611
18	0.00	33.31	-19.84	0.00	-7.7611
	0.50	24.16	-16.75	0.00	-7.6997
19	0.00	24.16	-16.75	0.00	-7.6997
	0.50	16.54	-13.71	0.00	-7.5393
20	0.00	16.54	-13.71	0.00	-7.5393
	0.50	10.43	-10.75	0.00	-7.3110
21	0.00	10.43	-10.75	0.00	-7.3110
	0.50	5.78	-7.89	0.00	-7.0397
22	0.00	5.78	-7.89	0.00	-7.0397
	0.50	2.53	-5.14	0.00	-6.7444
23	0.00	2.53	-5.14	0.00	-6.7444

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0.50 0.62 -2.51 0.00 -6.4384

24 0.00 0.62 -2.51 0.00 -6.4384

0.50 0.00 0.00 0.00 -6.1294

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1971.70	0.00	0.0000
	0.50	985.85	1971.70	0.00	0.0000
2	0.00	985.85	1971.70	0.00	0.0000
	0.50	1971.70	1971.70	0.00	0.0000
3	0.00	1971.70	1971.70	0.00	0.0000
	0.50	2957.55	1971.70	0.00	0.0000
4	0.00	2957.55	1971.70	0.00	0.0000
	0.50	3943.40	1971.70	0.00	0.0000
5	0.00	3943.40	1971.70	0.00	0.0000
	0.50	4929.25	1971.70	0.00	0.0000
6	0.00	4929.25	1971.70	0.00	2899.3380
	0.50	5647.72	944.60	0.00	2261.4600
7	0.00	5647.72	944.60	0.00	2261.4600
	0.50	5914.02	158.45	0.00	1692.1480
8	0.00	5914.02	158.45	0.00	1692.1480
	0.50	5841.64	-414.92	0.00	1194.7710
9	0.00	5841.64	-414.92	0.00	1194.7710
	0.50	5529.79	-804.17	0.00	768.5450
10	0.00	5529.79	-804.17	0.00	768.5450
	0.50	5063.53	-1037.01	0.00	409.7459
11	0.00	5063.53	-1037.01	0.00	409.7459
	0.50	4514.53	-1139.27	0.00	112.7480
12	0.00	4514.53	-1139.27	0.00	112.7480
	0.50	3942.12	-1134.29	0.00	-129.0980
13	0.00	3942.12	-1134.29	0.00	-43.0327
	0.50	3381.54	-1103.75	0.00	-107.5834
14	0.00	3381.54	-1103.75	0.00	-107.5834
	0.50	2842.18	-1050.30	0.00	-158.3509
15	0.00	2842.18	-1050.30	0.00	-158.3509
	0.50	2334.22	-978.97	0.00	-197.5290
16	0.00	2334.22	-978.97	0.00	-197.5290
	0.50	1865.49	-893.98	0.00	-227.1844
17	0.00	1865.49	-893.98	0.00	-227.1844
	0.50	1441.94	-798.74	0.00	-249.2246
18	0.00	1441.94	-798.74	0.00	-249.2246
	0.50	1068.00	-695.94	0.00	-265.3736

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19	0.00	1068.00	-695.94	0.00	-265.3736
	0.50	746.92	-587.62	0.00	-277.1537
20	0.00	746.92	-587.62	0.00	-277.1537
	0.50	481.06	-475.24	0.00	-285.8722
21	0.00	481.06	-475.24	0.00	-285.8722
	0.50	272.18	-359.82	0.00	-292.6116
22	0.00	272.18	-359.82	0.00	-292.6116
	0.50	121.64	-241.96	0.00	-298.2224
23	0.00	121.64	-241.96	0.00	-298.2224
	0.50	30.58	-121.98	0.00	-303.3173
24	0.00	30.58	-121.98	0.00	-303.3173
	0.50	0.00	0.00	0.00	-308.2672

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.33	-1840.00	0.00	0.0000
3	0.00	-613.33	-1840.00	0.00	0.0000
	0.50	-2070.00	-4140.00	0.00	0.0000
4	0.00	-2070.00	-4140.00	0.00	0.0000
	0.50	-4906.67	-7360.00	0.00	0.0000
5	0.00	-4906.67	-7360.00	0.00	0.0000
	0.50	-9583.25	-11499.50	0.00	0.0000
6	0.00	-9583.25	-11499.50	0.00	-11951.9100
	0.50	-14216.31	-7180.69	0.00	-9727.3940
7	0.00	-14216.31	-7180.69	0.00	-9727.3940
	0.50	-16906.46	-3716.40	0.00	-7674.6520
8	0.00	-16906.46	-3716.40	0.00	-7674.6520
	0.50	-18062.54	-1030.78	0.00	-5826.9760
9	0.00	-18062.54	-1030.78	0.00	-5826.9760
	0.50	-18052.83	961.40	0.00	-4198.8680
10	0.00	-18052.83	961.40	0.00	-4198.8680
	0.50	-17202.02	2348.19	0.00	-2790.5420
11	0.00	-17202.02	2348.19	0.00	-2790.5420
	0.50	-15791.19	3215.50	0.00	-1591.8860
12	0.00	-15791.19	3215.50	0.00	-1591.8860
	0.50	-14059.65	3643.77	0.00	-585.8998
13	0.00	-14059.65	3643.77	0.00	-195.2999
	0.50	-12227.99	3664.43	0.00	82.7821

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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14	0.00	-12227.99	3664.43	0.00	82.7821
	0.50	-10412.00	3584.35	0.00	311.0432
15	0.00	-10412.00	3584.35	0.00	311.0432
	0.50	-8657.34	3421.93	0.00	496.8659
16	0.00	-8657.34	3421.93	0.00	496.8659
	0.50	-7001.19	3192.66	0.00	647.3860
17	0.00	-7001.19	3192.66	0.00	647.3860
	0.50	-5473.68	2909.27	0.00	769.3402
18	0.00	-5473.68	2909.27	0.00	769.3402
	0.50	-4099.24	2581.88	0.00	868.9431
19	0.00	-4099.24	2581.88	0.00	868.9431
	0.50	-2897.83	2218.28	0.00	951.7874
20	0.00	-2897.83	2218.28	0.00	951.7874
	0.50	-1886.04	1824.15	0.00	1022.7620
21	0.00	-1886.04	1824.15	0.00	1022.7620
	0.50	-1078.10	1403.39	0.00	1085.9830
22	0.00	-1078.10	1403.39	0.00	1085.9830
	0.50	-486.68	958.39	0.00	1144.7400
23	0.00	-486.68	958.39	0.00	1144.7400
	0.50	-123.54	490.43	0.00	1201.4350
24	0.00	-123.54	490.43	0.00	1201.4350
	0.50	0.00	0.00	0.00	1257.5470

Condizione : Nbp

asta	x	M	T	N	P
1	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
2	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
3	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
4	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
5	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
6	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
7	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
8	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
9	0.00	0.00	0.00	-4725.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	0.00	0.00	-4725.00	0.0000
10	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
11	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
12	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
13	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
14	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
15	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
16	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
17	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
18	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
19	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
20	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
21	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
22	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
23	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000
24	0.00	0.00	0.00	-4725.00	0.0000
	0.50	0.00	0.00	-4725.00	0.0000

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	23075.50	8599.80	-4725.00	0.0000
	0.50	27342.23	8313.80	-4725.00	0.0000
2	0.00	27342.23	8313.80	-4725.00	0.0000
	0.50	31235.97	7107.80	-4725.00	0.0000
3	0.00	31235.97	7107.80	-4725.00	0.0000
	0.50	34296.70	4981.80	-4725.00	0.0000
4	0.00	34296.70	4981.80	-4725.00	0.0000
	0.50	36064.44	1935.80	-4725.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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60001-00	IN05	00	DE2CLIM0006-007	0	231 di 394
5	0.00	36064.44	1935.80	-4725.00	0.0000
	0.50	36079.25	-2029.70	-4725.00	0.0000
6	0.00	36079.25	-2029.70	-4725.00	7846.1680
	0.50	34410.56	-4482.12	-4725.00	5394.8170
7	0.00	34410.56	-4482.12	-4725.00	5394.8170
	0.50	31745.94	-6041.32	-4725.00	3363.0110
8	0.00	31745.94	-6041.32	-4725.00	3363.0110
	0.50	28491.16	-6868.55	-4725.00	1718.5960
9	0.00	28491.16	-6868.55	-4725.00	1718.5960
	0.50	24974.83	-7110.63	-4725.00	422.1286
10	0.00	24974.83	-7110.63	-4725.00	422.1286
	0.50	21456.23	-6897.89	-4725.00	-569.1037
11	0.00	21456.23	-6897.89	-4725.00	-569.1037
	0.50	18133.78	-6343.50	-4725.00	-1297.9020
12	0.00	18133.78	-6343.50	-4725.00	-1297.9020
	0.50	15153.50	-5543.97	-4725.00	-1804.7250
13	0.00	15153.50	-5543.97	-4725.00	-601.5750
	0.50	12504.54	-5044.78	-4725.00	-708.6680
14	0.00	12504.54	-5044.78	-4725.00	-708.6680
	0.50	10114.06	-4513.40	-4725.00	-764.7308
15	0.00	10114.06	-4513.40	-4725.00	-764.7308
	0.50	7993.42	-3968.19	-4725.00	-779.4984
16	0.00	7993.42	-3968.19	-4725.00	-779.4984
	0.50	6145.70	-3423.88	-4725.00	-761.6088
17	0.00	6145.70	-3423.88	-4725.00	-761.6088
	0.50	4567.46	-2891.95	-4725.00	-718.5906
18	0.00	4567.46	-2891.95	-4725.00	-718.5906
	0.50	3250.23	-2381.10	-4725.00	-656.8765
19	0.00	3250.23	-2381.10	-4725.00	-656.8765
	0.50	2181.78	-1897.68	-4725.00	-581.8367
20	0.00	2181.78	-1897.68	-4725.00	-581.8367
	0.50	1347.23	-1446.12	-4725.00	-497.8292
21	0.00	1347.23	-1446.12	-4725.00	-497.8292
	0.50	729.87	-1029.27	-4725.00	-408.2594
22	0.00	729.87	-1029.27	-4725.00	-408.2594
	0.50	311.89	-648.82	-4725.00	-315.6485
23	0.00	311.89	-648.82	-4725.00	-315.6485
	0.50	74.84	-305.63	-4725.00	-221.7055
24	0.00	74.84	-305.63	-4725.00	-221.7055
	0.50	0.00	0.00	-4725.00	-127.4026

Inviluppo sollecitazioni

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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asta	x		M	T	N	P
1	0.00	MAX	23075.50	8599.80	-4725.00	
		MIN	23075.50	8599.80	-4725.00	
	0.50	MAX	27342.23	8313.80	-4725.00	
		MIN	27342.23	8313.80	-4725.00	
2	0.00	MAX	27342.23	8313.80	-4725.00	
		MIN	27342.23	8313.80	-4725.00	
	0.50	MAX	31235.97	7107.80	-4725.00	
		MIN	31235.97	7107.80	-4725.00	
3	0.00	MAX	31235.97	7107.80	-4725.00	
		MIN	31235.97	7107.80	-4725.00	
	0.50	MAX	34296.70	4981.80	-4725.00	
		MIN	34296.70	4981.80	-4725.00	
4	0.00	MAX	34296.70	4981.80	-4725.00	
		MIN	34296.70	4981.80	-4725.00	
	0.50	MAX	36064.44	1935.80	-4725.00	
		MIN	36064.44	1935.80	-4725.00	
5	0.00	MAX	36064.44	1935.80	-4725.00	
		MIN	36064.44	1935.80	-4725.00	
	0.50	MAX	36079.25	-2029.70	-4725.00	
		MIN	36079.25	-2029.70	-4725.00	
6	0.00	MAX	36079.25	-2029.70	-4725.00	7846.1680
		MIN	36079.25	-2029.70	-4725.00	7846.1680
	0.50	MAX	34410.56	-4482.12	-4725.00	5394.8170
		MIN	34410.56	-4482.12	-4725.00	5394.8170
7	0.00	MAX	34410.56	-4482.12	-4725.00	5394.8170
		MIN	34410.56	-4482.12	-4725.00	5394.8170
	0.50	MAX	31745.94	-6041.32	-4725.00	3363.0110
		MIN	31745.94	-6041.32	-4725.00	3363.0110
8	0.00	MAX	31745.94	-6041.32	-4725.00	3363.0110
		MIN	31745.94	-6041.32	-4725.00	3363.0110
	0.50	MAX	28491.16	-6868.55	-4725.00	1718.5960
		MIN	28491.16	-6868.55	-4725.00	1718.5960
9	0.00	MAX	28491.16	-6868.55	-4725.00	1718.5960
		MIN	28491.16	-6868.55	-4725.00	1718.5960
	0.50	MAX	24974.83	-7110.63	-4725.00	422.1286
		MIN	24974.83	-7110.63	-4725.00	422.1286
10	0.00	MAX	24974.83	-7110.63	-4725.00	422.1286
		MIN	24974.83	-7110.63	-4725.00	422.1286
	0.50	MAX	21456.23	-6897.89	-4725.00	-569.1037
		MIN	21456.23	-6897.89	-4725.00	-569.1037
11	0.00	MAX	21456.23	-6897.89	-4725.00	-569.1037
		MIN	21456.23	-6897.89	-4725.00	-569.1037
	0.50	MAX	18133.78	-6343.50	-4725.00	-1297.9020
		MIN	18133.78	-6343.50	-4725.00	-1297.9020
12	0.00	MAX	18133.78	-6343.50	-4725.00	-1297.9020
		MIN	18133.78	-6343.50	-4725.00	-1297.9020
	0.50	MAX	15153.50	-5543.97	-4725.00	-1804.7250
		MIN	15153.50	-5543.97	-4725.00	-1804.7250

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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13	0.00	MAX	15153.50	-5543.97	-4725.00	-601.5750	
		MIN	15153.50	-5543.97	-4725.00	-601.5750	
	0.50	MAX	12504.54	-5044.78	-4725.00	-708.6680	
		MIN	12504.54	-5044.78	-4725.00	-708.6680	
14	0.00	MAX	12504.54	-5044.78	-4725.00	-708.6680	
		MIN	12504.54	-5044.78	-4725.00	-708.6680	
	0.50	MAX	10114.06	-4513.40	-4725.00	-764.7308	
		MIN	10114.06	-4513.40	-4725.00	-764.7308	
15	0.00	MAX	10114.06	-4513.40	-4725.00	-764.7308	
		MIN	10114.06	-4513.40	-4725.00	-764.7308	
	0.50	MAX	7993.42	-3968.19	-4725.00	-779.4984	
		MIN	7993.42	-3968.19	-4725.00	-779.4984	
16	0.00	MAX	7993.42	-3968.19	-4725.00	-779.4984	
		MIN	7993.42	-3968.19	-4725.00	-779.4984	
	0.50	MAX	6145.70	-3423.88	-4725.00	-761.6088	
		MIN	6145.70	-3423.88	-4725.00	-761.6088	
17	0.00	MAX	6145.70	-3423.88	-4725.00	-761.6088	
		MIN	6145.70	-3423.88	-4725.00	-761.6088	
	0.50	MAX	4567.46	-2891.95	-4725.00	-718.5906	
		MIN	4567.46	-2891.95	-4725.00	-718.5906	
18	0.00	MAX	4567.46	-2891.95	-4725.00	-718.5906	
		MIN	4567.46	-2891.95	-4725.00	-718.5906	
	0.50	MAX	3250.23	-2381.10	-4725.00	-656.8765	
		MIN	3250.23	-2381.10	-4725.00	-656.8765	
19	0.00	MAX	3250.23	-2381.10	-4725.00	-656.8765	
		MIN	3250.23	-2381.10	-4725.00	-656.8765	
	0.50	MAX	2181.78	-1897.68	-4725.00	-581.8367	
		MIN	2181.78	-1897.68	-4725.00	-581.8367	
20	0.00	MAX	2181.78	-1897.68	-4725.00	-581.8367	
		MIN	2181.78	-1897.68	-4725.00	-581.8367	
	0.50	MAX	1347.23	-1446.12	-4725.00	-497.8292	
		MIN	1347.23	-1446.12	-4725.00	-497.8292	
21	0.00	MAX	1347.23	-1446.12	-4725.00	-497.8292	
		MIN	1347.23	-1446.12	-4725.00	-497.8292	
	0.50	MAX	729.87	-1029.27	-4725.00	-408.2594	
		MIN	729.87	-1029.27	-4725.00	-408.2594	
22	0.00	MAX	729.87	-1029.27	-4725.00	-408.2594	
		MIN	729.87	-1029.27	-4725.00	-408.2594	
	0.50	MAX	311.89	-648.82	-4725.00	-315.6485	
		MIN	311.89	-648.82	-4725.00	-315.6485	
23	0.00	MAX	311.89	-648.82	-4725.00	-315.6485	
		MIN	311.89	-648.82	-4725.00	-315.6485	
	0.50	MAX	74.84	-305.63	-4725.00	-221.7055	
		MIN	74.84	-305.63	-4725.00	-221.7055	
24	0.00	MAX	74.84	-305.63	-4725.00	-221.7055	
		MIN	74.84	-305.63	-4725.00	-221.7055	
	0.50	MAX	0.00	0.00	-4725.00	-127.4026	
		MIN	0.00	0.00	-4725.00	-127.4026	

Massimi e minimi

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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asta	Mmax	X	comb.	Mmin	X	comb.
1	27342.23	0.50	1	23075.50	0.00	1
2	31235.97	0.50	1	27342.23	0.00	1
3	34296.70	0.50	1	31235.97	0.00	1
4	36064.44	0.50	1	34296.70	0.00	1
5	36319.98	0.26	1	36064.44	0.00	1
6	36079.25	0.00	1	34410.56	0.50	1
7	34410.56	0.00	1	31745.94	0.50	1
8	31745.94	0.00	1	28491.16	0.50	1
9	28491.16	0.00	1	24974.83	0.50	1
10	24974.83	0.00	1	21456.23	0.50	1
11	21456.23	0.00	1	18133.78	0.50	1
12	18133.78	0.00	1	15153.50	0.50	1
13	15153.50	0.00	1	12504.54	0.50	1
14	12504.54	0.00	1	10114.06	0.50	1
15	10114.06	0.00	1	7993.42	0.50	1
16	7993.42	0.00	1	6145.70	0.50	1
17	6145.70	0.00	1	4567.46	0.50	1
18	4567.46	0.00	1	3250.23	0.50	1
19	3250.23	0.00	1	2181.78	0.50	1
20	2181.78	0.00	1	1347.23	0.50	1
21	1347.23	0.00	1	729.87	0.50	1
22	729.87	0.00	1	311.89	0.50	1
23	311.89	0.00	1	74.84	0.50	1
24	74.84	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	0	0
22	0.00	-10.50	0	0	0
23	0.00	-11.00	0	0	0
24	0.00	-11.50	0	0	0
25	0.00	-12.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50
20	20	21	0.50
21	21	22	0.50
22	22	23	0.50
23	23	24	0.50
24	24	25	0.50



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asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
5	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
21	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
22	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
23	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
24	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23
21	1214.45	607.23
22	1214.45	607.23
23	1214.45	607.23

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24 1214.45 607.23

Peso totale struttura = 14573.40

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-17085.90

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	5062.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5315.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	348.00	348.00	LL
	6	0.00	0.00	348.00	348.00	LL
	7	0.00	0.00	348.00	348.00	LL
	8	0.00	0.00	348.00	348.00	LL
	9	0.00	0.00	348.00	348.00	LL
	10	0.00	0.00	348.00	348.00	LL
	11	0.00	0.00	348.00	348.00	LL
	12	0.00	0.00	348.00	348.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL
	21	0.00	0.00	472.00	472.00	LL
	22	0.00	0.00	472.00	472.00	LL
	23	0.00	0.00	472.00	472.00	LL
	24	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00



Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3680.00	LL
	3	0.00	0.00	-3680.00	-5520.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250)	T(250)	Mtr(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
FESSURAZIONE	1.00	0.5	0.5	0.5	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
FESSURAZIONE	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000

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3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000
21	0.00	0.00	0.00	-12144.50	0.0000
	0.50	0.00	0.00	-12751.73	0.0000
22	0.00	0.00	0.00	-12751.73	0.0000
	0.50	0.00	0.00	-13358.95	0.0000
23	0.00	0.00	0.00	-13358.95	0.0000

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0.50 0.00 0.00 -13966.18 0.0000

24 0.00 0.00 0.00 -13966.18 0.0000

0.50 0.00 0.00 -14573.40 0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
2	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
3	0.00	17085.90	0.00	0.00	0.0000
	0.50	17085.90	0.00	0.00	0.0000
4	0.00	17085.90	0.00	0.00	4392.2710
	0.50	16692.76	-1486.27	0.00	3094.4680
5	0.00	16692.76	-1486.27	0.00	3094.4680
	0.50	15679.08	-2495.73	0.00	2000.0480
6	0.00	15679.08	-2495.73	0.00	2000.0480
	0.50	14263.32	-3107.28	0.00	1096.8460
7	0.00	14263.32	-3107.28	0.00	1096.8460
	0.50	12625.91	-3393.91	0.00	367.7414
8	0.00	12625.91	-3393.91	0.00	367.7414
	0.50	10912.59	-3421.16	0.00	-207.1290
9	0.00	10912.59	-3421.16	0.00	-207.1290
	0.50	9238.37	-3246.41	0.00	-648.5880
10	0.00	9238.37	-3246.41	0.00	-648.5880
	0.50	7691.63	-2918.76	0.00	-977.0076
11	0.00	7691.63	-2918.76	0.00	-977.0076
	0.50	6338.17	-2479.50	0.00	-1211.2250
12	0.00	6338.17	-2479.50	0.00	-1211.2250
	0.50	5224.99	-1962.81	0.00	-1367.7330
13	0.00	5224.99	-1962.81	0.00	-455.9111
	0.50	4290.24	-1774.17	0.00	-486.7335
14	0.00	4290.24	-1774.17	0.00	-486.7335
	0.50	3452.26	-1576.84	0.00	-500.0450
15	0.00	3452.26	-1576.84	0.00	-500.0450
	0.50	2713.79	-1377.12	0.00	-499.2584
16	0.00	2713.79	-1377.12	0.00	-499.2584
	0.50	2074.70	-1180.02	0.00	-487.3825
17	0.00	2074.70	-1180.02	0.00	-487.3825
	0.50	1532.67	-989.43	0.00	-467.0214
18	0.00	1532.67	-989.43	0.00	-467.0214
	0.50	1083.68	-808.29	0.00	-440.3849

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19	0.00	1083.68	-808.29	0.00	-440.3849
	0.50	722.46	-638.70	0.00	-409.3037
20	0.00	722.46	-638.70	0.00	-409.3037
	0.50	442.81	-482.15	0.00	-375.2515
21	0.00	442.81	-482.15	0.00	-375.2515
	0.50	237.97	-339.58	0.00	-339.3700
22	0.00	237.97	-339.58	0.00	-339.3700
	0.50	100.80	-211.55	0.00	-302.4961
23	0.00	100.80	-211.55	0.00	-302.4961
	0.50	23.96	-98.32	0.00	-265.1910
24	0.00	23.96	-98.32	0.00	-265.1910
	0.50	0.00	0.00	0.00	-227.7704

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	5062.50	0.00	0.0000
	0.50	2531.25	5062.50	0.00	0.0000
2	0.00	2531.25	5062.50	0.00	0.0000
	0.50	5062.50	5062.50	0.00	0.0000
3	0.00	5062.50	5062.50	0.00	0.0000
	0.50	7593.75	5062.50	0.00	0.0000
4	0.00	7593.75	5062.50	0.00	6049.2330
	0.50	9563.29	2896.97	0.00	4826.4750
5	0.00	9563.29	2896.97	0.00	4826.4750
	0.50	10568.29	1196.65	0.00	3719.6160
6	0.00	10568.29	1196.65	0.00	3719.6160
	0.50	10829.32	-87.52	0.00	2741.1620
7	0.00	10829.32	-87.52	0.00	2741.1620
	0.50	10541.44	-1007.70	0.00	1894.5030
8	0.00	10541.44	-1007.70	0.00	1894.5030
	0.50	9873.59	-1615.98	0.00	1176.2930
9	0.00	9873.59	-1615.98	0.00	1176.2930
	0.50	8969.13	-1962.12	0.00	578.5147
10	0.00	8969.13	-1962.12	0.00	578.5147
	0.50	7947.47	-2092.06	0.00	90.2361
11	0.00	7947.47	-2092.06	0.00	90.2361
	0.50	6906.20	-2047.03	0.00	-300.9300
12	0.00	6906.20	-2047.03	0.00	-300.9300
	0.50	5923.55	-1863.22	0.00	-607.6301
13	0.00	5923.55	-1863.22	0.00	-202.5434
	0.50	5014.92	-1766.12	0.00	-280.6188

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14	0.00	5014.92	-1766.12	0.00	-280.6188
	0.50	4161.91	-1642.07	0.00	-338.2449
15	0.00	4161.91	-1642.07	0.00	-338.2449
	0.50	3376.09	-1498.53	0.00	-378.8930
16	0.00	3376.09	-1498.53	0.00	-378.8930
	0.50	2665.60	-1341.63	0.00	-405.7617
17	0.00	2665.60	-1341.63	0.00	-405.7617
	0.50	2035.86	-1176.28	0.00	-421.7435
18	0.00	2035.86	-1176.28	0.00	-421.7435
	0.50	1490.09	-1006.29	0.00	-429.4029
19	0.00	1490.09	-1006.29	0.00	-429.4029
	0.50	1029.86	-834.53	0.00	-430.9628
20	0.00	1029.86	-834.53	0.00	-430.9628
	0.50	655.52	-663.04	0.00	-428.2980
21	0.00	655.52	-663.04	0.00	-428.2980
	0.50	366.54	-493.20	0.00	-422.9337
22	0.00	366.54	-493.20	0.00	-422.9337
	0.50	161.90	-325.84	0.00	-416.0474
23	0.00	161.90	-325.84	0.00	-416.0474
	0.50	40.22	-161.39	0.00	-408.4735
24	0.00	40.22	-161.39	0.00	-408.4735
	0.50	0.00	0.00	0.00	-400.7081

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
2	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
3	0.00	5315.60	0.00	0.00	0.0000
	0.50	5315.60	0.00	0.00	0.0000
4	0.00	5315.60	0.00	0.00	1366.4810
	0.50	5193.29	-462.39	0.00	962.7208
5	0.00	5193.29	-462.39	0.00	962.7208
	0.50	4877.92	-776.45	0.00	622.2357
6	0.00	4877.92	-776.45	0.00	622.2357
	0.50	4437.47	-966.71	0.00	341.2401
7	0.00	4437.47	-966.71	0.00	341.2401
	0.50	3928.05	-1055.88	0.00	114.4081
8	0.00	3928.05	-1055.88	0.00	114.4081
	0.50	3395.02	-1064.36	0.00	-64.4400
9	0.00	3395.02	-1064.36	0.00	-64.4400

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	0.50	2874.15	-1009.99	0.00	-201.7824
10	0.00	2874.15	-1009.99	0.00	-201.7824
	0.50	2392.94	-908.06	0.00	-303.9571
11	0.00	2392.94	-908.06	0.00	-303.9571
	0.50	1971.87	-771.40	0.00	-376.8245
12	0.00	1971.87	-771.40	0.00	-376.8245
	0.50	1625.55	-610.65	0.00	-425.5160
13	0.00	1625.55	-610.65	0.00	-141.8387
	0.50	1334.74	-551.96	0.00	-151.4278
14	0.00	1334.74	-551.96	0.00	-151.4278
	0.50	1074.04	-490.57	0.00	-155.5691
15	0.00	1074.04	-490.57	0.00	-155.5691
	0.50	844.29	-428.44	0.00	-155.3245
16	0.00	844.29	-428.44	0.00	-155.3245
	0.50	645.46	-367.12	0.00	-151.6297
17	0.00	645.46	-367.12	0.00	-151.6297
	0.50	476.83	-307.82	0.00	-145.2952
18	0.00	476.83	-307.82	0.00	-145.2952
	0.50	337.15	-251.47	0.00	-137.0083
19	0.00	337.15	-251.47	0.00	-137.0083
	0.50	224.76	-198.71	0.00	-127.3386
20	0.00	224.76	-198.71	0.00	-127.3386
	0.50	137.76	-150.00	0.00	-116.7446
21	0.00	137.76	-150.00	0.00	-116.7446
	0.50	74.04	-105.65	0.00	-105.5815
22	0.00	74.04	-105.65	0.00	-105.5815
	0.50	31.36	-65.81	0.00	-94.1097
23	0.00	31.36	-65.81	0.00	-94.1097
	0.50	7.45	-30.59	0.00	-82.5037
24	0.00	7.45	-30.59	0.00	-82.5037
	0.50	0.00	0.00	0.00	-70.8617

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000
	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	697.2951
	0.50	627.16	421.94	0.00	677.8745

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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60001-00	IN05	00	DE2CLIM0006-007	0	244 di 394
5	0.00	627.16	421.94	0.00	677.8745
	0.50	814.50	328.20	0.00	666.0697
6	0.00	814.50	328.20	0.00	666.0697
	0.50	955.84	237.26	0.00	664.1727
7	0.00	955.84	237.26	0.00	664.1727
	0.50	1051.51	144.80	0.00	673.9113
8	0.00	1051.51	144.80	0.00	673.9113
	0.50	1099.57	45.93	0.00	696.4527
9	0.00	1099.57	45.93	0.00	696.4527
	0.50	1095.50	-64.59	0.00	732.3798
10	0.00	1095.50	-64.59	0.00	732.3798
	0.50	1032.15	-192.11	0.00	781.6355
11	0.00	1032.15	-192.11	0.00	781.6355
	0.50	899.69	-341.82	0.00	843.4355
12	0.00	899.69	-341.82	0.00	843.4355
	0.50	685.84	-518.43	0.00	916.1484
13	0.00	685.84	-518.43	0.00	305.3828
	0.50	454.30	-409.55	0.00	332.4083
14	0.00	454.30	-409.55	0.00	332.4083
	0.50	274.42	-311.86	0.00	361.3021
15	0.00	274.42	-311.86	0.00	361.3021
	0.50	140.48	-225.93	0.00	391.3294
16	0.00	140.48	-225.93	0.00	391.3294
	0.50	46.47	-152.12	0.00	421.9426
17	0.00	46.47	-152.12	0.00	421.9426
	0.50	-13.69	-90.57	0.00	452.7566
18	0.00	-13.69	-90.57	0.00	452.7566
	0.50	-46.15	-41.31	0.00	483.5242
19	0.00	-46.15	-41.31	0.00	483.5242
	0.50	-57.04	-4.28	0.00	514.1112
20	0.00	-57.04	-4.28	0.00	514.1112
	0.50	-52.46	20.58	0.00	544.4710
21	0.00	-52.46	20.58	0.00	544.4710
	0.50	-38.46	33.39	0.00	574.6204
22	0.00	-38.46	33.39	0.00	574.6204
	0.50	-21.07	34.19	0.00	604.6142
23	0.00	-21.07	34.19	0.00	604.6142
	0.50	-6.26	23.06	0.00	634.5212
24	0.00	-6.26	23.06	0.00	634.5212
	0.50	0.00	0.00	0.00	664.3999

Condizione : Spinta attiva

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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asta	x	M	T	N	P
1	0.00	0.00	651.00	0.00	0.0000
	0.50	376.25	868.50	0.00	0.0000
2	0.00	376.25	868.50	0.00	0.0000
	0.50	810.50	868.50	0.00	0.0000
3	0.00	810.50	868.50	0.00	0.0000
	0.50	1244.75	868.50	0.00	0.0000
4	0.00	1244.75	868.50	0.00	1022.8690
	0.50	1583.97	502.04	0.00	817.5041
5	0.00	1583.97	502.04	0.00	817.5041
	0.50	1759.83	213.76	0.00	631.3313
6	0.00	1759.83	213.76	0.00	631.3313
	0.50	1809.41	-4.47	0.00	466.5382
7	0.00	1809.41	-4.47	0.00	466.5382
	0.50	1765.58	-161.35	0.00	323.7642
8	0.00	1765.58	-161.35	0.00	323.7642
	0.50	1656.83	-265.62	0.00	202.5027
9	0.00	1656.83	-265.62	0.00	202.5027
	0.50	1507.34	-325.59	0.00	101.4491
10	0.00	1507.34	-325.59	0.00	101.4491
	0.50	1337.32	-349.00	0.00	18.7971
11	0.00	1337.32	-349.00	0.00	18.7971
	0.50	1163.28	-342.76	0.00	-47.5146
12	0.00	1163.28	-342.76	0.00	-47.5146
	0.50	998.48	-312.98	0.00	-99.5994
13	0.00	998.48	-312.98	0.00	-33.1998
	0.50	845.77	-296.96	0.00	-46.4894
14	0.00	845.77	-296.96	0.00	-46.4894
	0.50	702.28	-276.35	0.00	-56.3303
15	0.00	702.28	-276.35	0.00	-56.3303
	0.50	569.97	-252.41	0.00	-63.3064
16	0.00	569.97	-252.41	0.00	-63.3064
	0.50	450.26	-226.16	0.00	-67.9562
17	0.00	450.26	-226.16	0.00	-67.9562
	0.50	344.06	-198.44	0.00	-70.7671
18	0.00	344.06	-198.44	0.00	-70.7671
	0.50	251.95	-169.89	0.00	-72.1715
19	0.00	251.95	-169.89	0.00	-72.1715
	0.50	174.23	-141.00	0.00	-72.5446
20	0.00	174.23	-141.00	0.00	-72.5446
	0.50	110.95	-112.11	0.00	-72.2031

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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21	0.00	110.95	-112.11	0.00	-72.2031
	0.50	62.07	-83.46	0.00	-71.4046
22	0.00	62.07	-83.46	0.00	-71.4046
	0.50	27.43	-55.18	0.00	-70.3484
23	0.00	27.43	-55.18	0.00	-70.3484
	0.50	6.82	-27.35	0.00	-69.1757
24	0.00	6.82	-27.35	0.00	-69.1757
	0.50	0.00	0.00	0.00	-67.9705

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.17	652.33	0.00	0.0000
2	0.00	326.16	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.49	652.33	0.00	779.4758
	0.50	1232.28	373.29	0.00	621.9169
5	0.00	1232.28	373.29	0.00	621.9169
	0.50	1361.78	154.20	0.00	479.2922
6	0.00	1361.78	154.20	0.00	479.2922
	0.50	1395.41	-11.28	0.00	353.2133
7	0.00	1395.41	-11.28	0.00	353.2133
	0.50	1358.32	-129.85	0.00	244.1168
8	0.00	1358.32	-129.85	0.00	244.1168
	0.50	1272.26	-208.23	0.00	151.5716
9	0.00	1272.26	-208.23	0.00	151.5716
	0.50	1155.72	-252.83	0.00	74.5447
10	0.00	1155.72	-252.83	0.00	74.5447
	0.50	1024.07	-269.57	0.00	11.6274
11	0.00	1024.07	-269.57	0.00	11.6274
	0.50	889.90	-263.77	0.00	-38.7764
12	0.00	889.90	-263.77	0.00	-38.7764
	0.50	763.28	-240.09	0.00	-78.2964
13	0.00	763.28	-240.09	0.00	-26.0988
	0.50	646.20	-227.57	0.00	-36.1592
14	0.00	646.20	-227.57	0.00	-36.1592
	0.50	536.28	-211.59	0.00	-43.5847
15	0.00	536.28	-211.59	0.00	-43.5847
	0.50	435.03	-193.09	0.00	-48.8224

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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16	0.00	435.03	-193.09	0.00	-48.8224
	0.50	343.48	-172.88	0.00	-52.2845
17	0.00	343.48	-172.88	0.00	-52.2845
	0.50	262.33	-151.57	0.00	-54.3439
18	0.00	262.33	-151.57	0.00	-54.3439
	0.50	192.01	-129.67	0.00	-55.3308
19	0.00	192.01	-129.67	0.00	-55.3308
	0.50	132.70	-107.53	0.00	-55.5318
20	0.00	132.70	-107.53	0.00	-55.5318
	0.50	84.47	-85.44	0.00	-55.1885
21	0.00	84.47	-85.44	0.00	-55.1885
	0.50	47.23	-63.55	0.00	-54.4972
22	0.00	47.23	-63.55	0.00	-54.4972
	0.50	20.86	-41.99	0.00	-53.6099
23	0.00	20.86	-41.99	0.00	-53.6099
	0.50	5.18	-20.80	0.00	-52.6340
24	0.00	5.18	-20.80	0.00	-52.6340
	0.50	0.00	0.00	0.00	-51.6334

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	83.8562
	0.50	318.69	-28.38	0.00	59.0789
5	0.00	318.69	-28.38	0.00	59.0789
	0.50	299.34	-47.65	0.00	38.1845
6	0.00	299.34	-47.65	0.00	38.1845
	0.50	272.31	-59.32	0.00	20.9407
7	0.00	272.31	-59.32	0.00	20.9407
	0.50	241.05	-64.80	0.00	7.0208
8	0.00	241.05	-64.80	0.00	7.0208
	0.50	208.34	-65.32	0.00	-3.9545
9	0.00	208.34	-65.32	0.00	-3.9545
	0.50	176.38	-61.98	0.00	-12.3827
10	0.00	176.38	-61.98	0.00	-12.3827
	0.50	146.85	-55.72	0.00	-18.6528
11	0.00	146.85	-55.72	0.00	-18.6528

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	121.01	-47.34	0.00	-23.1244
12	0.00	121.01	-47.34	0.00	-23.1244
	0.50	99.75	-37.47	0.00	-26.1124
13	0.00	99.75	-37.47	0.00	-8.7041
	0.50	81.91	-33.87	0.00	-9.2926
14	0.00	81.91	-33.87	0.00	-9.2926
	0.50	65.91	-30.10	0.00	-9.5467
15	0.00	65.91	-30.10	0.00	-9.5467
	0.50	51.81	-26.29	0.00	-9.5317
16	0.00	51.81	-26.29	0.00	-9.5317
	0.50	39.61	-22.53	0.00	-9.3050
17	0.00	39.61	-22.53	0.00	-9.3050
	0.50	29.26	-18.89	0.00	-8.9163
18	0.00	29.26	-18.89	0.00	-8.9163
	0.50	20.69	-15.43	0.00	-8.4077
19	0.00	20.69	-15.43	0.00	-8.4077
	0.50	13.79	-12.19	0.00	-7.8143
20	0.00	13.79	-12.19	0.00	-7.8143
	0.50	8.45	-9.21	0.00	-7.1642
21	0.00	8.45	-9.21	0.00	-7.1642
	0.50	4.54	-6.48	0.00	-6.4792
22	0.00	4.54	-6.48	0.00	-6.4792
	0.50	1.92	-4.04	0.00	-5.7752
23	0.00	1.92	-4.04	0.00	-5.7752
	0.50	0.46	-1.88	0.00	-5.0630
24	0.00	0.46	-1.88	0.00	-5.0630
	0.50	0.00	0.00	0.00	-4.3485

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	55.7842
	0.50	212.01	-18.88	0.00	39.3014
5	0.00	212.01	-18.88	0.00	39.3014
	0.50	199.13	-31.70	0.00	25.4017
6	0.00	199.13	-31.70	0.00	25.4017
	0.50	181.15	-39.46	0.00	13.9305

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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7	0.00	181.15	-39.46	0.00	13.9305			
	0.50	160.36	-43.10	0.00	4.6705			
8	0.00	160.36	-43.10	0.00	4.6705			
	0.50	138.60	-43.45	0.00	-2.6306			
9	0.00	138.60	-43.45	0.00	-2.6306			
	0.50	117.33	-41.23	0.00	-8.2374			
10	0.00	117.33	-41.23	0.00	-8.2374			
	0.50	97.69	-37.07	0.00	-12.4085			
11	0.00	97.69	-37.07	0.00	-12.4085			
	0.50	80.50	-31.49	0.00	-15.3832			
12	0.00	80.50	-31.49	0.00	-15.3832			
	0.50	66.36	-24.93	0.00	-17.3709			
13	0.00	66.36	-24.93	0.00	-5.7903			
	0.50	54.49	-22.53	0.00	-6.1818			
14	0.00	54.49	-22.53	0.00	-6.1818			
	0.50	43.85	-20.03	0.00	-6.3508			
15	0.00	43.85	-20.03	0.00	-6.3508			
	0.50	34.47	-17.49	0.00	-6.3408			
16	0.00	34.47	-17.49	0.00	-6.3408			
	0.50	26.35	-14.99	0.00	-6.1900			
17	0.00	26.35	-14.99	0.00	-6.1900			
	0.50	19.47	-12.57	0.00	-5.9314			
18	0.00	19.47	-12.57	0.00	-5.9314			
	0.50	13.76	-10.27	0.00	-5.5931			
19	0.00	13.76	-10.27	0.00	-5.5931			
	0.50	9.18	-8.11	0.00	-5.1984			
20	0.00	9.18	-8.11	0.00	-5.1984			
	0.50	5.62	-6.12	0.00	-4.7659			
21	0.00	5.62	-6.12	0.00	-4.7659			
	0.50	3.02	-4.31	0.00	-4.3102			
22	0.00	3.02	-4.31	0.00	-4.3102			
	0.50	1.28	-2.69	0.00	-3.8419			
23	0.00	1.28	-2.69	0.00	-3.8419			
	0.50	0.30	-1.25	0.00	-3.3681			
24	0.00	0.30	-1.25	0.00	-3.3681			
	0.50	0.00	0.00	0.00	-2.8928			
Condizione : RITIRO+AT								
asta	x	M	T	N	P			
1	0.00	0.00	3367.07	0.00	0.0000			
	0.50	1683.54	3367.07	0.00	0.0000			

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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2	0.00	1683.54	3367.07	0.00	0.0000			
	0.50	3367.07	3367.07	0.00	0.0000			
3	0.00	3367.07	3367.07	0.00	0.0000			
	0.50	5050.61	3367.07	0.00	0.0000			
4	0.00	5050.61	3367.07	0.00	4023.3470			
	0.50	6360.55	1926.78	0.00	3210.0900			
5	0.00	6360.55	1926.78	0.00	3210.0900			
	0.50	7028.98	795.90	0.00	2473.9170			
6	0.00	7028.98	795.90	0.00	2473.9170			
	0.50	7202.58	-58.21	0.00	1823.1480			
7	0.00	7202.58	-58.21	0.00	1823.1480			
	0.50	7011.12	-670.22	0.00	1260.0350			
8	0.00	7011.12	-670.22	0.00	1260.0350			
	0.50	6566.93	-1074.79	0.00	782.3528			
9	0.00	6566.93	-1074.79	0.00	782.3528			
	0.50	5965.37	-1305.01	0.00	384.7703			
10	0.00	5965.37	-1305.01	0.00	384.7703			
	0.50	5285.87	-1391.43	0.00	60.0161			
11	0.00	5285.87	-1391.43	0.00	60.0161			
	0.50	4593.32	-1361.48	0.00	-200.1486			
12	0.00	4593.32	-1361.48	0.00	-200.1486			
	0.50	3939.75	-1239.23	0.00	-404.1350			
13	0.00	3939.75	-1239.23	0.00	-134.7117			
	0.50	3335.42	-1174.64	0.00	-186.6396			
14	0.00	3335.42	-1174.64	0.00	-186.6396			
	0.50	2768.09	-1092.14	0.00	-224.9668			
15	0.00	2768.09	-1092.14	0.00	-224.9668			
	0.50	2245.44	-996.68	0.00	-252.0019			
16	0.00	2245.44	-996.68	0.00	-252.0019			
	0.50	1772.89	-892.32	0.00	-269.8722			
17	0.00	1772.89	-892.32	0.00	-269.8722			
	0.50	1354.05	-782.34	0.00	-280.5017			
18	0.00	1354.05	-782.34	0.00	-280.5017			
	0.50	991.06	-669.28	0.00	-285.5960			
19	0.00	991.06	-669.28	0.00	-285.5960			
	0.50	684.96	-555.04	0.00	-286.6335			
20	0.00	684.96	-555.04	0.00	-286.6335			
	0.50	435.98	-440.99	0.00	-284.8611			
21	0.00	435.98	-440.99	0.00	-284.8611			
	0.50	243.79	-328.03	0.00	-281.2933			
22	0.00	243.79	-328.03	0.00	-281.2933			
	0.50	107.68	-216.72	0.00	-276.7133			

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



Doc. N. 60001-00

Progetto

IN05

Lotto

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23	0.00	107.68	-216.72	0.00	-276.7133
	0.50	26.75	-107.34	0.00	-271.6758
24	0.00	26.75	-107.34	0.00	-271.6758
	0.50	0.00	0.00	0.00	-266.5110

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.33	-1840.00	0.00	0.0000
3	0.00	-613.33	-1840.00	0.00	0.0000
	0.50	-2070.00	-4140.00	0.00	0.0000
4	0.00	-2070.00	-4140.00	0.00	-3882.6590
	0.50	-3775.90	-2729.21	0.00	-3197.1790
5	0.00	-3775.90	-2729.21	0.00	-3197.1790
	0.50	-4843.40	-1583.32	0.00	-2557.1970
6	0.00	-4843.40	-1583.32	0.00	-2557.1970
	0.50	-5399.90	-681.34	0.00	-1975.8900
7	0.00	-5399.90	-681.34	0.00	-1975.8900
	0.50	-5561.24	1.71	0.00	-1460.1770
8	0.00	-5561.24	1.71	0.00	-1460.1770
	0.50	-5430.23	492.55	0.00	-1012.1350
9	0.00	-5430.23	492.55	0.00	-1012.1350
	0.50	-5096.25	817.96	0.00	-630.2526
10	0.00	-5096.25	817.96	0.00	-630.2526
	0.50	-4635.55	1003.61	0.00	-310.5270
11	0.00	-4635.55	1003.61	0.00	-310.5270
	0.50	-4111.97	1073.22	0.00	-47.3920
12	0.00	-4111.97	1073.22	0.00	-47.3920
	0.50	-3578.10	1048.10	0.00	165.4977
13	0.00	-3578.10	1048.10	0.00	55.1659
	0.50	-3061.54	1014.40	0.00	111.5458
14	0.00	-3061.54	1014.40	0.00	111.5458
	0.50	-2567.02	960.77	0.00	155.4458
15	0.00	-2567.02	960.77	0.00	155.4458
	0.50	-2103.33	891.78	0.00	188.8775
16	0.00	-2103.33	891.78	0.00	188.8775
	0.50	-1677.16	811.23	0.00	213.7277
17	0.00	-1677.16	811.23	0.00	213.7277
	0.50	-1293.51	722.19	0.00	231.7308

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18	0.00	-1293.51	722.19	0.00	231.7308			
	0.50	-955.98	627.07	0.00	244.4487			
19	0.00	-955.98	627.07	0.00	244.4487			
	0.50	-667.14	527.70	0.00	253.2555			
20	0.00	-667.14	527.70	0.00	253.2555			
	0.50	-428.77	425.39	0.00	259.3272			
21	0.00	-428.77	425.39	0.00	259.3272			
	0.50	-242.09	321.05	0.00	263.6347			
22	0.00	-242.09	321.05	0.00	263.6347			
	0.50	-107.97	215.21	0.00	266.9380			
23	0.00	-107.97	215.21	0.00	266.9380			
	0.50	-27.08	108.15	0.00	269.7834			
24	0.00	-27.08	108.15	0.00	269.7834			
	0.50	0.00	0.00	0.00	272.5002			
Combinazione : FESSURAZIONE								
asta	x	M	T	N	P			
1	0.00	11743.95	7201.65	0.00	0.0000			
	0.50	15362.36	7133.15	0.00	0.0000			
2	0.00	15362.36	7133.15	0.00	0.0000			
	0.50	18665.77	5927.15	0.00	0.0000			
3	0.00	18665.77	5927.15	0.00	0.0000			
	0.50	21136.18	3801.15	0.00	0.0000			
4	0.00	21136.18	3801.15	0.00	8683.9610			
	0.50	22283.43	921.74	0.00	6670.4190			
5	0.00	22283.43	921.74	0.00	6670.4190			
	0.50	22182.81	-1208.37	0.00	4927.9490			
6	0.00	22182.81	-1208.37	0.00	4927.9490			
	0.50	21181.86	-2697.57	0.00	3455.6770			
7	0.00	21181.86	-2697.57	0.00	3455.6770			
	0.50	19574.41	-3651.56	0.00	2241.6680			
8	0.00	19574.41	-3651.56	0.00	2241.6680			
	0.50	17602.90	-4169.67	0.00	1266.5220			
9	0.00	17602.90	-4169.67	0.00	1266.5220			
	0.50	15462.22	-4342.53	0.00	506.3433			
10	0.00	15462.22	-4342.53	0.00	506.3433			
	0.50	13304.42	-4250.74	0.00	-64.8766			
11	0.00	13304.42	-4250.74	0.00	-64.8766			
	0.50	11243.85	-3964.40	0.00	-473.3934			
12	0.00	11243.85	-3964.40	0.00	-473.3934			
	0.50	9362.41	-3543.37	0.00	-744.3077			
13	0.00	9362.41	-3543.37	0.00	-248.1026			

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	7676.49	-3196.86	0.00	-300.1986
14	0.00	7676.49	-3196.86	0.00	-300.1986
	0.50	6167.92	-2836.04	0.00	-320.9611
15	0.00	6167.92	-2836.04	0.00	-320.9611
	0.50	4840.95	-2472.16	0.00	-316.5343
16	0.00	4840.95	-2472.16	0.00	-316.5343
	0.50	3694.78	-2114.15	0.00	-292.3247
17	0.00	3694.78	-2114.15	0.00	-292.3247
	0.50	2724.65	-1768.96	0.00	-253.0031
18	0.00	2724.65	-1768.96	0.00	-253.0031
	0.50	1922.81	-1441.79	0.00	-202.5243
19	0.00	1922.81	-1441.79	0.00	-202.5243
	0.50	1279.22	-1136.44	0.00	-144.1586
20	0.00	1279.22	-1136.44	0.00	-144.1586
	0.50	782.30	-855.49	0.00	-80.5316
21	0.00	782.30	-855.49	0.00	-80.5316
	0.50	419.38	-600.62	0.00	-13.6721
22	0.00	419.38	-600.62	0.00	-13.6721
	0.50	177.17	-372.81	0.00	54.9369
23	0.00	177.17	-372.81	0.00	54.9369
	0.50	41.98	-172.54	0.00	124.3040
24	0.00	41.98	-172.54	0.00	124.3040
	0.50	0.00	0.00	0.00	193.8737

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	11743.95	7201.65	0.00	
		MIN	11743.95	7201.65	0.00	
	0.50	MAX	15362.36	7133.15	0.00	
		MIN	15362.36	7133.15	0.00	
2	0.00	MAX	15362.36	7133.15	0.00	
		MIN	15362.36	7133.15	0.00	
	0.50	MAX	18665.77	5927.15	0.00	
		MIN	18665.77	5927.15	0.00	
3	0.00	MAX	18665.77	5927.15	0.00	
		MIN	18665.77	5927.15	0.00	
	0.50	MAX	21136.18	3801.15	0.00	
		MIN	21136.18	3801.15	0.00	
4	0.00	MAX	21136.18	3801.15	0.00	8683.9610
		MIN	21136.18	3801.15	0.00	8683.9610
	0.50	MAX	22283.43	921.74	0.00	6670.4190
		MIN	22283.43	921.74	0.00	6670.4190
5	0.00	MAX	22283.43	921.74	0.00	6670.4190
		MIN	22283.43	921.74	0.00	6670.4190
	0.50	MAX	22182.81	-1208.37	0.00	4927.9490

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	MIN	22182.81	-1208.37	0.00	4927.9490	
6	0.00	MAX	22182.81	-1208.37	0.00	4927.9490
	MIN	22182.81	-1208.37	0.00	4927.9490	
	0.50	MAX	21181.86	-2697.57	0.00	3455.6770
	MIN	21181.86	-2697.57	0.00	3455.6770	
7	0.00	MAX	21181.86	-2697.57	0.00	3455.6770
	MIN	21181.86	-2697.57	0.00	3455.6770	
	0.50	MAX	19574.41	-3651.56	0.00	2241.6680
	MIN	19574.41	-3651.56	0.00	2241.6680	
8	0.00	MAX	19574.41	-3651.56	0.00	2241.6680
	MIN	19574.41	-3651.56	0.00	2241.6680	
	0.50	MAX	17602.90	-4169.67	0.00	1266.5220
	MIN	17602.90	-4169.67	0.00	1266.5220	
9	0.00	MAX	17602.90	-4169.67	0.00	1266.5220
	MIN	17602.90	-4169.67	0.00	1266.5220	
	0.50	MAX	15462.22	-4342.53	0.00	506.3433
	MIN	15462.22	-4342.53	0.00	506.3433	
10	0.00	MAX	15462.22	-4342.53	0.00	506.3433
	MIN	15462.22	-4342.53	0.00	506.3433	
	0.50	MAX	13304.42	-4250.74	0.00	-64.8766
	MIN	13304.42	-4250.74	0.00	-64.8766	
11	0.00	MAX	13304.42	-4250.74	0.00	-64.8766
	MIN	13304.42	-4250.74	0.00	-64.8766	
	0.50	MAX	11243.85	-3964.40	0.00	-473.3934
	MIN	11243.85	-3964.40	0.00	-473.3934	
12	0.00	MAX	11243.85	-3964.40	0.00	-473.3934
	MIN	11243.85	-3964.40	0.00	-473.3934	
	0.50	MAX	9362.41	-3543.37	0.00	-744.3077
	MIN	9362.41	-3543.37	0.00	-744.3077	
13	0.00	MAX	9362.41	-3543.37	0.00	-248.1026
	MIN	9362.41	-3543.37	0.00	-248.1026	
	0.50	MAX	7676.49	-3196.86	0.00	-300.1986
	MIN	7676.49	-3196.86	0.00	-300.1986	
14	0.00	MAX	7676.49	-3196.86	0.00	-300.1986
	MIN	7676.49	-3196.86	0.00	-300.1986	
	0.50	MAX	6167.92	-2836.04	0.00	-320.9611
	MIN	6167.92	-2836.04	0.00	-320.9611	
15	0.00	MAX	6167.92	-2836.04	0.00	-320.9611
	MIN	6167.92	-2836.04	0.00	-320.9611	
	0.50	MAX	4840.95	-2472.16	0.00	-316.5343
	MIN	4840.95	-2472.16	0.00	-316.5343	
16	0.00	MAX	4840.95	-2472.16	0.00	-316.5343
	MIN	4840.95	-2472.16	0.00	-316.5343	
	0.50	MAX	3694.78	-2114.15	0.00	-292.3247
	MIN	3694.78	-2114.15	0.00	-292.3247	
17	0.00	MAX	3694.78	-2114.15	0.00	-292.3247
	MIN	3694.78	-2114.15	0.00	-292.3247	
	0.50	MAX	2724.65	-1768.96	0.00	-253.0031
	MIN	2724.65	-1768.96	0.00	-253.0031	

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Cepav due



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18	0.00	MAX	2724.65	-1768.96	0.00	-253.0031
		MIN	2724.65	-1768.96	0.00	-253.0031
	0.50	MAX	1922.81	-1441.79	0.00	-202.5243
		MIN	1922.81	-1441.79	0.00	-202.5243
19	0.00	MAX	1922.81	-1441.79	0.00	-202.5243
		MIN	1922.81	-1441.79	0.00	-202.5243
	0.50	MAX	1279.22	-1136.44	0.00	-144.1586
		MIN	1279.22	-1136.44	0.00	-144.1586
20	0.00	MAX	1279.22	-1136.44	0.00	-144.1586
		MIN	1279.22	-1136.44	0.00	-144.1586
	0.50	MAX	782.30	-855.49	0.00	-80.5316
		MIN	782.30	-855.49	0.00	-80.5316
21	0.00	MAX	782.30	-855.49	0.00	-80.5316
		MIN	782.30	-855.49	0.00	-80.5316
	0.50	MAX	419.38	-600.62	0.00	-13.6721
		MIN	419.38	-600.62	0.00	-13.6721
22	0.00	MAX	419.38	-600.62	0.00	-13.6721
		MIN	419.38	-600.62	0.00	-13.6721
	0.50	MAX	177.17	-372.81	0.00	54.9369
		MIN	177.17	-372.81	0.00	54.9369
23	0.00	MAX	177.17	-372.81	0.00	54.9369
		MIN	177.17	-372.81	0.00	54.9369
	0.50	MAX	41.98	-172.54	0.00	124.3040
		MIN	41.98	-172.54	0.00	124.3040
24	0.00	MAX	41.98	-172.54	0.00	124.3040
		MIN	41.98	-172.54	0.00	124.3040
	0.50	MAX	0.00	0.00	0.00	193.8737
		MIN	0.00	0.00	0.00	193.8737

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	15362.36	0.50	1	11743.95	0.00	1
2	18665.77	0.50	1	15362.36	0.00	1
3	21136.18	0.50	1	18665.77	0.00	1
4	22283.43	0.50	1	21136.18	0.00	1
5	22372.27	0.20	1	22182.81	0.50	1
6	22182.81	0.00	1	21181.86	0.50	1
7	21181.86	0.00	1	19574.41	0.50	1
8	19574.41	0.00	1	17602.90	0.50	1
9	17602.90	0.00	1	15462.22	0.50	1
10	15462.22	0.00	1	13304.42	0.50	1
11	13304.42	0.00	1	11243.85	0.50	1
12	11243.85	0.00	1	9362.41	0.50	1
13	9362.41	0.00	1	7676.49	0.50	1
14	7676.49	0.00	1	6167.92	0.50	1
15	6167.92	0.00	1	4840.95	0.50	1
16	4840.95	0.00	1	3694.78	0.50	1
17	3694.78	0.00	1	2724.65	0.50	1
18	2724.65	0.00	1	1922.81	0.50	1
19	1922.81	0.00	1	1279.22	0.50	1
20	1279.22	0.00	1	782.30	0.50	1
21	782.30	0.00	1	419.38	0.50	1
22	419.38	0.00	1	177.17	0.50	1
23	177.17	0.00	1	41.98	0.50	1
24	41.98	0.00	1	0.00	0.50	1

**ALLEGATO N°6****Fondazioni su pali per Barriere di h=5.75m con rilevato di H=7.0m****Calcolo agli elementi finiti con il programma di calcolo "ENG"**

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50



20	20	21	0.50			
asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	0.0000	0.00
5	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
7	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23

Peso totale struttura = 12144.50

M(250)

Carichi nodali :



descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-12398.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	4312.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-4528.13

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	348.00	348.00	LL
	6	0.00	0.00	348.00	348.00	LL
	7	0.00	0.00	348.00	348.00	LL
	8	0.00	0.00	348.00	348.00	LL
	9	0.00	0.00	348.00	348.00	LL
	10	0.00	0.00	348.00	348.00	LL
	11	0.00	0.00	348.00	348.00	LL
	12	0.00	0.00	348.00	348.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.16

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3679.00	LL
	3	0.00	0.00	-3679.00	-5519.00	LL
	4	0.00	0.00	-7358.00	-9198.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250).	T(250).	Mtrasp(250)	. q	Spinta attiva.. Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
ESERCIZIO	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000

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7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000
10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
2	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
3	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
4	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
5	0.00	12398.50	0.00	0.00	3437.1430
	0.50	12090.17	-1166.96	0.00	2439.0640
6	0.00	12090.17	-1166.96	0.00	2439.0640

GENERAL CONTRACTOR

Cepav due



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	0.50	11292.95	-1965.40	0.00	1588.2520
7	0.00	11292.95	-1965.40	0.00	1588.2520
	0.50	10176.66	-2452.33	0.00	875.1340
8	0.00	10176.66	-2452.33	0.00	875.1340
	0.50	8883.78	-2680.07	0.00	286.2138
9	0.00	8883.78	-2680.07	0.00	286.2138
	0.50	7532.01	-2695.09	0.00	-194.1907
10	0.00	7532.01	-2695.09	0.00	-194.1907
	0.50	6217.43	-2537.40	0.00	-582.5025
11	0.00	6217.43	-2537.40	0.00	-582.5025
	0.50	5017.77	-2240.51	0.00	-894.7090
12	0.00	5017.77	-2240.51	0.00	-894.7090
	0.50	3995.53	-1831.80	0.00	-1145.4090
13	0.00	3995.53	-1831.80	0.00	-381.8029
	0.50	3120.06	-1665.62	0.00	-449.0414
14	0.00	3120.06	-1665.62	0.00	-449.0414
	0.50	2333.94	-1475.27	0.00	-503.5388
15	0.00	2333.94	-1475.27	0.00	-503.5388
	0.50	1648.08	-1265.18	0.00	-548.4939
16	0.00	1648.08	-1265.18	0.00	-548.4939
	0.50	1071.50	-1038.59	0.00	-586.6977
17	0.00	1071.50	-1038.59	0.00	-586.6977
	0.50	611.86	-797.72	0.00	-620.4967
18	0.00	611.86	-797.72	0.00	-620.4967
	0.50	275.93	-543.92	0.00	-651.7610
19	0.00	275.93	-543.92	0.00	-651.7610
	0.50	69.97	-277.92	0.00	-681.8570
20	0.00	69.97	-277.92	0.00	-681.8570
	0.50	0.00	0.00	0.00	-711.6218

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	4312.50	0.00	0.0000
	0.50	2156.25	4312.50	0.00	0.0000
2	0.00	2156.25	4312.50	0.00	0.0000
	0.50	4312.50	4312.50	0.00	0.0000
3	0.00	4312.50	4312.50	0.00	0.0000
	0.50	6468.75	4312.50	0.00	0.0000
4	0.00	6468.75	4312.50	0.00	0.0000
	0.50	8625.00	4312.50	0.00	0.0000
5	0.00	8625.00	4312.50	0.00	6133.7660
	0.50	10213.37	2126.61	0.00	4845.7170

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6	0.00	10213.37	2126.61	0.00	4845.7170
	0.50	10833.23	430.25	0.00	3681.5080
7	0.00	10833.23	430.25	0.00	3681.5080
	0.50	10716.66	-827.90	0.00	2648.9500
8	0.00	10716.66	-827.90	0.00	2648.9500
	0.50	10069.60	-1700.36	0.00	1746.8280
9	0.00	10069.60	-1700.36	0.00	1746.8280
	0.50	9072.11	-2237.79	0.00	967.4188
10	0.00	9072.11	-2237.79	0.00	967.4188
	0.50	7879.84	-2486.86	0.00	298.6884
11	0.00	7879.84	-2486.86	0.00	298.6884
	0.50	6626.40	-2488.87	0.00	-273.7985
12	0.00	6626.40	-2488.87	0.00	-273.7985
	0.50	5426.22	-2279.20	0.00	-765.2445
13	0.00	5426.22	-2279.20	0.00	-255.0815
	0.50	4316.93	-2148.54	0.00	-396.7586
14	0.00	4316.93	-2148.54	0.00	-396.7586
	0.50	3286.48	-1965.02	0.00	-520.8223
15	0.00	3286.48	-1965.02	0.00	-520.8223
	0.50	2359.68	-1734.83	0.00	-631.4619
16	0.00	2359.68	-1734.83	0.00	-631.4619
	0.50	1558.65	-1462.55	0.00	-732.4457
17	0.00	1558.65	-1462.55	0.00	-732.4457
	0.50	903.61	-1151.36	0.00	-827.0302
18	0.00	903.61	-1151.36	0.00	-827.0302
	0.50	413.44	-803.27	0.00	-917.8775
19	0.00	413.44	-803.27	0.00	-917.8775
	0.50	106.31	-419.34	0.00	-1006.9780
20	0.00	106.31	-419.34	0.00	-1006.9780
	0.50	0.00	0.00	0.00	-1095.5780

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
2	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
3	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
4	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000

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5	0.00	4528.13	0.00	0.00	1255.3000						
	0.50	4415.52	-426.19	0.00	890.7853						
6	0.00	4415.52	-426.19	0.00	890.7853						
	0.50	4124.36	-717.80	0.00	580.0548						
7	0.00	4124.36	-717.80	0.00	580.0548						
	0.50	3716.68	-895.63	0.00	319.6129						
8	0.00	3716.68	-895.63	0.00	319.6129						
	0.50	3244.50	-978.81	0.00	104.5298						
9	0.00	3244.50	-978.81	0.00	104.5298						
	0.50	2750.81	-984.29	0.00	-70.9215						
10	0.00	2750.81	-984.29	0.00	-70.9215						
	0.50	2270.71	-926.70	0.00	-212.7392						
11	0.00	2270.71	-926.70	0.00	-212.7392						
	0.50	1832.57	-818.27	0.00	-326.7620						
12	0.00	1832.57	-818.27	0.00	-326.7620						
	0.50	1459.23	-669.00	0.00	-418.3215						
13	0.00	1459.23	-669.00	0.00	-139.4405						
	0.50	1139.50	-608.31	0.00	-163.9971						
14	0.00	1139.50	-608.31	0.00	-163.9971						
	0.50	852.39	-538.79	0.00	-183.9004						
15	0.00	852.39	-538.79	0.00	-183.9004						
	0.50	601.90	-462.06	0.00	-200.3187						
16	0.00	601.90	-462.06	0.00	-200.3187						
	0.50	391.33	-379.31	0.00	-214.2714						
17	0.00	391.33	-379.31	0.00	-214.2714						
	0.50	223.46	-291.34	0.00	-226.6153						
18	0.00	223.46	-291.34	0.00	-226.6153						
	0.50	100.78	-198.65	0.00	-238.0335						
19	0.00	100.78	-198.65	0.00	-238.0335						
	0.50	25.56	-101.50	0.00	-249.0251						
20	0.00	25.56	-101.50	0.00	-249.0251						
	0.50	0.00	0.00	0.00	-259.8957						
Condizione : q											
asta	x	M	T	N	P						
1	0.00	0.00	0.00	0.00	0.0000						
	0.50	43.50	174.00	0.00	0.0000						
2	0.00	43.50	174.00	0.00	0.0000						
	0.50	174.00	348.00	0.00	0.0000						
3	0.00	174.00	348.00	0.00	0.0000						
	0.50	391.50	522.00	0.00	0.0000						
4	0.00	391.50	522.00	0.00	0.0000						

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	0.50	696.00	696.00	0.00	0.0000
5	0.00	696.00	696.00	0.00	921.2517
	0.50	997.48	513.43	0.00	868.3249
6	0.00	997.48	513.43	0.00	868.3249
	0.50	1212.57	349.67	0.00	827.5012
7	0.00	1212.57	349.67	0.00	827.5012
	0.50	1349.39	199.32	0.00	801.4176
8	0.00	1349.39	199.32	0.00	801.4176
	0.50	1413.09	56.14	0.00	791.7515
9	0.00	1413.09	56.14	0.00	791.7515
	0.50	1405.60	-86.60	0.00	799.2834
10	0.00	1405.60	-86.60	0.00	799.2834
	0.50	1325.42	-235.78	0.00	823.9202
11	0.00	1325.42	-235.78	0.00	823.9202
	0.50	1167.64	-398.04	0.00	864.6770
12	0.00	1167.64	-398.04	0.00	864.6770
	0.50	924.17	-579.47	0.00	919.6172
13	0.00	924.17	-579.47	0.00	306.5391
	0.50	662.16	-470.04	0.00	328.6110
14	0.00	662.16	-470.04	0.00	328.6110
	0.50	452.57	-369.99	0.00	353.3983
15	0.00	452.57	-369.99	0.00	353.3983
	0.50	290.46	-280.22	0.00	380.0454
16	0.00	290.46	-280.22	0.00	380.0454
	0.50	170.53	-201.33	0.00	407.8902
17	0.00	170.53	-201.33	0.00	407.8902
	0.50	87.25	-133.71	0.00	436.4421
18	0.00	87.25	-133.71	0.00	436.4421
	0.50	34.91	-77.56	0.00	465.3600
19	0.00	34.91	-77.56	0.00	465.3600
	0.50	7.76	-32.98	0.00	494.4287
20	0.00	7.76	-32.98	0.00	494.4287
	0.50	0.00	0.00	0.00	523.5355
Condizione : Spinta attiva					
asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	376.91	869.83	0.00	0.0000
2	0.00	376.92	869.83	0.00	0.0000
	0.50	811.83	869.83	0.00	0.0000
3	0.00	811.83	869.83	0.00	0.0000
	0.50	1246.75	869.83	0.00	0.0000

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4	0.00	1246.74	869.83	0.00	0.0000
	0.50	1681.66	869.83	0.00	0.0000
5	0.00	1681.66	869.83	0.00	1221.1000
	0.50	2003.48	434.40	0.00	965.9699
6	0.00	2003.48	434.40	0.00	965.9699
	0.50	2132.23	95.97	0.00	735.1292
7	0.00	2132.23	95.97	0.00	735.1292
	0.50	2113.94	-155.52	0.00	530.1985
8	0.00	2113.94	-155.52	0.00	530.1985
	0.50	1989.48	-330.42	0.00	350.9959
9	0.00	1989.48	-330.42	0.00	350.9959
	0.50	1794.61	-438.75	0.00	196.0365
10	0.00	1794.61	-438.75	0.00	196.0365
	0.50	1560.28	-489.73	0.00	62.9703
11	0.00	1560.28	-489.73	0.00	62.9703
	0.50	1313.07	-491.52	0.00	-51.0396
12	0.00	1313.07	-491.52	0.00	-51.0396
	0.50	1075.78	-451.15	0.00	-148.9914
13	0.00	1075.78	-451.15	0.00	-49.6638
	0.50	856.13	-425.57	0.00	-77.9255
14	0.00	856.13	-425.57	0.00	-77.9255
	0.50	651.96	-389.44	0.00	-102.6942
15	0.00	651.96	-389.44	0.00	-102.6942
	0.50	468.24	-344.00	0.00	-124.7998
16	0.00	468.24	-344.00	0.00	-124.7998
	0.50	309.37	-290.14	0.00	-144.9895
17	0.00	309.37	-290.14	0.00	-144.9895
	0.50	179.39	-228.50	0.00	-163.9091
18	0.00	179.39	-228.50	0.00	-163.9091
	0.50	82.10	-159.47	0.00	-182.0867
19	0.00	82.10	-159.47	0.00	-182.0867
	0.50	21.11	-83.28	0.00	-199.9175
20	0.00	21.11	-83.28	0.00	-199.9175
	0.50	0.00	0.00	0.00	-217.6488

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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3	0.00	652.33	652.33	0.00	0.0000			
	0.50	978.50	652.33	0.00	0.0000			
4	0.00	978.50	652.33	0.00	0.0000			
	0.50	1304.66	652.33	0.00	0.0000			
5	0.00	1304.66	652.33	0.00	927.8237			
	0.50	1544.92	321.68	0.00	732.9871			
6	0.00	1544.92	321.68	0.00	732.9871			
	0.50	1638.69	65.08	0.00	556.8830			
7	0.00	1638.69	65.08	0.00	556.8830			
	0.50	1621.05	-125.23	0.00	400.6932			
8	0.00	1621.05	-125.23	0.00	400.6932			
	0.50	1523.18	-257.20	0.00	264.2339			
9	0.00	1523.18	-257.20	0.00	264.2339			
	0.50	1372.29	-338.50	0.00	146.3365			
10	0.00	1372.29	-338.50	0.00	146.3365			
	0.50	1191.94	-376.17	0.00	45.1811			
11	0.00	1191.94	-376.17	0.00	45.1811			
	0.50	1002.34	-376.48	0.00	-41.4161			
12	0.00	1002.34	-376.48	0.00	-41.4161			
	0.50	820.80	-344.76	0.00	-115.7547			
13	0.00	820.80	-344.76	0.00	-38.5849			
	0.50	653.00	-325.00	0.00	-60.0157			
14	0.00	653.00	-325.00	0.00	-60.0157			
	0.50	497.13	-297.24	0.00	-78.7821			
15	0.00	497.13	-297.24	0.00	-78.7821			
	0.50	356.94	-262.42	0.00	-95.5180			
16	0.00	356.94	-262.42	0.00	-95.5180			
	0.50	235.77	-221.23	0.00	-110.7933			
17	0.00	235.77	-221.23	0.00	-110.7933			
	0.50	136.68	-174.16	0.00	-125.1007			
18	0.00	136.68	-174.16	0.00	-125.1007			
	0.50	62.54	-121.51	0.00	-138.8427			
19	0.00	62.54	-121.51	0.00	-138.8427			
	0.50	16.08	-63.43	0.00	-152.3205			
20	0.00	16.08	-63.43	0.00	-152.3205			
	0.50	0.00	0.00	0.00	-165.7225			
Condizione : Mq								
asta	x	M	T	N	P			
1	0.00	326.16	0.00	0.00	0.0000			
	0.50	326.16	0.00	0.00	0.0000			
2	0.00	326.16	0.00	0.00	0.0000			

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	326.16	0.00	0.00	0.0000
3	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
4	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
5	0.00	326.16	0.00	0.00	90.4189
	0.50	318.05	-30.70	0.00	64.1630
6	0.00	318.05	-30.70	0.00	64.1630
	0.50	297.08	-51.70	0.00	41.7812
7	0.00	297.08	-51.70	0.00	41.7812
	0.50	267.71	-64.51	0.00	23.0216
8	0.00	267.71	-64.51	0.00	23.0216
	0.50	233.70	-70.50	0.00	7.5293
9	0.00	233.70	-70.50	0.00	7.5293
	0.50	198.14	-70.90	0.00	-5.1085
10	0.00	198.14	-70.90	0.00	-5.1085
	0.50	163.56	-66.75	0.00	-15.3235
11	0.00	163.56	-66.75	0.00	-15.3235
	0.50	132.00	-58.94	0.00	-23.5366
12	0.00	132.00	-58.94	0.00	-23.5366
	0.50	105.11	-48.19	0.00	-30.1316
13	0.00	105.11	-48.19	0.00	-10.0439
	0.50	82.08	-43.82	0.00	-11.8127
14	0.00	82.08	-43.82	0.00	-11.8127
	0.50	61.40	-38.81	0.00	-13.2463
15	0.00	61.40	-38.81	0.00	-13.2463
	0.50	43.36	-33.28	0.00	-14.4289
16	0.00	43.36	-33.28	0.00	-14.4289
	0.50	28.19	-27.32	0.00	-15.4339
17	0.00	28.19	-27.32	0.00	-15.4339
	0.50	16.10	-20.99	0.00	-16.3230
18	0.00	16.10	-20.99	0.00	-16.3230
	0.50	7.26	-14.31	0.00	-17.1455
19	0.00	7.26	-14.31	0.00	-17.1455
	0.50	1.84	-7.31	0.00	-17.9372
20	0.00	1.84	-7.31	0.00	-17.9372
	0.50	0.00	0.00	0.00	-18.7202
Condizione : Mspinta attiva					
asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	60.1573
	0.50	211.60	-20.42	0.00	42.6888
6	0.00	211.60	-20.42	0.00	42.6888
	0.50	197.65	-34.40	0.00	27.7978
7	0.00	197.65	-34.40	0.00	27.7978
	0.50	178.11	-42.92	0.00	15.3167
8	0.00	178.11	-42.92	0.00	15.3167
	0.50	155.48	-46.91	0.00	5.0093
9	0.00	155.48	-46.91	0.00	5.0093
	0.50	131.83	-47.17	0.00	-3.3987
10	0.00	131.83	-47.17	0.00	-3.3987
	0.50	108.82	-44.41	0.00	-10.1950
11	0.00	108.82	-44.41	0.00	-10.1950
	0.50	87.82	-39.21	0.00	-15.6593
12	0.00	87.82	-39.21	0.00	-15.6593
	0.50	69.93	-32.06	0.00	-20.0471
13	0.00	69.93	-32.06	0.00	-6.6824
	0.50	54.61	-29.15	0.00	-7.8592
14	0.00	54.61	-29.15	0.00	-7.8592
	0.50	40.85	-25.82	0.00	-8.8130
15	0.00	40.85	-25.82	0.00	-8.8130
	0.50	28.84	-22.14	0.00	-9.5998
16	0.00	28.84	-22.14	0.00	-9.5998
	0.50	18.75	-18.18	0.00	-10.2685
17	0.00	18.75	-18.18	0.00	-10.2685
	0.50	10.71	-13.96	0.00	-10.8600
18	0.00	10.71	-13.96	0.00	-10.8600
	0.50	4.83	-9.52	0.00	-11.4072
19	0.00	4.83	-9.52	0.00	-11.4072
	0.50	1.22	-4.86	0.00	-11.9339
20	0.00	1.22	-4.86	0.00	-11.9339
	0.50	0.00	0.00	0.00	-12.4549

Condizione : RITIRO+AT

asta x M T N P

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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1	0.00	0.00	2410.88	0.00	0.0000			
	0.50	1205.44	2410.88	0.00	0.0000			
2	0.00	1205.44	2410.88	0.00	0.0000			
	0.50	2410.88	2410.88	0.00	0.0000			
3	0.00	2410.88	2410.88	0.00	0.0000			
	0.50	3616.32	2410.88	0.00	0.0000			
4	0.00	3616.32	2410.88	0.00	0.0000			
	0.50	4821.76	2410.88	0.00	0.0000			
5	0.00	4821.76	2410.88	0.00	3429.0500			
	0.50	5709.73	1188.87	0.00	2708.9730			
6	0.00	5709.73	1188.87	0.00	2708.9730			
	0.50	6056.26	240.53	0.00	2058.1280			
7	0.00	6056.26	240.53	0.00	2058.1280			
	0.50	5991.09	-462.83	0.00	1480.8810			
8	0.00	5991.09	-462.83	0.00	1480.8810			
	0.50	5629.36	-950.58	0.00	976.5552			
9	0.00	5629.36	-950.58	0.00	976.5552			
	0.50	5071.72	-1251.03	0.00	540.8304			
10	0.00	5071.72	-1251.03	0.00	540.8304			
	0.50	4405.18	-1390.26	0.00	166.9802			
11	0.00	4405.18	-1390.26	0.00	166.9802			
	0.50	3704.45	-1391.39	0.00	-153.0656			
12	0.00	3704.45	-1391.39	0.00	-153.0656			
	0.50	3033.50	-1274.18	0.00	-427.8059			
13	0.00	3033.50	-1274.18	0.00	-142.6020			
	0.50	2413.36	-1201.13	0.00	-221.8058			
14	0.00	2413.36	-1201.13	0.00	-221.8058			
	0.50	1837.29	-1098.54	0.00	-291.1629			
15	0.00	1837.29	-1098.54	0.00	-291.1629			
	0.50	1319.16	-969.85	0.00	-353.0154			
16	0.00	1319.16	-969.85	0.00	-353.0154			
	0.50	871.36	-817.63	0.00	-409.4699			
17	0.00	871.36	-817.63	0.00	-409.4699			
	0.50	505.16	-643.66	0.00	-462.3469			
18	0.00	505.16	-643.66	0.00	-462.3469			
	0.50	231.13	-449.06	0.00	-513.1346			
19	0.00	231.13	-449.06	0.00	-513.1346			
	0.50	59.43	-234.43	0.00	-562.9459			
20	0.00	59.43	-234.43	0.00	-562.9459			
	0.50	0.00	0.00	0.00	-612.4770			

Condizione : SPINTA PASSIVA

GENERAL CONTRACTOR

Cepav due



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asta	x	M	T	N	P
1	0.00 0.50	0.00 -76.67	0.00 -460.00	0.00 0.00	0.0000 0.0000
2	0.00 0.50	-76.67 -613.29	-460.00 -1839.75	0.00 0.00	0.0000 0.0000
3	0.00 0.50	-613.29 -2069.71	-1839.75 -4139.25	0.00 0.00	0.0000 0.0000
4	0.00 0.50	-2069.71 -5135.75	-4139.25 -8278.25	0.00 0.00	0.0000 0.0000
5	0.00 0.50	-5135.75 -8468.78	-8278.25 -5157.17	0.00 0.00	-8608.2530 -7055.0920
6	0.00 0.50	-8468.78 -10393.03	-5157.17 -2636.31	0.00 0.00	-7055.0920 -5603.9990
7	0.00 0.50	-10393.03 -11197.50	-2636.31 -669.71	0.00 0.00	-5603.9990 -4278.7880
8	0.00 0.50	-11197.50 -11146.34	-669.71 795.27	0.00 0.00	-4278.7880 -3089.5590
9	0.00 0.50	-11146.34 -10476.74	795.27 1813.09	0.00 0.00	-3089.5590 -2035.9280
10	0.00 0.50	-10476.74 -9398.97	1813.09 2436.45	0.00 0.00	-2035.9280 -1109.9270
11	0.00 0.50	-9398.97 -8097.93	2436.45 2713.81	0.00 0.00	-1109.9270 -298.5700
12	0.00 0.50	-8097.93 -6735.69	2713.81 2687.80	0.00 0.00	-298.5700 413.8776
13	0.00 0.50	-6735.69 -5412.74	2687.80 2590.06	0.00 0.00	137.9592 347.9857
14	0.00 0.50	-5412.74 -4158.82	2590.06 2413.12	0.00 0.00	347.9857 535.9379
15	0.00 0.50	-4158.82 -3011.51	2413.12 2164.76	0.00 0.00	535.9379 706.9111
16	0.00 0.50	-3011.51 -2004.98	2164.76 1850.81	0.00 0.00	706.9111 865.5680
17	0.00 0.50	-2004.98 -1170.95	1850.81 1475.33	0.00 0.00	865.5680 1015.9980
18	0.00 0.50	-1170.95 -539.46	1475.33 1040.92	0.00 0.00	1015.9980 1161.5890
19	0.00 0.50	-539.46 -139.61	1040.92 548.96	0.00 0.00	1161.5890 1304.9040
20	0.00 0.50	-139.61 0.00	548.96 0.00	0.00 0.00	1304.9040 1447.5620

GENERAL CONTRACTOR

Cepav due



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Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	17469.79	8028.04	0.00	0.0000
	0.50	21501.39	7959.54	0.00	0.0000
2	0.00	21501.39	7959.54	0.00	0.0000
	0.50	25218.04	6753.79	0.00	0.0000
3	0.00	25218.04	6753.79	0.00	0.0000
	0.50	28101.89	4628.29	0.00	0.0000
4	0.00	28101.89	4628.29	0.00	0.0000
	0.50	29463.12	663.29	0.00	0.0000
5	0.00	29463.12	663.29	0.00	8867.7570
	0.50	29035.54	-2216.44	0.00	6503.5820
6	0.00	29035.54	-2216.44	0.00	6503.5820
	0.50	27391.99	-4224.11	0.00	4493.0350
7	0.00	27391.99	-4224.11	0.00	4493.0350
	0.50	24933.79	-5497.26	0.00	2816.4380
8	0.00	24933.79	-5497.26	0.00	2816.4380
	0.50	21995.82	-6163.44	0.00	1444.0880
9	0.00	21995.82	-6163.44	0.00	1444.0880
	0.50	18852.37	-6337.03	0.00	340.3580
10	0.00	18852.37	-6337.03	0.00	340.3580
	0.50	15724.21	-6117.60	0.00	-532.9468
11	0.00	15724.21	-6117.60	0.00	-532.9468
	0.50	12786.14	-5589.43	0.00	-1213.8800
12	0.00	12786.14	-5589.43	0.00	-1213.8800
	0.50	10174.57	-4822.02	0.00	-1738.2100
13	0.00	10174.57	-4822.02	0.00	-579.4035
	0.50	7885.08	-4327.12	0.00	-712.6193
14	0.00	7885.08	-4327.12	0.00	-712.6193
	0.50	5855.18	-3785.79	0.00	-813.6238
15	0.00	5855.18	-3785.79	0.00	-813.6238
	0.50	4105.14	-3209.22	0.00	-890.6799
16	0.00	4105.14	-3209.22	0.00	-890.6799
	0.50	2650.47	-2605.47	0.00	-950.9118
17	0.00	2650.47	-2605.47	0.00	-950.9118
	0.50	1503.27	-1980.06	0.00	-1000.2410
18	0.00	1503.27	-1980.06	0.00	-1000.2410
	0.50	673.46	-1336.34	0.00	-1043.3390
19	0.00	673.46	-1336.34	0.00	-1043.3390
	0.50	169.68	-676.09	0.00	-1083.5830
20	0.00	169.68	-676.09	0.00	-1083.5830

GENERAL CONTRACTOR

Cepav due



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0.50 0.00 0.00 0.00 -1123.0210

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	17469.79	8028.04	0.00	
		MIN	17469.79	8028.04	0.00	
	0.50	MAX	21501.39	7959.54	0.00	
		MIN	21501.39	7959.54	0.00	
2	0.00	MAX	21501.39	7959.54	0.00	
		MIN	21501.39	7959.54	0.00	
	0.50	MAX	25218.04	6753.79	0.00	
		MIN	25218.04	6753.79	0.00	
3	0.00	MAX	25218.04	6753.79	0.00	
		MIN	25218.04	6753.79	0.00	
	0.50	MAX	28101.89	4628.29	0.00	
		MIN	28101.89	4628.29	0.00	
4	0.00	MAX	28101.89	4628.29	0.00	
		MIN	28101.89	4628.29	0.00	
	0.50	MAX	29463.12	663.29	0.00	
		MIN	29463.12	663.29	0.00	
5	0.00	MAX	29463.12	663.29	0.00	8867.7570
		MIN	29463.12	663.29	0.00	8867.7570
	0.50	MAX	29035.54	-2216.44	0.00	6503.5820
		MIN	29035.54	-2216.44	0.00	6503.5820
6	0.00	MAX	29035.54	-2216.44	0.00	6503.5820
		MIN	29035.54	-2216.44	0.00	6503.5820
	0.50	MAX	27391.99	-4224.11	0.00	4493.0350
		MIN	27391.99	-4224.11	0.00	4493.0350
7	0.00	MAX	27391.99	-4224.11	0.00	4493.0350
		MIN	27391.99	-4224.11	0.00	4493.0350
	0.50	MAX	24933.79	-5497.26	0.00	2816.4380
		MIN	24933.79	-5497.26	0.00	2816.4380
8	0.00	MAX	24933.79	-5497.26	0.00	2816.4380
		MIN	24933.79	-5497.26	0.00	2816.4380
	0.50	MAX	21995.82	-6163.44	0.00	1444.0880
		MIN	21995.82	-6163.44	0.00	1444.0880
9	0.00	MAX	21995.82	-6163.44	0.00	1444.0880
		MIN	21995.82	-6163.44	0.00	1444.0880
	0.50	MAX	18852.37	-6337.03	0.00	340.3580
		MIN	18852.37	-6337.03	0.00	340.3580
10	0.00	MAX	18852.37	-6337.03	0.00	340.3580
		MIN	18852.37	-6337.03	0.00	340.3580
	0.50	MAX	15724.21	-6117.60	0.00	-532.9468
		MIN	15724.21	-6117.60	0.00	-532.9468
11	0.00	MAX	15724.21	-6117.60	0.00	-532.9468
		MIN	15724.21	-6117.60	0.00	-532.9468
	0.50	MAX	12786.14	-5589.43	0.00	-1213.8800
		MIN	12786.14	-5589.43	0.00	-1213.8800
12	0.00	MAX	12786.14	-5589.43	0.00	-1213.8800

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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		MIN	12786.14	-5589.43	0.00	-1213.8800
	0.50	MAX	10174.57	-4822.02	0.00	-1738.2100
		MIN	10174.57	-4822.02	0.00	-1738.2100
13	0.00	MAX	10174.57	-4822.02	0.00	-579.4035
		MIN	10174.57	-4822.02	0.00	-579.4035
	0.50	MAX	7885.08	-4327.12	0.00	-712.6193
		MIN	7885.08	-4327.12	0.00	-712.6193
14	0.00	MAX	7885.08	-4327.12	0.00	-712.6193
		MIN	7885.08	-4327.12	0.00	-712.6193
	0.50	MAX	5855.18	-3785.79	0.00	-813.6238
		MIN	5855.18	-3785.79	0.00	-813.6238
15	0.00	MAX	5855.18	-3785.79	0.00	-813.6238
		MIN	5855.18	-3785.79	0.00	-813.6238
	0.50	MAX	4105.14	-3209.22	0.00	-890.6799
		MIN	4105.14	-3209.22	0.00	-890.6799
16	0.00	MAX	4105.14	-3209.22	0.00	-890.6799
		MIN	4105.14	-3209.22	0.00	-890.6799
	0.50	MAX	2650.47	-2605.47	0.00	-950.9118
		MIN	2650.47	-2605.47	0.00	-950.9118
17	0.00	MAX	2650.47	-2605.47	0.00	-950.9118
		MIN	2650.47	-2605.47	0.00	-950.9118
	0.50	MAX	1503.27	-1980.06	0.00	-1000.2410
		MIN	1503.27	-1980.06	0.00	-1000.2410
18	0.00	MAX	1503.27	-1980.06	0.00	-1000.2410
		MIN	1503.27	-1980.06	0.00	-1000.2410
	0.50	MAX	673.46	-1336.34	0.00	-1043.3390
		MIN	673.46	-1336.34	0.00	-1043.3390
19	0.00	MAX	673.46	-1336.34	0.00	-1043.3390
		MIN	673.46	-1336.34	0.00	-1043.3390
	0.50	MAX	169.68	-676.09	0.00	-1083.5830
		MIN	169.68	-676.09	0.00	-1083.5830
20	0.00	MAX	169.68	-676.09	0.00	-1083.5830
		MIN	169.68	-676.09	0.00	-1083.5830
	0.50	MAX	0.00	0.00	0.00	-1123.0210
		MIN	0.00	0.00	0.00	-1123.0210

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	21501.39	0.50	1	17469.79	0.00	1
2	25218.04	0.50	1	21501.39	0.00	1
3	28101.89	0.50	1	25218.04	0.00	1
4	29463.12	0.50	1	28101.89	0.00	1
5	29496.50	0.10	1	29035.54	0.50	1
6	29035.54	0.00	1	27391.99	0.50	1
7	27391.99	0.00	1	24933.79	0.50	1
8	24933.79	0.00	1	21995.82	0.50	1
9	21995.82	0.00	1	18852.37	0.50	1
10	18852.37	0.00	1	15724.21	0.50	1
11	15724.21	0.00	1	12786.14	0.50	1
12	12786.14	0.00	1	10174.57	0.50	1
13	10174.57	0.00	1	7885.08	0.50	1
14	7885.08	0.00	1	5855.18	0.50	1
15	5855.18	0.00	1	4105.14	0.50	1

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16	4105.14	0.00	1	2650.47	0.50	1
17	2650.47	0.00	1	1503.27	0.50	1
18	1503.27	0.00	1	673.46	0.50	1
19	673.46	0.00	1	169.68	0.50	1
20	169.68	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	0	0
18	0.00	-8.50	0	0	0
19	0.00	-9.00	0	0	0
20	0.00	-9.50	0	0	0
21	0.00	-10.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50
17	17	18	0.50
18	18	19	0.50
19	19	20	0.50
20	20	21	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E9	0.0000	0.00
2	1	0.4952	0.019514	3.1447E9	0.0000	0.00
3	1	0.4952	0.019514	3.1447E9	0.0000	0.00
4	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
5	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
6	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80

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7	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
8	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
9	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
10	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
11	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
12	1	0.4952	0.019514	3.1447E9	3000000.0..	0.80
13	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
14	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
15	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
16	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
17	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
18	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
19	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80
20	1	0.4952	0.019514	3.1447E9	1000000.0..	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	1214.45	607.23
2	1214.45	607.23
3	1214.45	607.23
4	1214.45	607.23
5	1214.45	607.23
6	1214.45	607.23
7	1214.45	607.23
8	1214.45	607.23
9	1214.45	607.23
10	1214.45	607.23
11	1214.45	607.23
12	1214.45	607.23
13	1214.45	607.23
14	1214.45	607.23
15	1214.45	607.23
16	1214.45	607.23
17	1214.45	607.23
18	1214.45	607.23
19	1214.45	607.23
20	1214.45	607.23

Peso totale struttura = 12144.50

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-12398.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	4312.50	0.00	0.00



Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-4528.13

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	348.00	LL
	2	0.00	0.00	348.00	348.00	LL
	3	0.00	0.00	348.00	348.00	LL
	4	0.00	0.00	348.00	348.00	LL
	5	0.00	0.00	348.00	348.00	LL
	6	0.00	0.00	348.00	348.00	LL
	7	0.00	0.00	348.00	348.00	LL
	8	0.00	0.00	348.00	348.00	LL
	9	0.00	0.00	348.00	348.00	LL
	10	0.00	0.00	348.00	348.00	LL
	11	0.00	0.00	348.00	348.00	LL
	12	0.00	0.00	348.00	348.00	LL
	13	0.00	0.00	472.00	472.00	LL
	14	0.00	0.00	472.00	472.00	LL
	15	0.00	0.00	472.00	472.00	LL
	16	0.00	0.00	472.00	472.00	LL
	17	0.00	0.00	472.00	472.00	LL
	18	0.00	0.00	472.00	472.00	LL
	19	0.00	0.00	472.00	472.00	LL
	20	0.00	0.00	472.00	472.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	348.00	522.00	LL

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.16

Mspinta attiva



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Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1840.00	LL
	2	0.00	0.00	-1840.00	-3679.00	LL
	3	0.00	0.00	-3679.00	-5519.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250)	T(250)	Mtr(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
FESSURAZIONE	1.00	0.5	0.5	0.5	1.00	1.00	1.00	1.00	1.00

combinazione RITIRO + AT.. spinta passiva..

FESSURAZIONE 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-607.23	0.0000
2	0.00	0.00	0.00	-607.23	0.0000
	0.50	0.00	0.00	-1214.45	0.0000
3	0.00	0.00	0.00	-1214.45	0.0000
	0.50	0.00	0.00	-1821.68	0.0000
4	0.00	0.00	0.00	-1821.68	0.0000
	0.50	0.00	0.00	-2428.90	0.0000
5	0.00	0.00	0.00	-2428.90	0.0000
	0.50	0.00	0.00	-3036.13	0.0000
6	0.00	0.00	0.00	-3036.13	0.0000
	0.50	0.00	0.00	-3643.35	0.0000
7	0.00	0.00	0.00	-3643.35	0.0000
	0.50	0.00	0.00	-4250.58	0.0000
8	0.00	0.00	0.00	-4250.58	0.0000
	0.50	0.00	0.00	-4857.80	0.0000
9	0.00	0.00	0.00	-4857.80	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

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10	0.00	0.00	0.00	-5465.03	0.0000
	0.50	0.00	0.00	-6072.25	0.0000
11	0.00	0.00	0.00	-6072.25	0.0000
	0.50	0.00	0.00	-6679.48	0.0000
12	0.00	0.00	0.00	-6679.48	0.0000
	0.50	0.00	0.00	-7286.70	0.0000
13	0.00	0.00	0.00	-7286.70	0.0000
	0.50	0.00	0.00	-7893.93	0.0000
14	0.00	0.00	0.00	-7893.93	0.0000
	0.50	0.00	0.00	-8501.15	0.0000
15	0.00	0.00	0.00	-8501.15	0.0000
	0.50	0.00	0.00	-9108.38	0.0000
16	0.00	0.00	0.00	-9108.38	0.0000
	0.50	0.00	0.00	-9715.60	0.0000
17	0.00	0.00	0.00	-9715.60	0.0000
	0.50	0.00	0.00	-10322.83	0.0000
18	0.00	0.00	0.00	-10322.83	0.0000
	0.50	0.00	0.00	-10930.05	0.0000
19	0.00	0.00	0.00	-10930.05	0.0000
	0.50	0.00	0.00	-11537.28	0.0000
20	0.00	0.00	0.00	-11537.28	0.0000
	0.50	0.00	0.00	-12144.50	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
2	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
3	0.00	12398.50	0.00	0.00	0.0000
	0.50	12398.50	0.00	0.00	0.0000
4	0.00	12398.50	0.00	0.00	3336.0710
	0.50	12099.17	-1133.17	0.00	2370.7110
5	0.00	12099.17	-1133.17	0.00	2370.7110
	0.50	11324.56	-1910.89	0.00	1552.7410
6	0.00	11324.56	-1910.89	0.00	1552.7410
	0.50	10237.98	-2390.26	0.00	872.8601
7	0.00	10237.98	-2390.26	0.00	872.8601
	0.50	8975.23	-2623.85	0.00	317.9260
8	0.00	8975.23	-2623.85	0.00	317.9260
	0.50	7647.25	-2658.47	0.00	-127.3811

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9	0.00	7647.25	-2658.47	0.00	-127.3811
	0.50	6343.13	-2534.66	0.00	-479.2006
10	0.00	6343.13	-2534.66	0.00	-479.2006
	0.50	5133.29	-2286.50	0.00	-753.3997
11	0.00	5133.29	-2286.50	0.00	-753.3997
	0.50	4072.66	-1941.97	0.00	-964.7087
12	0.00	4072.66	-1941.97	0.00	-964.7087
	0.50	3203.61	-1523.52	0.00	-1126.0470
13	0.00	3203.61	-1523.52	0.00	-375.3491
	0.50	2480.72	-1365.31	0.00	-416.0274
14	0.00	2480.72	-1365.31	0.00	-416.0274
	0.50	1840.65	-1192.98	0.00	-446.5713
15	0.00	1840.65	-1192.98	0.00	-446.5713
	0.50	1289.51	-1010.05	0.00	-469.5864
16	0.00	1289.51	-1010.05	0.00	-469.5864
	0.50	831.94	-819.06	0.00	-487.3164
17	0.00	831.94	-819.06	0.00	-487.3164
	0.50	471.50	-621.74	0.00	-501.6242
18	0.00	471.50	-621.74	0.00	-501.6242
	0.50	211.07	-419.14	0.00	-513.9772
19	0.00	211.07	-419.14	0.00	-513.9772
	0.50	53.14	-211.82	0.00	-525.4355
20	0.00	53.14	-211.82	0.00	-525.4355
	0.50	0.00	0.00	0.00	-536.6418

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	4312.50	0.00	0.0000
	0.50	2156.25	4312.50	0.00	0.0000
2	0.00	2156.25	4312.50	0.00	0.0000
	0.50	4312.50	4312.50	0.00	0.0000
3	0.00	4312.50	4312.50	0.00	0.0000
	0.50	6468.75	4312.50	0.00	0.0000
4	0.00	6468.75	4312.50	0.00	5396.0650
	0.50	8123.54	2378.47	0.00	4316.2510
5	0.00	8123.54	2378.47	0.00	4316.2510
	0.50	8915.85	856.02	0.00	3334.8430
6	0.00	8915.85	856.02	0.00	3334.8430
	0.50	9041.25	-296.38	0.00	2461.7230
7	0.00	9041.25	-296.38	0.00	2461.7230
	0.50	8673.85	-1122.50	0.00	1698.6020
8	0.00	8673.85	-1122.50	0.00	1698.6020

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	0.50	7965.92	-1665.53	0.00	1041.1440
9	0.00	7965.92	-1665.53	0.00	1041.1440
	0.50	7048.73	-1966.01	0.00	480.8311
10	0.00	7048.73	-1966.01	0.00	480.8311
	0.50	6034.20	-2060.56	0.00	6.5671
11	0.00	6034.20	-2060.56	0.00	6.5671
	0.50	5017.14	-1981.06	0.00	-393.9507
12	0.00	5017.14	-1981.06	0.00	-393.9507
	0.50	4077.64	-1754.44	0.00	-733.0709
13	0.00	4077.64	-1754.44	0.00	-244.3570
	0.50	3228.11	-1637.25	0.00	-340.7536
14	0.00	3228.11	-1637.25	0.00	-340.7536
	0.50	2446.33	-1484.35	0.00	-423.9761
15	0.00	2446.33	-1484.35	0.00	-423.9761
	0.50	1748.94	-1300.35	0.00	-497.2040
16	0.00	1748.94	-1300.35	0.00	-497.2040
	0.50	1150.59	-1088.65	0.00	-563.2731
17	0.00	1150.59	-1088.65	0.00	-563.2731
	0.50	664.51	-851.62	0.00	-624.6168
18	0.00	664.51	-851.62	0.00	-624.6168
	0.50	302.95	-590.72	0.00	-683.2110
19	0.00	302.95	-590.72	0.00	-683.2110
	0.50	77.63	-306.74	0.00	-740.5248
20	0.00	77.63	-306.74	0.00	-740.5248
	0.50	0.00	0.00	0.00	-797.4723

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
2	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
3	0.00	4528.13	0.00	0.00	0.0000
	0.50	4528.13	0.00	0.00	0.0000
4	0.00	4528.13	0.00	0.00	1218.3860
	0.50	4418.81	-413.85	0.00	865.8216
5	0.00	4418.81	-413.85	0.00	865.8216
	0.50	4135.91	-697.89	0.00	567.0859
6	0.00	4135.91	-697.89	0.00	567.0859
	0.50	3739.07	-872.96	0.00	318.7824
7	0.00	3739.07	-872.96	0.00	318.7824
	0.50	3277.90	-958.27	0.00	116.1116

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8	0.00	3277.90	-958.27	0.00	116.1116
	0.50	2792.90	-970.92	0.00	-46.5216
9	0.00	2792.90	-970.92	0.00	-46.5216
	0.50	2316.61	-925.70	0.00	-175.0117
10	0.00	2316.61	-925.70	0.00	-175.0117
	0.50	1874.76	-835.07	0.00	-275.1536
11	0.00	1874.76	-835.07	0.00	-275.1536
	0.50	1487.40	-709.24	0.00	-352.3270
12	0.00	1487.40	-709.24	0.00	-352.3270
	0.50	1170.01	-556.42	0.00	-411.2505
13	0.00	1170.01	-556.42	0.00	-137.0835
	0.50	906.00	-498.63	0.00	-151.9398
14	0.00	906.00	-498.63	0.00	-151.9398
	0.50	672.23	-435.69	0.00	-163.0950
15	0.00	672.23	-435.69	0.00	-163.0950
	0.50	470.95	-368.89	0.00	-171.5004
16	0.00	470.95	-368.89	0.00	-171.5004
	0.50	303.84	-299.13	0.00	-177.9757
17	0.00	303.84	-299.13	0.00	-177.9757
	0.50	172.20	-227.07	0.00	-183.2012
18	0.00	172.20	-227.07	0.00	-183.2012
	0.50	77.09	-153.08	0.00	-187.7127
19	0.00	77.09	-153.08	0.00	-187.7127
	0.50	19.41	-77.36	0.00	-191.8974
20	0.00	19.41	-77.36	0.00	-191.8974
	0.50	0.00	0.00	0.00	-195.9901

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	43.50	174.00	0.00	0.0000
2	0.00	43.50	174.00	0.00	0.0000
	0.50	174.00	348.00	0.00	0.0000
3	0.00	174.00	348.00	0.00	0.0000
	0.50	391.50	522.00	0.00	0.0000
4	0.00	391.50	522.00	0.00	686.1567
	0.50	628.22	426.09	0.00	668.2156
5	0.00	628.22	426.09	0.00	668.2156
	0.50	818.55	335.91	0.00	657.9052
6	0.00	818.55	335.91	0.00	657.9052
	0.50	964.50	247.91	0.00	657.5539

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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7	0.00	964.50	247.91	0.00	657.5539			
	0.50	1066.11	157.77	0.00	668.9453			
8	0.00	1066.11	157.77	0.00	668.9453			
	0.50	1121.09	60.52	0.00	693.3190			
9	0.00	1121.09	60.52	0.00	693.3190			
	0.50	1124.56	-49.15	0.00	731.3419			
10	0.00	1124.56	-49.15	0.00	731.3419			
	0.50	1068.95	-176.74	0.00	783.0489			
11	0.00	1068.95	-176.74	0.00	783.0489			
	0.50	943.95	-327.57	0.00	847.7497			
12	0.00	943.95	-327.57	0.00	847.7497			
	0.50	736.68	-506.57	0.00	923.9034			
13	0.00	736.68	-506.57	0.00	307.9678			
	0.50	510.76	-398.99	0.00	336.3470			
14	0.00	510.76	-398.99	0.00	336.3470			
	0.50	335.73	-303.17	0.00	366.8243			
15	0.00	335.73	-303.17	0.00	366.8243			
	0.50	205.52	-219.81	0.00	398.6845			
16	0.00	205.52	-219.81	0.00	398.6845			
	0.50	113.78	-149.34	0.00	431.3951			
17	0.00	113.78	-149.34	0.00	431.3951			
	0.50	53.99	-92.02	0.00	464.5800			
18	0.00	53.99	-92.02	0.00	464.5800			
	0.50	19.54	-47.99	0.00	497.9934			
19	0.00	19.54	-47.99	0.00	497.9934			
	0.50	3.77	-17.31	0.00	531.4929			
20	0.00	3.77	-17.31	0.00	531.4929			
	0.50	0.00	0.00	0.00	565.0117			
Condizione : Spinta attiva								
asta	x	M	T	N	P			
1	0.00	0.00	652.33	0.00	0.0000			
	0.50	376.91	869.83	0.00	0.0000			
2	0.00	376.92	869.83	0.00	0.0000			
	0.50	811.83	869.83	0.00	0.0000			
3	0.00	811.83	869.83	0.00	0.0000			
	0.50	1246.75	869.83	0.00	0.0000			
4	0.00	1246.74	869.83	0.00	1072.7790			
	0.50	1581.92	485.04	0.00	859.4964			
5	0.00	1581.92	485.04	0.00	859.4964			
	0.50	1745.35	181.60	0.00	665.3731			
6	0.00	1745.35	181.60	0.00	665.3731			

GENERAL CONTRACTOR

Cepav due



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	0.50	1775.72	-48.60	0.00	492.4456
7	0.00	1775.72	-48.60	0.00	492.4456
	0.50	1707.53	-214.13	0.00	341.1203
8	0.00	1707.53	-214.13	0.00	341.1203
	0.50	1570.95	-323.50	0.00	210.5943
9	0.00	1570.95	-323.50	0.00	210.5943
	0.50	1392.05	-384.69	0.00	99.2252
10	0.00	1392.05	-384.69	0.00	99.2252
	0.50	1193.08	-404.92	0.00	4.8490
11	0.00	1193.08	-404.92	0.00	4.8490
	0.50	992.90	-390.49	0.00	-74.9468
12	0.00	992.90	-390.49	0.00	-74.9468
	0.50	807.47	-346.74	0.00	-142.5926
13	0.00	807.47	-346.74	0.00	-47.5309
	0.50	639.50	-323.85	0.00	-66.7837
14	0.00	639.50	-323.85	0.00	-66.7837
	0.50	484.81	-293.81	0.00	-83.4268
15	0.00	484.81	-293.81	0.00	-83.4268
	0.50	346.73	-257.55	0.00	-98.0892
16	0.00	346.73	-257.55	0.00	-98.0892
	0.50	228.18	-215.75	0.00	-111.3324
17	0.00	228.18	-215.75	0.00	-111.3324
	0.50	131.82	-168.86	0.00	-123.6384
18	0.00	131.82	-168.86	0.00	-123.6384
	0.50	60.12	-117.19	0.00	-135.3991
19	0.00	60.12	-117.19	0.00	-135.3991
	0.50	15.41	-60.88	0.00	-146.9057
20	0.00	15.41	-60.88	0.00	-146.9057
	0.50	0.00	0.00	0.00	-158.3395

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.17	652.33	0.00	0.0000
2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.49	652.33	0.00	816.2353
	0.50	1228.81	359.78	0.00	652.8973
5	0.00	1228.81	359.78	0.00	652.8973
	0.50	1348.66	129.49	0.00	504.4447

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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6	0.00	1348.66	129.49	0.00	504.4447
	0.50	1367.62	-44.83	0.00	372.3723
7	0.00	1367.62	-44.83	0.00	372.3723
	0.50	1312.05	-169.79	0.00	256.9389
8	0.00	1312.05	-169.79	0.00	256.9389
	0.50	1204.96	-251.94	0.00	157.4886
9	0.00	1204.96	-251.94	0.00	157.4886
	0.50	1066.22	-297.39	0.00	72.7329
10	0.00	1066.22	-297.39	0.00	72.7329
	0.50	912.76	-311.69	0.00	0.9934
11	0.00	912.76	-311.69	0.00	0.9934
	0.50	758.92	-299.66	0.00	-59.5909
12	0.00	758.92	-299.66	0.00	-59.5909
	0.50	616.80	-265.39	0.00	-110.8879
13	0.00	616.80	-265.39	0.00	-36.9626
	0.50	488.30	-247.66	0.00	-51.5441
14	0.00	488.30	-247.66	0.00	-51.5441
	0.50	370.04	-224.53	0.00	-64.1327
15	0.00	370.04	-224.53	0.00	-64.1327
	0.50	264.55	-196.70	0.00	-75.2095
16	0.00	264.55	-196.70	0.00	-75.2095
	0.50	174.04	-164.67	0.00	-85.2035
17	0.00	174.04	-164.67	0.00	-85.2035
	0.50	100.52	-128.82	0.00	-94.4826
18	0.00	100.52	-128.82	0.00	-94.4826
	0.50	45.83	-89.35	0.00	-103.3459
19	0.00	45.83	-89.35	0.00	-103.3459
	0.50	11.74	-46.40	0.00	-112.0154
20	0.00	11.74	-46.40	0.00	-112.0154
	0.50	0.00	0.00	0.00	-120.6296

Condizione : Mg

asta	x	M	T	N	P
1	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
2	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
3	0.00	326.16	0.00	0.00	0.0000
	0.50	326.16	0.00	0.00	0.0000
4	0.00	326.16	0.00	0.00	87.7600
	0.50	318.29	-29.81	0.00	62.3649

GENERAL CONTRACTOR

Cepav due



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5	0.00	318.29	-29.81	0.00	62.3649
	0.50	297.91	-50.27	0.00	40.8470
6	0.00	297.91	-50.27	0.00	40.8470
	0.50	269.32	-62.88	0.00	22.9618
7	0.00	269.32	-62.88	0.00	22.9618
	0.50	236.11	-69.02	0.00	8.3635
8	0.00	236.11	-69.02	0.00	8.3635
	0.50	201.17	-69.93	0.00	-3.3509
9	0.00	201.17	-69.93	0.00	-3.3509
	0.50	166.86	-66.68	0.00	-12.6060
10	0.00	166.86	-66.68	0.00	-12.6060
	0.50	135.04	-60.15	0.00	-19.8192
11	0.00	135.04	-60.15	0.00	-19.8192
	0.50	107.14	-51.09	0.00	-25.3780
12	0.00	107.14	-51.09	0.00	-25.3780
	0.50	84.28	-40.08	0.00	-29.6223
13	0.00	84.28	-40.08	0.00	-9.8741
	0.50	65.26	-35.92	0.00	-10.9442
14	0.00	65.26	-35.92	0.00	-10.9442
	0.50	48.42	-31.38	0.00	-11.7477
15	0.00	48.42	-31.38	0.00	-11.7477
	0.50	33.92	-26.57	0.00	-12.3531
16	0.00	33.92	-26.57	0.00	-12.3531
	0.50	21.89	-21.55	0.00	-12.8195
17	0.00	21.89	-21.55	0.00	-12.8195
	0.50	12.40	-16.36	0.00	-13.1959
18	0.00	12.40	-16.36	0.00	-13.1959
	0.50	5.55	-11.03	0.00	-13.5209
19	0.00	5.55	-11.03	0.00	-13.5209
	0.50	1.40	-5.57	0.00	-13.8223
20	0.00	1.40	-5.57	0.00	-13.8223
	0.50	0.00	0.00	0.00	-14.1171

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	58.3883

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	211.76	-19.83	0.00	41.4925
5	0.00	211.76	-19.83	0.00	41.4925
	0.50	198.20	-33.44	0.00	27.1763
6	0.00	198.20	-33.44	0.00	27.1763
	0.50	179.19	-41.83	0.00	15.2769
7	0.00	179.19	-41.83	0.00	15.2769
	0.50	157.09	-45.92	0.00	5.5644
8	0.00	157.09	-45.92	0.00	5.5644
	0.50	133.84	-46.53	0.00	-2.2294
9	0.00	133.84	-46.53	0.00	-2.2294
	0.50	111.02	-44.36	0.00	-8.3870
10	0.00	111.02	-44.36	0.00	-8.3870
	0.50	89.84	-40.02	0.00	-13.1861
11	0.00	89.84	-40.02	0.00	-13.1861
	0.50	71.28	-33.99	0.00	-16.8844
12	0.00	71.28	-33.99	0.00	-16.8844
	0.50	56.07	-26.66	0.00	-19.7082
13	0.00	56.07	-26.66	0.00	-6.5694
	0.50	43.42	-23.90	0.00	-7.2814
14	0.00	43.42	-23.90	0.00	-7.2814
	0.50	32.22	-20.88	0.00	-7.8159
15	0.00	32.22	-20.88	0.00	-7.8159
	0.50	22.57	-17.68	0.00	-8.2188
16	0.00	22.57	-17.68	0.00	-8.2188
	0.50	14.56	-14.34	0.00	-8.5291
17	0.00	14.56	-14.34	0.00	-8.5291
	0.50	8.25	-10.88	0.00	-8.7795
18	0.00	8.25	-10.88	0.00	-8.7795
	0.50	3.69	-7.34	0.00	-8.9957
19	0.00	3.69	-7.34	0.00	-8.9957
	0.50	0.93	-3.71	0.00	-9.1962
20	0.00	0.93	-3.71	0.00	-9.1962
	0.50	0.00	0.00	0.00	-9.3924

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	3233.34	0.00	0.0000
	0.50	1616.67	3233.34	0.00	0.0000
2	0.00	1616.67	3233.34	0.00	0.0000
	0.50	3233.34	3233.34	0.00	0.0000
3	0.00	3233.34	3233.34	0.00	0.0000
	0.50	4850.01	3233.34	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



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4	0.00	4850.01	3233.34	0.00	4045.7570
	0.50	6090.71	1783.28	0.00	3236.1550
5	0.00	6090.71	1783.28	0.00	3236.1550
	0.50	6684.75	641.81	0.00	2500.3340
6	0.00	6684.75	641.81	0.00	2500.3340
	0.50	6778.77	-222.21	0.00	1845.7030
7	0.00	6778.77	-222.21	0.00	1845.7030
	0.50	6503.31	-841.61	0.00	1273.5450
8	0.00	6503.31	-841.61	0.00	1273.5450
	0.50	5972.53	-1248.75	0.00	780.6089
9	0.00	5972.53	-1248.75	0.00	780.6089
	0.50	5284.86	-1474.04	0.00	360.5082
10	0.00	5284.86	-1474.04	0.00	360.5082
	0.50	4524.21	-1544.93	0.00	4.9237
11	0.00	4524.21	-1544.93	0.00	4.9237
	0.50	3761.66	-1485.32	0.00	-295.3687
12	0.00	3761.66	-1485.32	0.00	-295.3687
	0.50	3057.25	-1315.41	0.00	-549.6277
13	0.00	3057.25	-1315.41	0.00	-183.2092
	0.50	2420.31	-1227.55	0.00	-255.4836
14	0.00	2420.31	-1227.55	0.00	-255.4836
	0.50	1834.16	-1112.91	0.00	-317.8807
15	0.00	1834.16	-1112.91	0.00	-317.8807
	0.50	1311.28	-974.95	0.00	-372.7840
16	0.00	1311.28	-974.95	0.00	-372.7840
	0.50	862.67	-816.23	0.00	-422.3201
17	0.00	862.67	-816.23	0.00	-422.3201
	0.50	498.22	-638.51	0.00	-468.3131
18	0.00	498.22	-638.51	0.00	-468.3131
	0.50	227.14	-442.90	0.00	-512.2448
19	0.00	227.14	-442.90	0.00	-512.2448
	0.50	58.21	-229.98	0.00	-555.2164
20	0.00	58.21	-229.98	0.00	-555.2164
	0.50	0.00	0.00	0.00	-597.9134

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-76.67	-460.00	0.00	0.0000
2	0.00	-76.67	-460.00	0.00	0.0000
	0.50	-613.29	-1839.75	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



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3	0.00	-613.29	-1839.75	0.00	0.0000			
	0.50	-2069.71	-4139.25	0.00	0.0000			
4	0.00	-2069.71	-4139.25	0.00	-4065.5560			
	0.50	-3757.95	-2661.22	0.00	-3351.4020			
5	0.00	-3757.95	-2661.22	0.00	-3351.4020			
	0.50	-4777.03	-1459.57	0.00	-2682.4950			
6	0.00	-4777.03	-1459.57	0.00	-2682.4950			
	0.50	-5260.14	-513.51	0.00	-2071.4270			
7	0.00	-5260.14	-513.51	0.00	-2071.4270			
	0.50	-5329.06	201.45	0.00	-1524.2250			
8	0.00	-5329.06	201.45	0.00	-1524.2250			
	0.50	-5092.91	711.10	0.00	-1041.8430			
9	0.00	-5092.91	711.10	0.00	-1041.8430			
	0.50	-4647.93	1040.85	0.00	-621.4925			
10	0.00	-4647.93	1040.85	0.00	-621.4925			
	0.50	-4078.07	1214.45	0.00	-257.8213			
11	0.00	-4078.07	1214.45	0.00	-257.8213			
	0.50	-3455.95	1253.15	0.00	56.0618			
12	0.00	-3455.95	1253.15	0.00	56.0618			
	0.50	-2844.32	1175.34	0.00	327.6962			
13	0.00	-2844.32	1175.34	0.00	109.2321			
	0.50	-2270.25	1115.68	0.00	188.1758			
14	0.00	-2270.25	1115.68	0.00	188.1758			
	0.50	-1733.56	1026.45	0.00	257.8581			
15	0.00	-1733.56	1026.45	0.00	257.8581			
	0.50	-1248.18	910.91	0.00	320.4606			
16	0.00	-1248.18	910.91	0.00	320.4606			
	0.50	-826.63	771.48	0.00	377.9565			
17	0.00	-826.63	771.48	0.00	377.9565			
	0.50	-480.40	609.84	0.00	432.0592			
18	0.00	-480.40	609.84	0.00	432.0592			
	0.50	-220.31	427.06	0.00	484.1755			
19	0.00	-220.31	427.06	0.00	484.1755			
	0.50	-56.77	223.70	0.00	535.3615			
20	0.00	-56.77	223.70	0.00	535.3615			
	0.50	0.00	0.00	0.00	586.2800			
Combinazione : FESSURAZIONE								
asta	x	M	T	N	P			
1	0.00	9006.48	6368.09	0.00	0.0000			
	0.50	12160.98	6103.84	0.00	0.0000			
2	0.00	12160.98	6103.84	0.00	0.0000			

GENERAL CONTRACTOR

Cepav due



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	0.50	14928.02	4811.09	0.00	0.0000
3	0.00	14928.02	4811.09	0.00	0.0000
	0.50	16818.77	2598.59	0.00	0.0000
4	0.00	16818.77	2598.59	0.00	6797.3140
	0.50	17517.44	303.49	0.00	5181.7560
5	0.00	17517.44	303.49	0.00	5181.7560
	0.50	17222.60	-1389.61	0.00	3779.2810
6	0.00	17222.60	-1389.61	0.00	3779.2810
	0.50	16214.03	-2565.41	0.00	2586.5700
7	0.00	16214.03	-2565.41	0.00	2586.5700
	0.50	14729.80	-3305.39	0.00	1591.5400
8	0.00	14729.80	-3305.39	0.00	1591.5400
	0.50	12968.66	-3684.99	0.00	776.2518
9	0.00	12968.66	-3684.99	0.00	776.2518
	0.50	11093.57	-3771.72	0.00	119.3484
10	0.00	11093.57	-3771.72	0.00	119.3484
	0.50	9235.93	-3624.23	0.00	-401.9537
11	0.00	9235.93	-3624.23	0.00	-401.9537
	0.50	7500.07	-3292.07	0.00	-810.2521
12	0.00	7500.07	-3292.07	0.00	-810.2521
	0.50	5967.79	-2816.05	0.00	-1126.6790
13	0.00	5967.79	-2816.05	0.00	-375.5596
	0.50	4629.59	-2531.35	0.00	-456.6562
14	0.00	4629.59	-2531.35	0.00	-456.6562
	0.50	3441.16	-2218.25	0.00	-518.8413
15	0.00	3441.16	-2218.25	0.00	-518.8413
	0.50	2414.97	-1883.31	0.00	-566.9525
16	0.00	2414.97	-1883.31	0.00	-566.9525
	0.50	1560.69	-1531.27	0.00	-605.1669
17	0.00	1560.69	-1531.27	0.00	-605.1669
	0.50	886.00	-1165.38	0.00	-636.9623
18	0.00	886.00	-1165.38	0.00	-636.9623
	0.50	397.28	-787.61	0.00	-665.0850
19	0.00	397.28	-787.61	0.00	-665.0850
	0.50	100.19	-399.02	0.00	-691.5243
20	0.00	100.19	-399.02	0.00	-691.5243
	0.50	0.00	0.00	0.00	-717.4885

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	9006.48	6368.09	0.00	
		MIN	9006.48	6368.09	0.00	

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	0.50	MAX	12160.98	6103.84	0.00	
		MIN	12160.98	6103.84	0.00	
2	0.00	MAX	12160.98	6103.84	0.00	
		MIN	12160.98	6103.84	0.00	
	0.50	MAX	14928.02	4811.09	0.00	
		MIN	14928.02	4811.09	0.00	
3	0.00	MAX	14928.02	4811.09	0.00	
		MIN	14928.02	4811.09	0.00	
	0.50	MAX	16818.77	2598.59	0.00	
		MIN	16818.77	2598.59	0.00	
4	0.00	MAX	16818.77	2598.59	0.00	6797.3140
		MIN	16818.77	2598.59	0.00	6797.3140
	0.50	MAX	17517.44	303.49	0.00	5181.7560
		MIN	17517.44	303.49	0.00	5181.7560
5	0.00	MAX	17517.44	303.49	0.00	5181.7560
		MIN	17517.44	303.49	0.00	5181.7560
	0.50	MAX	17222.60	-1389.61	0.00	3779.2810
		MIN	17222.60	-1389.61	0.00	3779.2810
6	0.00	MAX	17222.60	-1389.61	0.00	3779.2810
		MIN	17222.60	-1389.61	0.00	3779.2810
	0.50	MAX	16214.03	-2565.41	0.00	2586.5700
		MIN	16214.03	-2565.41	0.00	2586.5700
7	0.00	MAX	16214.03	-2565.41	0.00	2586.5700
		MIN	16214.03	-2565.41	0.00	2586.5700
	0.50	MAX	14729.80	-3305.39	0.00	1591.5400
		MIN	14729.80	-3305.39	0.00	1591.5400
8	0.00	MAX	14729.80	-3305.39	0.00	1591.5400
		MIN	14729.80	-3305.39	0.00	1591.5400
	0.50	MAX	12968.66	-3684.99	0.00	776.2518
		MIN	12968.66	-3684.99	0.00	776.2518
9	0.00	MAX	12968.66	-3684.99	0.00	776.2518
		MIN	12968.66	-3684.99	0.00	776.2518
	0.50	MAX	11093.57	-3771.72	0.00	119.3484
		MIN	11093.57	-3771.72	0.00	119.3484
10	0.00	MAX	11093.57	-3771.72	0.00	119.3484
		MIN	11093.57	-3771.72	0.00	119.3484
	0.50	MAX	9235.93	-3624.23	0.00	-401.9537
		MIN	9235.93	-3624.23	0.00	-401.9537
11	0.00	MAX	9235.93	-3624.23	0.00	-401.9537
		MIN	9235.93	-3624.23	0.00	-401.9537
	0.50	MAX	7500.07	-3292.07	0.00	-810.2521
		MIN	7500.07	-3292.07	0.00	-810.2521
12	0.00	MAX	7500.07	-3292.07	0.00	-810.2521
		MIN	7500.07	-3292.07	0.00	-810.2521
	0.50	MAX	5967.79	-2816.05	0.00	-1126.6790
		MIN	5967.79	-2816.05	0.00	-1126.6790
13	0.00	MAX	5967.79	-2816.05	0.00	-375.5596
		MIN	5967.79	-2816.05	0.00	-375.5596
	0.50	MAX	4629.59	-2531.35	0.00	-456.6562
		MIN	4629.59	-2531.35	0.00	-456.6562

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14	0.00	MAX	4629.59	-2531.35	0.00	-456.6562
		MIN	4629.59	-2531.35	0.00	-456.6562
	0.50	MAX	3441.16	-2218.25	0.00	-518.8413
		MIN	3441.16	-2218.25	0.00	-518.8413
15	0.00	MAX	3441.16	-2218.25	0.00	-518.8413
		MIN	3441.16	-2218.25	0.00	-518.8413
	0.50	MAX	2414.97	-1883.31	0.00	-566.9525
		MIN	2414.97	-1883.31	0.00	-566.9525
16	0.00	MAX	2414.97	-1883.31	0.00	-566.9525
		MIN	2414.97	-1883.31	0.00	-566.9525
	0.50	MAX	1560.69	-1531.27	0.00	-605.1669
		MIN	1560.69	-1531.27	0.00	-605.1669
17	0.00	MAX	1560.69	-1531.27	0.00	-605.1669
		MIN	1560.69	-1531.27	0.00	-605.1669
	0.50	MAX	886.00	-1165.38	0.00	-636.9623
		MIN	886.00	-1165.38	0.00	-636.9623
18	0.00	MAX	886.00	-1165.38	0.00	-636.9623
		MIN	886.00	-1165.38	0.00	-636.9623
	0.50	MAX	397.28	-787.61	0.00	-665.0850
		MIN	397.28	-787.61	0.00	-665.0850
19	0.00	MAX	397.28	-787.61	0.00	-665.0850
		MIN	397.28	-787.61	0.00	-665.0850
	0.50	MAX	100.19	-399.02	0.00	-691.5243
		MIN	100.19	-399.02	0.00	-691.5243
20	0.00	MAX	100.19	-399.02	0.00	-691.5243
		MIN	100.19	-399.02	0.00	-691.5243
	0.50	MAX	0.00	0.00	0.00	-717.4885
		MIN	0.00	0.00	0.00	-717.4885

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	12160.98	0.50	1	9006.48	0.00	1
2	14928.02	0.50	1	12160.98	0.00	1
3	16818.77	0.50	1	14928.02	0.00	1
4	17517.44	0.50	1	16818.77	0.00	1
5	17529.26	0.08	1	17222.60	0.50	1
6	17222.60	0.00	1	16214.03	0.50	1
7	16214.03	0.00	1	14729.80	0.50	1
8	14729.80	0.00	1	12968.66	0.50	1
9	12968.66	0.00	1	11093.57	0.50	1
10	11093.57	0.00	1	9235.93	0.50	1
11	9235.93	0.00	1	7500.07	0.50	1
12	7500.07	0.00	1	5967.79	0.50	1
13	5967.79	0.00	1	4629.59	0.50	1
14	4629.59	0.00	1	3441.16	0.50	1
15	3441.16	0.00	1	2414.97	0.50	1
16	2414.97	0.00	1	1560.69	0.50	1
17	1560.69	0.00	1	886.00	0.50	1
18	886.00	0.00	1	397.28	0.50	1
19	397.28	0.00	1	100.19	0.50	1
20	100.19	0.00	1	0.00	0.50	1



ALLEGATO N°7

Fondazioni su pali per Barriere di h=4.75m con rilevato di H=7.0m

Calcolo agli elementi finiti con il programma di calcolo "ENG"

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00
5	1	0.2785	0.006174	3.1447E9	0.0000	0.00
6	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60

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9	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8461.00

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	3562.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-3741.00

q



Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL
	4	0.00	0.00	261.00	261.00	LL
	5	0.00	0.00	261.00	261.00	LL
	6	0.00	0.00	261.00	261.00	LL
	7	0.00	0.00	261.00	261.00	LL
	8	0.00	0.00	261.00	261.00	LL
	9	0.00	0.00	261.00	261.00	LL
	10	0.00	0.00	261.00	261.00	LL
	11	0.00	0.00	261.00	261.00	LL
	12	0.00	0.00	261.00	261.00	LL
	13	0.00	0.00	354.00	354.00	LL
	14	0.00	0.00	354.00	354.00	LL
	15	0.00	0.00	354.00	354.00	LL
	16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL

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3	0.00	0.00	-2759.00	-4139.00	LL
4	0.00	0.00	-4139.00	-5519.00	LL
5	0.00	0.00	-5519.00	-7358.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250).	T(250).	Mtrasp(250)	. q	Spinta attiva.. Tq	Mq	Mspinta att..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
ESERCIZIO	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000

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16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
2	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
3	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
4	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
5	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
6	0.00	8461.00	0.00	0.00	5363.8690
	0.50	8107.58	-1322.24	0.00	3529.5060
7	0.00	8107.58	-1322.24	0.00	3529.5060
	0.50	7222.32	-2142.91	0.00	2006.6060
8	0.00	7222.32	-2142.91	0.00	2006.6060
	0.50	6033.43	-2550.59	0.00	761.7088
9	0.00	6033.43	-2550.59	0.00	761.7088
	0.50	4727.71	-2621.87	0.00	-250.5084
10	0.00	4727.71	-2621.87	0.00	-250.5084
	0.50	3457.18	-2418.93	0.00	-1079.9930
11	0.00	3457.18	-2418.93	0.00	-1079.9930
	0.50	2346.53	-1989.04	0.00	-1775.4210
12	0.00	2346.53	-1989.04	0.00	-1775.4210
	0.50	1500.31	-1365.74	0.00	-2379.3570
13	0.00	1500.31	-1365.74	0.00	-793.1189
	0.50	881.39	-1100.91	0.00	-974.8654
14	0.00	881.39	-1100.91	0.00	-974.8654
	0.50	408.14	-783.60	0.00	-1145.1070
15	0.00	408.14	-783.60	0.00	-1145.1070
	0.50	106.11	-416.30	0.00	-1309.9100
16	0.00	106.11	-416.30	0.00	-1309.9100
	0.50	0.00	0.00	0.00	-1473.1370

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	3562.50	0.00	0.0000
	0.50	1781.25	3562.50	0.00	0.0000

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2	0.00	1781.25	3562.50	0.00	0.0000
	0.50	3562.50	3562.50	0.00	0.0000
3	0.00	3562.50	3562.50	0.00	0.0000
	0.50	5343.75	3562.50	0.00	0.0000
4	0.00	5343.75	3562.50	0.00	0.0000
	0.50	7125.00	3562.50	0.00	0.0000
5	0.00	7125.00	3562.50	0.00	0.0000
	0.50	8906.25	3562.50	0.00	0.0000
6	0.00	8906.25	3562.50	0.00	11196.4800
	0.50	9928.44	678.37	0.00	8146.5390
7	0.00	9928.44	678.37	0.00	8146.5390
	0.50	9727.31	-1349.76	0.00	5476.1750
8	0.00	9727.31	-1349.76	0.00	5476.1750
	0.50	8702.37	-2635.46	0.00	3178.9010
9	0.00	8702.37	-2635.46	0.00	3178.9010
	0.50	7197.76	-3285.20	0.00	1216.2340
10	0.00	7197.76	-3285.20	0.00	1216.2340
	0.50	5507.75	-3390.85	0.00	-468.9986
11	0.00	5507.75	-3390.85	0.00	-468.9986
	0.50	3885.25	-3025.82	0.00	-1941.2640
12	0.00	3885.25	-3025.82	0.00	-1941.2640
	0.50	2551.24	-2244.37	0.00	-3262.5230
13	0.00	2551.24	-2244.37	0.00	-1087.5080
	0.50	1520.71	-1857.47	0.00	-1494.7430
14	0.00	1520.71	-1857.47	0.00	-1494.7430
	0.50	713.52	-1352.00	0.00	-1882.1600
15	0.00	713.52	-1352.00	0.00	-1882.1600
	0.50	187.74	-732.26	0.00	-2260.0870
16	0.00	187.74	-732.26	0.00	-2260.0870
	0.50	0.00	0.00	0.00	-2635.2340

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
2	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
3	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
4	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000

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5	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
6	0.00	3741.00	0.00	0.00	2371.6150
	0.50	3584.74	-584.62	0.00	1560.5580
7	0.00	3584.74	-584.62	0.00	1560.5580
	0.50	3193.32	-947.48	0.00	887.2136
8	0.00	3193.32	-947.48	0.00	887.2136
	0.50	2667.66	-1127.74	0.00	336.7868
9	0.00	2667.66	-1127.74	0.00	336.7868
	0.50	2090.34	-1159.25	0.00	-110.7614
10	0.00	2090.34	-1159.25	0.00	-110.7614
	0.50	1528.58	-1069.52	0.00	-477.5149
11	0.00	1528.58	-1069.52	0.00	-477.5149
	0.50	1037.51	-879.45	0.00	-784.9957
12	0.00	1037.51	-879.45	0.00	-784.9957
	0.50	663.36	-603.86	0.00	-1052.0240
13	0.00	663.36	-603.86	0.00	-350.6746
	0.50	389.70	-486.76	0.00	-431.0331
14	0.00	389.70	-486.76	0.00	-431.0331
	0.50	180.46	-346.47	0.00	-506.3049
15	0.00	180.46	-346.47	0.00	-506.3049
	0.50	46.92	-184.07	0.00	-579.1720
16	0.00	46.92	-184.07	0.00	-579.1720
	0.50	0.00	0.00	0.00	-651.3420

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.62	391.50	0.00	0.0000
4	0.00	293.62	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	0.0000
	0.50	815.62	652.50	0.00	0.0000
6	0.00	815.63	652.50	0.00	1666.7060
	0.50	1056.90	326.24	0.00	1393.0310
7	0.00	1056.90	326.24	0.00	1393.0310
	0.50	1154.54	75.98	0.00	1159.7180
8	0.00	1154.54	75.98	0.00	1159.7180

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	0.50	1143.41	-111.07	0.00	970.6527
9	0.00	1143.41	-111.07	0.00	970.6527
	0.50	1051.79	-248.18	0.00	825.4951
10	0.00	1051.79	-248.18	0.00	825.4951
	0.50	901.44	-348.02	0.00	720.7764
11	0.00	901.44	-348.02	0.00	720.7764
	0.50	708.08	-421.90	0.00	650.7394
12	0.00	708.08	-421.90	0.00	650.7394
	0.50	482.30	-479.10	0.00	607.9496
13	0.00	482.30	-479.10	0.00	202.6499
	0.50	272.08	-361.40	0.00	194.6135
14	0.00	272.08	-361.40	0.00	194.6135
	0.50	121.20	-241.89	0.00	190.1441
15	0.00	121.20	-241.89	0.00	190.1441
	0.50	30.36	-121.33	0.00	187.2996
16	0.00	30.36	-121.33	0.00	187.2996
	0.50	0.00	0.00	0.00	184.9109

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	0.0000
	0.50	1630.00	652.00	0.00	0.0000
6	0.00	1630.00	652.00	0.00	2049.1510
	0.50	1817.08	124.15	0.00	1490.9600
7	0.00	1817.08	124.15	0.00	1490.9600
	0.50	1780.27	-247.03	0.00	1002.2360
8	0.00	1780.27	-247.03	0.00	1002.2360
	0.50	1592.69	-482.34	0.00	581.7947
9	0.00	1592.69	-482.34	0.00	581.7947
	0.50	1317.32	-601.25	0.00	222.5922
10	0.00	1317.32	-601.25	0.00	222.5922
	0.50	1008.02	-620.58	0.00	-85.8350
11	0.00	1008.02	-620.58	0.00	-85.8350
	0.50	711.07	-553.78	0.00	-355.2853

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12	0.00	711.07	-553.78	0.00	-355.2853
	0.50	466.92	-410.76	0.00	-597.0989
13	0.00	466.92	-410.76	0.00	-199.0330
	0.50	278.32	-339.95	0.00	-273.5643
14	0.00	278.32	-339.95	0.00	-273.5643
	0.50	130.59	-247.44	0.00	-344.4682
15	0.00	130.59	-247.44	0.00	-344.4682
	0.50	34.36	-134.02	0.00	-413.6356
16	0.00	34.36	-134.02	0.00	-413.6356
	0.50	0.00	0.00	0.00	-482.2941

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.50	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	0.0000
	0.50	1630.83	652.33	0.00	0.0000
6	0.00	1630.83	652.33	0.00	2050.1890
	0.50	1818.00	124.22	0.00	1491.7140
7	0.00	1818.00	124.22	0.00	1491.7140
	0.50	1781.17	-247.16	0.00	1002.7430
8	0.00	1781.17	-247.16	0.00	1002.7430
	0.50	1593.49	-482.58	0.00	582.0892
9	0.00	1593.49	-482.58	0.00	582.0892
	0.50	1317.98	-601.55	0.00	222.7049
10	0.00	1317.98	-601.55	0.00	222.7049
	0.50	1008.53	-620.90	0.00	-85.8784
11	0.00	1008.53	-620.90	0.00	-85.8784
	0.50	711.43	-554.06	0.00	-355.4651
12	0.00	711.43	-554.06	0.00	-355.4651
	0.50	467.16	-410.97	0.00	-597.4011
13	0.00	467.16	-410.97	0.00	-199.1337
	0.50	278.46	-340.12	0.00	-273.7027
14	0.00	278.46	-340.12	0.00	-273.7027
	0.50	130.65	-247.56	0.00	-344.6426

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15	0.00	130.65	-247.56	0.00	-344.6426
	0.50	34.38	-134.08	0.00	-413.8449

16	0.00	34.38	-134.08	0.00	-413.8449
	0.50	0.00	0.00	0.00	-482.5382

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
6	0.00	326.20	0.00	0.00	206.7952
	0.50	312.57	-50.98	0.00	136.0743
7	0.00	312.57	-50.98	0.00	136.0743
	0.50	278.44	-82.62	0.00	77.3614
8	0.00	278.44	-82.62	0.00	77.3614
	0.50	232.61	-98.33	0.00	29.3664
9	0.00	232.61	-98.33	0.00	29.3664
	0.50	182.27	-101.08	0.00	-9.6579
10	0.00	182.27	-101.08	0.00	-9.6579
	0.50	133.29	-93.26	0.00	-41.6374
11	0.00	133.29	-93.26	0.00	-41.6374
	0.50	90.47	-76.68	0.00	-68.4484
12	0.00	90.47	-76.68	0.00	-68.4484
	0.50	57.84	-52.65	0.00	-91.7322
13	0.00	57.84	-52.65	0.00	-30.5774
	0.50	33.98	-42.44	0.00	-37.5843
14	0.00	33.98	-42.44	0.00	-37.5843
	0.50	15.74	-30.21	0.00	-44.1477
15	0.00	15.74	-30.21	0.00	-44.1477
	0.50	4.09	-16.05	0.00	-50.5014
16	0.00	4.09	-16.05	0.00	-50.5014
	0.50	0.00	0.00	0.00	-56.7944

Condizione : Mspinta attiva

asta	x	M	T	N	P
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1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
6	0.00	217.00	0.00	0.00	137.5676
	0.50	207.94	-33.91	0.00	90.5216
7	0.00	207.94	-33.91	0.00	90.5216
	0.50	185.23	-54.96	0.00	51.4636
8	0.00	185.23	-54.96	0.00	51.4636
	0.50	154.74	-65.42	0.00	19.5356
9	0.00	154.74	-65.42	0.00	19.5356
	0.50	121.25	-67.24	0.00	-6.4248
10	0.00	121.25	-67.24	0.00	-6.4248
	0.50	88.67	-62.04	0.00	-27.6987
11	0.00	88.67	-62.04	0.00	-27.6987
	0.50	60.18	-51.01	0.00	-45.5344
12	0.00	60.18	-51.01	0.00	-45.5344
	0.50	38.48	-35.03	0.00	-61.0236
13	0.00	38.48	-35.03	0.00	-20.3412
	0.50	22.60	-28.24	0.00	-25.0025
14	0.00	22.60	-28.24	0.00	-25.0025
	0.50	10.47	-20.10	0.00	-29.3687
15	0.00	10.47	-20.10	0.00	-29.3687
	0.50	2.72	-10.68	0.00	-33.5954
16	0.00	2.72	-10.68	0.00	-33.5954
	0.50	0.00	0.00	0.00	-37.7817

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	796.28	0.00	0.0000
	0.50	398.14	796.28	0.00	0.0000
2	0.00	398.14	796.28	0.00	0.0000
	0.50	796.28	796.28	0.00	0.0000
3	0.00	796.28	796.28	0.00	0.0000
	0.50	1194.42	796.28	0.00	0.0000
4	0.00	1194.42	796.28	0.00	0.0000

GENERAL CONTRACTOR

Cepav due



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	0.50	1592.56	796.28	0.00	0.0000
5	0.00	1592.56	796.28	0.00	0.0000
	0.50	1990.70	796.28	0.00	0.0000
6	0.00	1990.70	796.28	0.00	2502.6050
	0.50	2219.18	151.63	0.00	1820.8920
7	0.00	2219.18	151.63	0.00	1820.8920
	0.50	2174.22	-301.70	0.00	1224.0200
8	0.00	2174.22	-301.70	0.00	1224.0200
	0.50	1945.13	-589.07	0.00	710.5393
9	0.00	1945.13	-589.07	0.00	710.5393
	0.50	1608.82	-734.30	0.00	271.8493
10	0.00	1608.82	-734.30	0.00	271.8493
	0.50	1231.08	-757.91	0.00	-104.8293
11	0.00	1231.08	-757.91	0.00	-104.8293
	0.50	868.42	-676.32	0.00	-433.9059
12	0.00	868.42	-676.32	0.00	-433.9059
	0.50	570.25	-501.66	0.00	-729.2301
13	0.00	570.25	-501.66	0.00	-243.0767
	0.50	339.90	-415.18	0.00	-334.1009
14	0.00	339.90	-415.18	0.00	-334.1009
	0.50	159.48	-302.19	0.00	-420.6951
15	0.00	159.48	-302.19	0.00	-420.6951
	0.50	41.96	-163.67	0.00	-505.1684
16	0.00	41.96	-163.67	0.00	-505.1684
	0.50	0.00	0.00	0.00	-589.0203

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	0.0000
	0.50	-7205.08	-8738.00	0.00	0.0000
6	0.00	-7205.08	-8738.00	0.00	-18181.3900
	0.50	-10323.80	-3951.72	0.00	-13874.5600
7	0.00	-10323.80	-3951.72	0.00	-13874.5600
	0.50	-11362.22	-397.18	0.00	-9959.8150

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8	0.00	-11362.22	-397.18	0.00	-9959.8150
	0.50	-10905.40	2050.94	0.00	-6479.1490
9	0.00	-10905.40	2050.94	0.00	-6479.1490
	0.50	-9474.19	3521.26	0.00	-3416.5950
10	0.00	-9474.19	3521.26	0.00	-3416.5950
	0.50	-7527.36	4131.55	0.00	-718.3456
11	0.00	-7527.36	4131.55	0.00	-718.3456
	0.50	-5469.47	3980.04	0.00	1689.4980
12	0.00	-5469.47	3980.04	0.00	1689.4980
	0.50	-3661.65	3141.81	0.00	3885.2660
13	0.00	-3661.65	3141.81	0.00	1295.0890
	0.50	-2204.91	2651.06	0.00	1979.4730
14	0.00	-2204.91	2651.06	0.00	1979.4730
	0.50	-1043.90	1960.29	0.00	2635.1500
15	0.00	-1043.90	1960.29	0.00	2635.1500
	0.50	-276.89	1075.76	0.00	3276.9640
16	0.00	-276.89	1075.76	0.00	3276.9640
	0.50	0.00	0.00	0.00	3914.6870

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	12745.20	5663.11	0.00	0.0000
	0.50	15551.88	5448.61	0.00	0.0000
2	0.00	15551.88	5448.61	0.00	0.0000
	0.50	18078.85	4544.36	0.00	0.0000
3	0.00	18078.85	4544.36	0.00	0.0000
	0.50	19981.28	2950.36	0.00	0.0000
4	0.00	19981.28	2950.36	0.00	0.0000
	0.50	20914.21	666.36	0.00	0.0000
5	0.00	20914.21	666.36	0.00	0.0000
	0.50	20513.52	-2422.39	0.00	0.0000
6	0.00	20513.52	-2422.39	0.00	9363.5810
	0.50	18728.61	-4538.86	0.00	5785.2350
7	0.00	18728.61	-4538.86	0.00	5785.2350
	0.50	16134.60	-5694.81	0.00	2927.7230
8	0.00	16134.60	-5694.81	0.00	2927.7230
	0.50	13160.14	-6091.66	0.00	692.2259
9	0.00	13160.14	-6091.66	0.00	692.2259
	0.50	10141.05	-5898.67	0.00	-1035.0720
10	0.00	10141.05	-5898.67	0.00	-1035.0720
	0.50	7337.15	-5250.46	0.00	-2369.9540

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11	0.00	7337.15	-5250.46	0.00	-2369.9540
	0.50	4949.46	-4248.01	0.00	-3420.0810
12	0.00	4949.46	-4248.01	0.00	-3420.0810
	0.50	3136.21	-2962.32	0.00	-4277.1740
13	0.00	3136.21	-2962.32	0.00	-1425.7250
	0.50	1812.23	-2321.40	0.00	-1670.5100
14	0.00	1812.23	-2321.40	0.00	-1670.5100
	0.50	826.34	-1611.17	0.00	-1891.6000
15	0.00	826.34	-1611.17	0.00	-1891.6000
	0.50	211.75	-836.70	0.00	-2101.6510
16	0.00	211.75	-836.70	0.00	-2101.6510
	0.50	0.00	0.00	0.00	-2308.5440

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	12745.20	5663.11	0.00	
		MIN	12745.20	5663.11	0.00	
	0.50	MAX	15551.88	5448.61	0.00	
		MIN	15551.88	5448.61	0.00	
2	0.00	MAX	15551.88	5448.61	0.00	
		MIN	15551.88	5448.61	0.00	
	0.50	MAX	18078.85	4544.36	0.00	
		MIN	18078.85	4544.36	0.00	
3	0.00	MAX	18078.85	4544.36	0.00	
		MIN	18078.85	4544.36	0.00	
	0.50	MAX	19981.28	2950.36	0.00	
		MIN	19981.28	2950.36	0.00	
4	0.00	MAX	19981.28	2950.36	0.00	
		MIN	19981.28	2950.36	0.00	
	0.50	MAX	20914.21	666.36	0.00	
		MIN	20914.21	666.36	0.00	
5	0.00	MAX	20914.21	666.36	0.00	
		MIN	20914.21	666.36	0.00	
	0.50	MAX	20513.52	-2422.39	0.00	
		MIN	20513.52	-2422.39	0.00	
6	0.00	MAX	20513.52	-2422.39	0.00	9363.5810
		MIN	20513.52	-2422.39	0.00	9363.5810
	0.50	MAX	18728.61	-4538.86	0.00	5785.2350
		MIN	18728.61	-4538.86	0.00	5785.2350
7	0.00	MAX	18728.61	-4538.86	0.00	5785.2350
		MIN	18728.61	-4538.86	0.00	5785.2350
	0.50	MAX	16134.60	-5694.81	0.00	2927.7230
		MIN	16134.60	-5694.81	0.00	2927.7230
8	0.00	MAX	16134.60	-5694.81	0.00	2927.7230
		MIN	16134.60	-5694.81	0.00	2927.7230
	0.50	MAX	13160.14	-6091.66	0.00	692.2259
		MIN	13160.14	-6091.66	0.00	692.2259

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9	0.00	MAX	13160.14	-6091.66	0.00	692.2259
		MIN	13160.14	-6091.66	0.00	692.2259
	0.50	MAX	10141.05	-5898.67	0.00	-1035.0720
		MIN	10141.05	-5898.67	0.00	-1035.0720
10	0.00	MAX	10141.05	-5898.67	0.00	-1035.0720
		MIN	10141.05	-5898.67	0.00	-1035.0720
	0.50	MAX	7337.15	-5250.46	0.00	-2369.9540
		MIN	7337.15	-5250.46	0.00	-2369.9540
11	0.00	MAX	7337.15	-5250.46	0.00	-2369.9540
		MIN	7337.15	-5250.46	0.00	-2369.9540
	0.50	MAX	4949.46	-4248.01	0.00	-3420.0810
		MIN	4949.46	-4248.01	0.00	-3420.0810
12	0.00	MAX	4949.46	-4248.01	0.00	-3420.0810
		MIN	4949.46	-4248.01	0.00	-3420.0810
	0.50	MAX	3136.21	-2962.32	0.00	-4277.1740
		MIN	3136.21	-2962.32	0.00	-4277.1740
13	0.00	MAX	3136.21	-2962.32	0.00	-1425.7250
		MIN	3136.21	-2962.32	0.00	-1425.7250
	0.50	MAX	1812.23	-2321.40	0.00	-1670.5100
		MIN	1812.23	-2321.40	0.00	-1670.5100
14	0.00	MAX	1812.23	-2321.40	0.00	-1670.5100
		MIN	1812.23	-2321.40	0.00	-1670.5100
	0.50	MAX	826.34	-1611.17	0.00	-1891.6000
		MIN	826.34	-1611.17	0.00	-1891.6000
15	0.00	MAX	826.34	-1611.17	0.00	-1891.6000
		MIN	826.34	-1611.17	0.00	-1891.6000
	0.50	MAX	211.75	-836.70	0.00	-2101.6510
		MIN	211.75	-836.70	0.00	-2101.6510
16	0.00	MAX	211.75	-836.70	0.00	-2101.6510
		MIN	211.75	-836.70	0.00	-2101.6510
	0.50	MAX	0.00	0.00	0.00	-2308.5440
		MIN	0.00	0.00	0.00	-2308.5440

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	15551.88	0.50	1	12745.20	0.00	1
2	18078.85	0.50	1	15551.88	0.00	1
3	19981.28	0.50	1	18078.85	0.00	1
4	20914.21	0.50	1	19981.28	0.00	1
5	20955.27	0.12	1	20513.52	0.50	1
6	20513.52	0.00	1	18728.61	0.50	1
7	18728.61	0.00	1	16134.60	0.50	1
8	16134.60	0.00	1	13160.14	0.50	1
9	13160.14	0.00	1	10141.05	0.50	1
10	10141.05	0.00	1	7337.15	0.50	1
11	7337.15	0.00	1	4949.46	0.50	1
12	4949.46	0.00	1	3136.21	0.50	1
13	3136.21	0.00	1	1812.23	0.50	1
14	1812.23	0.00	1	826.34	0.50	1
15	826.34	0.00	1	211.75	0.50	1
16	211.75	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00
5	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

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15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8461.00

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	3562.50	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-3741.00

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	referim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL



4	0.00	0.00	261.00	261.00	LL
5	0.00	0.00	261.00	261.00	LL
6	0.00	0.00	261.00	261.00	LL
7	0.00	0.00	261.00	261.00	LL
8	0.00	0.00	261.00	261.00	LL
9	0.00	0.00	261.00	261.00	LL
10	0.00	0.00	261.00	261.00	LL
11	0.00	0.00	261.00	261.00	LL
12	0.00	0.00	261.00	261.00	LL
13	0.00	0.00	354.00	354.00	LL
14	0.00	0.00	354.00	354.00	LL
15	0.00	0.00	354.00	354.00	LL
16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.33	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL
	4	0.00	0.00	-4139.00	-5519.00	LL

Combinazioni di carico :

combinazione	P.P..	M(250)	T(250)	Mtr(250)	.q	Spinta attiva..	Tq	Mq	Mspinta att..
FESSURAZIONE	1.00	0.5	0.5	0.5	1.00	1.00	1.00	1.00	1.00

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combinazione RITIRO + AT.. spinta passiva..
 FESSURAZIONE 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00 0.50	0.00 0.00	0.00 0.00	0.00 -341.56	0.0000 0.0000
2	0.00 0.50	0.00 0.00	0.00 0.00	-341.56 -683.13	0.0000 0.0000
3	0.00 0.50	0.00 0.00	0.00 0.00	-683.13 -1024.69	0.0000 0.0000
4	0.00 0.50	0.00 0.00	0.00 0.00	-1024.69 -1366.26	0.0000 0.0000
5	0.00 0.50	0.00 0.00	0.00 0.00	-1366.26 -1707.82	0.0000 0.0000
6	0.00 0.50	0.00 0.00	0.00 0.00	-1707.82 -2049.38	0.0000 0.0000
7	0.00 0.50	0.00 0.00	0.00 0.00	-2049.38 -2390.95	0.0000 0.0000
8	0.00 0.50	0.00 0.00	0.00 0.00	-2390.95 -2732.51	0.0000 0.0000
9	0.00 0.50	0.00 0.00	0.00 0.00	-2732.51 -3074.08	0.0000 0.0000
10	0.00 0.50	0.00 0.00	0.00 0.00	-3074.08 -3415.64	0.0000 0.0000
11	0.00 0.50	0.00 0.00	0.00 0.00	-3415.64 -3757.21	0.0000 0.0000
12	0.00 0.50	0.00 0.00	0.00 0.00	-3757.21 -4098.77	0.0000 0.0000
13	0.00 0.50	0.00 0.00	0.00 0.00	-4098.77 -4440.33	0.0000 0.0000
14	0.00 0.50	0.00 0.00	0.00 0.00	-4440.33 -4781.90	0.0000 0.0000
15	0.00 0.50	0.00 0.00	0.00 0.00	-4781.90 -5123.46	0.0000 0.0000
16	0.00 0.50	0.00 0.00	0.00 0.00	-5123.46 -5465.03	0.0000 0.0000

Condizione : M(250)

asta	x	M	T	N	P
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1	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
2	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
3	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
4	0.00	8461.00	0.00	0.00	0.0000
	0.50	8461.00	0.00	0.00	0.0000
5	0.00	8461.00	0.00	0.00	4950.2930
	0.50	8134.99	-1219.61	0.00	3257.0560
6	0.00	8134.99	-1219.61	0.00	3257.0560
	0.50	7317.89	-1980.01	0.00	1876.4720
7	0.00	7317.89	-1980.01	0.00	1876.4720
	0.50	6216.58	-2370.48	0.00	777.6448
8	0.00	6216.58	-2370.48	0.00	777.6448
	0.50	4995.95	-2469.21	0.00	-81.4358
9	0.00	4995.95	-2469.21	0.00	-81.4358
	0.50	3785.11	-2341.00	0.00	-747.5040
10	0.00	3785.11	-2341.00	0.00	-747.5040
	0.50	2684.25	-2036.57	0.00	-1267.0090
11	0.00	2684.25	-2036.57	0.00	-1267.0090
	0.50	1771.61	-1593.30	0.00	-1682.2220
12	0.00	1771.61	-1593.30	0.00	-1682.2220
	0.50	1109.75	-1036.93	0.00	-2028.1950
13	0.00	1109.75	-1036.93	0.00	-676.0651
	0.50	644.43	-819.32	0.00	-776.8875
14	0.00	644.43	-819.32	0.00	-776.8875
	0.50	295.22	-572.93	0.00	-869.2878
15	0.00	295.22	-572.93	0.00	-869.2878
	0.50	75.99	-299.59	0.00	-957.7475
16	0.00	75.99	-299.59	0.00	-957.7475
	0.50	0.00	0.00	0.00	-1045.0750

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	3562.50	0.00	0.0000
	0.50	1781.25	3562.50	0.00	0.0000
2	0.00	1781.25	3562.50	0.00	0.0000
	0.50	3562.50	3562.50	0.00	0.0000
3	0.00	3562.50	3562.50	0.00	0.0000
	0.50	5343.75	3562.50	0.00	0.0000
4	0.00	5343.75	3562.50	0.00	0.0000

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	0.50	7125.00	3562.50	0.00	0.0000
5	0.00	7125.00	3562.50	0.00	9434.2640
	0.50	8263.80	1115.30	0.00	6976.4810
6	0.00	8263.80	1115.30	0.00	6976.4810
	0.50	8355.10	-643.31	0.00	4834.5360
7	0.00	8355.10	-643.31	0.00	4834.5360
	0.50	7719.23	-1809.35	0.00	3012.9860
8	0.00	7719.23	-1809.35	0.00	3012.9860
	0.50	6628.97	-2475.70	0.00	1488.1490
9	0.00	6628.97	-2475.70	0.00	1488.1490
	0.50	5312.92	-2725.24	0.00	218.6448
10	0.00	5312.92	-2725.24	0.00	218.6448
	0.50	3961.61	-2626.97	0.00	-845.7478
11	0.00	3961.61	-2626.97	0.00	-845.7478
	0.50	2734.90	-2234.49	0.00	-1756.7120
12	0.00	2734.90	-2234.49	0.00	-1756.7120
	0.50	1769.64	-1586.48	0.00	-2561.1930
13	0.00	1769.64	-1586.48	0.00	-853.7309
	0.50	1046.47	-1293.97	0.00	-1098.8400
14	0.00	1046.47	-1293.97	0.00	-1098.8400
	0.50	487.51	-930.37	0.00	-1330.3000
15	0.00	487.51	-930.37	0.00	-1330.3000
	0.50	127.44	-498.66	0.00	-1555.2690
16	0.00	127.44	-498.66	0.00	-1555.2690
	0.50	0.00	0.00	0.00	-1778.3470

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
2	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
3	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
4	0.00	3741.00	0.00	0.00	0.0000
	0.50	3741.00	0.00	0.00	0.0000
5	0.00	3741.00	0.00	0.00	2188.7540
	0.50	3596.86	-539.25	0.00	1440.0950
6	0.00	3596.86	-539.25	0.00	1440.0950
	0.50	3235.58	-875.45	0.00	829.6752
7	0.00	3235.58	-875.45	0.00	829.6752
	0.50	2748.64	-1048.10	0.00	343.8328

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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8	0.00	2748.64	-1048.10	0.00	343.8328
	0.50	2208.94	-1091.75	0.00	-36.0066
9	0.00	2208.94	-1091.75	0.00	-36.0066
	0.50	1673.57	-1035.06	0.00	-330.5061
10	0.00	1673.57	-1035.06	0.00	-330.5061
	0.50	1186.83	-900.46	0.00	-560.2033
11	0.00	1186.83	-900.46	0.00	-560.2033
	0.50	783.31	-704.47	0.00	-743.7884
12	0.00	783.31	-704.47	0.00	-743.7884
	0.50	490.67	-458.47	0.00	-896.7591
13	0.00	490.67	-458.47	0.00	-298.9197
	0.50	284.93	-362.26	0.00	-343.4979
14	0.00	284.93	-362.26	0.00	-343.4979
	0.50	130.53	-253.32	0.00	-384.3524
15	0.00	130.53	-253.32	0.00	-384.3524
	0.50	33.60	-132.46	0.00	-423.4645
16	0.00	33.60	-132.46	0.00	-423.4645
	0.50	0.00	0.00	0.00	-462.0761

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.63	391.50	0.00	0.0000
4	0.00	293.62	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	1245.1370
	0.50	726.98	306.58	0.00	1071.5660
6	0.00	726.98	306.58	0.00	1071.5660
	0.50	836.57	139.08	0.00	925.7693
7	0.00	836.57	139.08	0.00	925.7693
	0.50	872.54	10.46	0.00	812.0502
8	0.00	872.54	10.46	0.00	812.0502
	0.50	851.87	-89.14	0.00	731.8529
9	0.00	851.87	-89.14	0.00	731.8529
	0.50	786.57	-169.70	0.00	684.4175
10	0.00	786.57	-169.70	0.00	684.4175
	0.50	683.77	-240.67	0.00	667.2447

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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11	0.00	683.77	-240.67	0.00	667.2447
	0.50	546.08	-310.55	0.00	676.3719
12	0.00	546.08	-310.55	0.00	676.3719
	0.50	372.21	-386.45	0.00	706.4762
13	0.00	372.21	-386.45	0.00	235.4921
	0.50	205.27	-282.03	0.00	250.3264
14	0.00	205.27	-282.03	0.00	250.3264
	0.50	89.36	-182.49	0.00	267.8585
15	0.00	89.36	-182.49	0.00	267.8585
	0.50	21.87	-88.41	0.00	286.5931
16	0.00	21.87	-88.41	0.00	286.5931
	0.50	0.00	0.00	0.00	305.6582

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1726.6360
	0.50	1512.42	204.12	0.00	1276.8180
6	0.00	1512.42	204.12	0.00	1276.8180
	0.50	1529.13	-117.74	0.00	884.8048
7	0.00	1529.13	-117.74	0.00	884.8048
	0.50	1412.76	-331.14	0.00	551.4293
8	0.00	1412.76	-331.14	0.00	551.4293
	0.50	1213.22	-453.10	0.00	272.3573
9	0.00	1213.22	-453.10	0.00	272.3573
	0.50	972.36	-498.77	0.00	40.0158
10	0.00	972.36	-498.77	0.00	40.0158
	0.50	725.04	-480.78	0.00	-154.7867
11	0.00	725.04	-480.78	0.00	-154.7867
	0.50	500.53	-408.95	0.00	-321.5091
12	0.00	500.53	-408.95	0.00	-321.5091
	0.50	323.87	-290.35	0.00	-468.7432
13	0.00	323.87	-290.35	0.00	-156.2477
	0.50	191.52	-236.82	0.00	-201.1071
14	0.00	191.52	-236.82	0.00	-201.1071

GENERAL CONTRACTOR

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ALTA SORVEGLIANZA



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	0.50	89.22	-170.27	0.00	-243.4682
15	0.00	89.22	-170.27	0.00	-243.4682
	0.50	23.32	-91.26	0.00	-284.6415
16	0.00	23.32	-91.26	0.00	-284.6415
	0.50	0.00	0.00	0.00	-325.4687

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.33	0.00	0.0000
	0.50	326.16	652.33	0.00	0.0000
2	0.00	326.17	652.33	0.00	0.0000
	0.50	652.33	652.33	0.00	0.0000
3	0.00	652.33	652.33	0.00	0.0000
	0.50	978.50	652.33	0.00	0.0000
4	0.00	978.50	652.33	0.00	0.0000
	0.50	1304.66	652.33	0.00	0.0000
5	0.00	1304.66	652.33	0.00	1727.5100
	0.50	1513.19	204.22	0.00	1277.4650
6	0.00	1513.19	204.22	0.00	1277.4650
	0.50	1529.90	-117.80	0.00	885.2527
7	0.00	1529.90	-117.80	0.00	885.2527
	0.50	1413.47	-331.31	0.00	551.7084
8	0.00	1413.47	-331.31	0.00	551.7084
	0.50	1213.83	-453.33	0.00	272.4952
9	0.00	1213.83	-453.33	0.00	272.4952
	0.50	972.85	-499.02	0.00	40.0361
10	0.00	972.85	-499.02	0.00	40.0361
	0.50	725.41	-481.03	0.00	-154.8650
11	0.00	725.41	-481.03	0.00	-154.8650
	0.50	500.79	-409.16	0.00	-321.6719
12	0.00	500.79	-409.16	0.00	-321.6719
	0.50	324.04	-290.50	0.00	-468.9804
13	0.00	324.04	-290.50	0.00	-156.3268
	0.50	191.62	-236.94	0.00	-201.2089
14	0.00	191.62	-236.94	0.00	-201.2089
	0.50	89.27	-170.36	0.00	-243.5914
15	0.00	89.27	-170.36	0.00	-243.5914
	0.50	23.34	-91.31	0.00	-284.7855
16	0.00	23.34	-91.31	0.00	-284.7855
	0.50	0.00	0.00	0.00	-325.6335

Condizione : Mq

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asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	190.8505
	0.50	313.63	-47.02	0.00	125.5705
6	0.00	313.63	-47.02	0.00	125.5705
	0.50	282.13	-76.34	0.00	72.3443
7	0.00	282.13	-76.34	0.00	72.3443
	0.50	239.67	-91.39	0.00	29.9808
8	0.00	239.67	-91.39	0.00	29.9808
	0.50	192.61	-95.20	0.00	-3.1396
9	0.00	192.61	-95.20	0.00	-3.1396
	0.50	145.93	-90.25	0.00	-28.8188
10	0.00	145.93	-90.25	0.00	-28.8188
	0.50	103.49	-78.52	0.00	-48.8475
11	0.00	103.49	-78.52	0.00	-48.8475
	0.50	68.30	-61.43	0.00	-64.8553
12	0.00	68.30	-61.43	0.00	-64.8553
	0.50	42.78	-39.98	0.00	-78.1938
13	0.00	42.78	-39.98	0.00	-26.0646
	0.50	24.85	-31.59	0.00	-29.9516
14	0.00	24.85	-31.59	0.00	-29.9516
	0.50	11.38	-22.09	0.00	-33.5140
15	0.00	11.38	-22.09	0.00	-33.5140
	0.50	2.93	-11.55	0.00	-36.9244
16	0.00	2.93	-11.55	0.00	-36.9244
	0.50	0.00	0.00	0.00	-40.2912

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000

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4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	126.9606
	0.50	208.64	-31.28	0.00	83.5340
6	0.00	208.64	-31.28	0.00	83.5340
	0.50	187.68	-50.78	0.00	48.1260
7	0.00	187.68	-50.78	0.00	48.1260
	0.50	159.44	-60.80	0.00	19.9443
8	0.00	159.44	-60.80	0.00	19.9443
	0.50	128.13	-63.33	0.00	-2.0886
9	0.00	128.13	-63.33	0.00	-2.0886
	0.50	97.08	-60.04	0.00	-19.1713
10	0.00	97.08	-60.04	0.00	-19.1713
	0.50	68.84	-52.23	0.00	-32.4951
11	0.00	68.84	-52.23	0.00	-32.4951
	0.50	45.44	-40.86	0.00	-43.1441
12	0.00	45.44	-40.86	0.00	-43.1441
	0.50	28.46	-26.59	0.00	-52.0173
13	0.00	28.46	-26.59	0.00	-17.3391
	0.50	16.53	-21.01	0.00	-19.9249
14	0.00	16.53	-21.01	0.00	-19.9249
	0.50	7.57	-14.69	0.00	-22.2947
15	0.00	7.57	-14.69	0.00	-22.2947
	0.50	1.95	-7.68	0.00	-24.5634
16	0.00	1.95	-7.68	0.00	-24.5634
	0.50	0.00	0.00	0.00	-26.8031

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1128.84	0.00	0.0000
	0.50	564.42	1128.84	0.00	0.0000
2	0.00	564.42	1128.84	0.00	0.0000
	0.50	1128.84	1128.84	0.00	0.0000
3	0.00	1128.84	1128.84	0.00	0.0000
	0.50	1693.26	1128.84	0.00	0.0000
4	0.00	1693.26	1128.84	0.00	0.0000
	0.50	2257.68	1128.84	0.00	0.0000
5	0.00	2257.68	1128.84	0.00	2989.4110
	0.50	2618.53	353.40	0.00	2210.6190
6	0.00	2618.53	353.40	0.00	2210.6190
	0.50	2647.46	-203.85	0.00	1531.9070

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7	0.00	2647.46	-203.85	0.00	1531.9070
	0.50	2445.97	-573.33	0.00	954.7172
8	0.00	2445.97	-573.33	0.00	954.7172
	0.50	2100.51	-784.47	0.00	471.5458
9	0.00	2100.51	-784.47	0.00	471.5458
	0.50	1683.49	-863.54	0.00	69.2814
10	0.00	1683.49	-863.54	0.00	69.2814
	0.50	1255.31	-832.40	0.00	-267.9899
11	0.00	1255.31	-832.40	0.00	-267.9899
	0.50	866.60	-708.04	0.00	-556.6448
12	0.00	866.60	-708.04	0.00	-556.6448
	0.50	560.74	-502.70	0.00	-811.5585
13	0.00	560.74	-502.70	0.00	-270.5195
	0.50	331.59	-410.02	0.00	-348.1867
14	0.00	331.59	-410.02	0.00	-348.1867
	0.50	154.47	-294.81	0.00	-421.5286
15	0.00	154.47	-294.81	0.00	-421.5286
	0.50	40.38	-158.01	0.00	-492.8140
16	0.00	40.38	-158.01	0.00	-492.8140
	0.50	0.00	0.00	0.00	-563.5003

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	-10309.7000
	0.50	-5726.87	-2788.40	0.00	-7974.8560
6	0.00	-5726.87	-2788.40	0.00	-7974.8560
	0.50	-6578.92	-725.39	0.00	-5857.3750
7	0.00	-6578.92	-725.39	0.00	-5857.3750
	0.50	-6551.66	741.37	0.00	-3991.1900
8	0.00	-6551.66	741.37	0.00	-3991.1900
	0.50	-5924.25	1687.75	0.00	-2376.1470
9	0.00	-5924.25	1687.75	0.00	-2376.1470
	0.50	-4938.57	2185.83	0.00	-988.7906
10	0.00	-4938.57	2185.83	0.00	-988.7906

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	0.50	-3802.61	2298.36	0.00	208.2855
11	0.00	-3802.61	2298.36	0.00	208.2855
	0.50	-2695.98	2075.86	0.00	1258.3820
12	0.00	-2695.98	2075.86	0.00	1258.3820
	0.50	-1776.27	1555.86	0.00	2203.7380
13	0.00	-1776.27	1555.86	0.00	734.5793
	0.50	-1060.67	1291.97	0.00	1026.6020
14	0.00	-1060.67	1291.97	0.00	1026.6020
	0.50	-498.46	943.00	0.00	1304.8030
15	0.00	-498.46	943.00	0.00	1304.8030
	0.50	-131.34	511.93	0.00	1576.3760
16	0.00	-131.34	511.93	0.00	1576.3760
	0.50	0.00	0.00	0.00	1846.0060

Combinazione : FESSURAZIONE

asta	x	M	T	N	P
1	0.00	6644.20	4214.42	0.00	0.0000
	0.50	8726.54	3999.92	0.00	0.0000
2	0.00	8726.54	3999.92	0.00	0.0000
	0.50	10529.16	3095.67	0.00	0.0000
3	0.00	10529.16	3095.67	0.00	0.0000
	0.50	11707.25	1501.67	0.00	0.0000
4	0.00	11707.25	1501.67	0.00	0.0000
	0.50	11915.83	-782.33	0.00	0.0000
5	0.00	11915.83	-782.33	0.00	5983.4570
	0.50	11164.34	-2120.15	0.00	3907.5330
6	0.00	11164.34	-2120.15	0.00	3907.5330
	0.50	9888.24	-2902.20	0.00	2261.1710
7	0.00	9888.24	-2902.20	0.00	2261.1710
	0.50	8334.41	-3250.10	0.00	995.8722
8	0.00	8334.41	-3250.10	0.00	995.8722
	0.50	6692.85	-3269.14	0.00	52.2286
9	0.00	6692.85	-3269.14	0.00	52.2286
	0.50	5105.51	-3046.14	0.00	-632.7125
10	0.00	5105.51	-3046.14	0.00	-632.7125
	0.50	3675.60	-2649.27	0.00	-1119.9340
11	0.00	3675.60	-2649.27	0.00	-1119.9340
	0.50	2476.68	-2129.26	0.00	-1464.4330
12	0.00	2476.68	-2129.26	0.00	-1464.4330
	0.50	1560.87	-1521.66	0.00	-1712.3530
13	0.00	1560.87	-1521.66	0.00	-570.7842
	0.50	888.63	-1164.20	0.00	-633.0639

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14	0.00	888.63	-1164.20	0.00	-633.0639
	0.50	399.44	-790.03	0.00	-683.7056
15	0.00	399.44	-790.03	0.00	-683.7056
	0.50	100.96	-401.65	0.00	-728.9996
16	0.00	100.96	-401.65	0.00	-728.9996
	0.50	0.00	0.00	0.00	-772.7818

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	6644.20	4214.42	0.00	
		MIN	6644.20	4214.42	0.00	
	0.50	MAX	8726.54	3999.92	0.00	
		MIN	8726.54	3999.92	0.00	
2	0.00	MAX	8726.54	3999.92	0.00	
		MIN	8726.54	3999.92	0.00	
	0.50	MAX	10529.16	3095.67	0.00	
		MIN	10529.16	3095.67	0.00	
3	0.00	MAX	10529.16	3095.67	0.00	
		MIN	10529.16	3095.67	0.00	
	0.50	MAX	11707.25	1501.67	0.00	
		MIN	11707.25	1501.67	0.00	
4	0.00	MAX	11707.25	1501.67	0.00	
		MIN	11707.25	1501.67	0.00	
	0.50	MAX	11915.83	-782.33	0.00	
		MIN	11915.83	-782.33	0.00	
5	0.00	MAX	11915.83	-782.33	0.00	5983.4570
		MIN	11915.83	-782.33	0.00	5983.4570
	0.50	MAX	11164.34	-2120.15	0.00	3907.5330
		MIN	11164.34	-2120.15	0.00	3907.5330
6	0.00	MAX	11164.34	-2120.15	0.00	3907.5330
		MIN	11164.34	-2120.15	0.00	3907.5330
	0.50	MAX	9888.24	-2902.20	0.00	2261.1710
		MIN	9888.24	-2902.20	0.00	2261.1710
7	0.00	MAX	9888.24	-2902.20	0.00	2261.1710
		MIN	9888.24	-2902.20	0.00	2261.1710
	0.50	MAX	8334.41	-3250.10	0.00	995.8722
		MIN	8334.41	-3250.10	0.00	995.8722
8	0.00	MAX	8334.41	-3250.10	0.00	995.8722
		MIN	8334.41	-3250.10	0.00	995.8722
	0.50	MAX	6692.85	-3269.14	0.00	52.2286
		MIN	6692.85	-3269.14	0.00	52.2286
9	0.00	MAX	6692.85	-3269.14	0.00	52.2286
		MIN	6692.85	-3269.14	0.00	52.2286
	0.50	MAX	5105.51	-3046.14	0.00	-632.7125
		MIN	5105.51	-3046.14	0.00	-632.7125
10	0.00	MAX	5105.51	-3046.14	0.00	-632.7125
		MIN	5105.51	-3046.14	0.00	-632.7125
	0.50	MAX	3675.60	-2649.27	0.00	-1119.9340



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		MIN	3675.60	-2649.27	0.00	-1119.9340
11	0.00	MAX	3675.60	-2649.27	0.00	-1119.9340
		MIN	3675.60	-2649.27	0.00	-1119.9340
	0.50	MAX	2476.68	-2129.26	0.00	-1464.4330
		MIN	2476.68	-2129.26	0.00	-1464.4330
12	0.00	MAX	2476.68	-2129.26	0.00	-1464.4330
		MIN	2476.68	-2129.26	0.00	-1464.4330
	0.50	MAX	1560.87	-1521.66	0.00	-1712.3530
		MIN	1560.87	-1521.66	0.00	-1712.3530
13	0.00	MAX	1560.87	-1521.66	0.00	-570.7842
		MIN	1560.87	-1521.66	0.00	-570.7842
	0.50	MAX	888.63	-1164.20	0.00	-633.0639
		MIN	888.63	-1164.20	0.00	-633.0639
14	0.00	MAX	888.63	-1164.20	0.00	-633.0639
		MIN	888.63	-1164.20	0.00	-633.0639
	0.50	MAX	399.44	-790.03	0.00	-683.7056
		MIN	399.44	-790.03	0.00	-683.7056
15	0.00	MAX	399.44	-790.03	0.00	-683.7056
		MIN	399.44	-790.03	0.00	-683.7056
	0.50	MAX	100.96	-401.65	0.00	-728.9996
		MIN	100.96	-401.65	0.00	-728.9996
16	0.00	MAX	100.96	-401.65	0.00	-728.9996
		MIN	100.96	-401.65	0.00	-728.9996
	0.50	MAX	0.00	0.00	0.00	-772.7818
		MIN	0.00	0.00	0.00	-772.7818

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	8726.54	0.50	1	6644.20	0.00	1
2	10529.16	0.50	1	8726.54	0.00	1
3	11707.25	0.50	1	10529.16	0.00	1
4	11975.64	0.34	1	11707.25	0.00	1
5	11915.83	0.00	1	11164.34	0.50	1
6	11164.34	0.00	1	9888.24	0.50	1
7	9888.24	0.00	1	8334.41	0.50	1
8	8334.41	0.00	1	6692.85	0.50	1
9	6692.85	0.00	1	5105.51	0.50	1
10	5105.51	0.00	1	3675.60	0.50	1
11	3675.60	0.00	1	2476.68	0.50	1
12	2476.68	0.00	1	1560.87	0.50	1
13	1560.87	0.00	1	888.63	0.50	1
14	888.63	0.00	1	399.44	0.50	1
15	399.44	0.00	1	100.96	0.50	1
16	100.96	0.00	1	0.00	0.50	1



ALLEGATO N°8

Fondazioni su pali per Barriere di h=3.75m con rilevato di H=7.0m

Calcolo agli elementi finiti con il programma di calcolo "ENG"

1) Combinazione di esercizio

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00
5	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60

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8	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5273.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	2812.00	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2952.60

q



Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	261.00	261.00	LL
	2	0.00	0.00	261.00	261.00	LL
	3	0.00	0.00	261.00	261.00	LL
	4	0.00	0.00	261.00	261.00	LL
	5	0.00	0.00	261.00	261.00	LL
	6	0.00	0.00	261.00	261.00	LL
	7	0.00	0.00	261.00	261.00	LL
	8	0.00	0.00	261.00	261.00	LL
	9	0.00	0.00	261.00	261.00	LL
	10	0.00	0.00	261.00	261.00	LL
	11	0.00	0.00	261.00	261.00	LL
	12	0.00	0.00	261.00	261.00	LL
	13	0.00	0.00	354.00	354.00	LL
	14	0.00	0.00	354.00	354.00	LL
	15	0.00	0.00	354.00	354.00	LL
	16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL



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3	0.00	0.00	-2759.00	-4139.00	LL
4	0.00	0.00	-4139.00	-5519.00	LL

Combinazioni di carico :

combinazione	P.P..	Mbp	Tbp	. q	Tsacpv..	Tqpv	Mqpv	Msacpv..
ESERCIZIO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

combinazione	RITIRO + AT..	spinta passiva..
ESERCIZIO	1.00	1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000

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16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

asta	x	M	T	N	P
1	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
2	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
3	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
4	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
5	0.00	5273.50	0.00	0.00	3085.3770
	0.50	5070.31	-760.15	0.00	2030.0300
6	0.00	5070.31	-760.15	0.00	2030.0300
	0.50	4561.03	-1234.08	0.00	1169.5520
7	0.00	4561.03	-1234.08	0.00	1169.5520
	0.50	3874.61	-1477.45	0.00	484.6838
8	0.00	3874.61	-1477.45	0.00	484.6838
	0.50	3113.84	-1538.99	0.00	-50.7566
9	0.00	3113.84	-1538.99	0.00	-50.7566
	0.50	2359.15	-1459.08	0.00	-465.8979
10	0.00	2359.15	-1459.08	0.00	-465.8979
	0.50	1673.02	-1269.33	0.00	-789.6905
11	0.00	1673.02	-1269.33	0.00	-789.6905
	0.50	1104.20	-993.06	0.00	-1048.4810
12	0.00	1104.20	-993.06	0.00	-1048.4810
	0.50	691.68	-646.29	0.00	-1264.1160
13	0.00	691.68	-646.29	0.00	-421.3721
	0.50	401.66	-510.66	0.00	-484.2118
14	0.00	401.66	-510.66	0.00	-484.2118
	0.50	184.00	-357.09	0.00	-541.8023
15	0.00	184.00	-357.09	0.00	-541.8023
	0.50	47.36	-186.73	0.00	-596.9367
16	0.00	47.36	-186.73	0.00	-596.9367
	0.50	0.00	0.00	0.00	-651.3655

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	2812.00	0.00	0.0000
	0.50	1406.00	2812.00	0.00	0.0000

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2	0.00	1406.00	2812.00	0.00	0.0000
	0.50	2812.00	2812.00	0.00	0.0000
3	0.00	2812.00	2812.00	0.00	0.0000
	0.50	4218.00	2812.00	0.00	0.0000
4	0.00	4218.00	2812.00	0.00	0.0000
	0.50	5624.00	2812.00	0.00	0.0000
5	0.00	5624.00	2812.00	0.00	7446.7790
	0.50	6522.90	880.34	0.00	5506.7690
6	0.00	6522.90	880.34	0.00	5506.7690
	0.50	6594.96	-507.79	0.00	3816.0600
7	0.00	6594.96	-507.79	0.00	3816.0600
	0.50	6093.05	-1428.18	0.00	2378.2500
8	0.00	6093.05	-1428.18	0.00	2378.2500
	0.50	5232.47	-1954.15	0.00	1174.6450
9	0.00	5232.47	-1954.15	0.00	1174.6450
	0.50	4193.67	-2151.12	0.00	172.5836
10	0.00	4193.67	-2151.12	0.00	172.5836
	0.50	3127.03	-2073.56	0.00	-667.5769
11	0.00	3127.03	-2073.56	0.00	-667.5769
	0.50	2158.75	-1763.76	0.00	-1386.6310
12	0.00	2158.75	-1763.76	0.00	-1386.6310
	0.50	1396.83	-1252.26	0.00	-2021.6350
13	0.00	1396.83	-1252.26	0.00	-673.8782
	0.50	826.02	-1021.37	0.00	-867.3513
14	0.00	826.02	-1021.37	0.00	-867.3513
	0.50	384.80	-734.37	0.00	-1050.0500
15	0.00	384.80	-734.37	0.00	-1050.0500
	0.50	100.60	-393.61	0.00	-1227.6250
16	0.00	100.60	-393.61	0.00	-1227.6250
	0.50	0.00	0.00	0.00	-1403.7090

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
2	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
3	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
4	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
5	0.00	2952.60	0.00	0.00	1727.4830

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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	0.50	2838.83	-425.60	0.00	1136.6010
6	0.00	2838.83	-425.60	0.00	1136.6010
	0.50	2553.69	-690.96	0.00	654.8247
7	0.00	2553.69	-690.96	0.00	654.8247
	0.50	2169.37	-827.22	0.00	271.3715
8	0.00	2169.37	-827.22	0.00	271.3715
	0.50	1743.42	-861.67	0.00	-28.4183
9	0.00	1743.42	-861.67	0.00	-28.4183
	0.50	1320.87	-816.93	0.00	-260.8534
10	0.00	1320.87	-816.93	0.00	-260.8534
	0.50	936.71	-710.69	0.00	-442.1428
11	0.00	936.71	-710.69	0.00	-442.1428
	0.50	618.23	-556.01	0.00	-587.0381
12	0.00	618.23	-556.01	0.00	-587.0381
	0.50	387.27	-361.85	0.00	-707.7709
13	0.00	387.27	-361.85	0.00	-235.9236
	0.50	224.89	-285.91	0.00	-271.1072
14	0.00	224.89	-285.91	0.00	-271.1072
	0.50	103.02	-199.93	0.00	-303.3517
15	0.00	103.02	-199.93	0.00	-303.3517
	0.50	26.52	-104.55	0.00	-334.2212
16	0.00	26.52	-104.55	0.00	-334.2212
	0.50	0.00	0.00	0.00	-364.6955

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.63	391.50	0.00	0.0000
4	0.00	293.62	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	1245.1370
	0.50	726.98	306.58	0.00	1071.5660
6	0.00	726.98	306.58	0.00	1071.5660
	0.50	836.57	139.08	0.00	925.7693
7	0.00	836.57	139.08	0.00	925.7693
	0.50	872.54	10.46	0.00	812.0502
8	0.00	872.54	10.46	0.00	812.0502
	0.50	851.87	-89.14	0.00	731.8529

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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9	0.00	851.87	-89.14	0.00	731.8529
	0.50	786.57	-169.70	0.00	684.4175
10	0.00	786.57	-169.70	0.00	684.4175
	0.50	683.77	-240.67	0.00	667.2447
11	0.00	683.77	-240.67	0.00	667.2447
	0.50	546.08	-310.55	0.00	676.3719
12	0.00	546.08	-310.55	0.00	676.3719
	0.50	372.21	-386.45	0.00	706.4762
13	0.00	372.21	-386.45	0.00	235.4921
	0.50	205.27	-282.03	0.00	250.3264
14	0.00	205.27	-282.03	0.00	250.3264
	0.50	89.36	-182.49	0.00	267.8585
15	0.00	89.36	-182.49	0.00	267.8585
	0.50	21.87	-88.41	0.00	286.5931
16	0.00	21.87	-88.41	0.00	286.5931
	0.50	0.00	0.00	0.00	305.6582

Condizione : Spinta attiva

asta	x	M	T	N	P
1	0.00	0.00	651.00	0.00	0.0000
	0.50	325.50	651.00	0.00	0.0000
2	0.00	325.50	651.00	0.00	0.0000
	0.50	651.00	651.00	0.00	0.0000
3	0.00	651.00	651.00	0.00	0.0000
	0.50	976.50	651.00	0.00	0.0000
4	0.00	976.50	651.00	0.00	0.0000
	0.50	1302.00	651.00	0.00	0.0000
5	0.00	1302.00	651.00	0.00	1723.9880
	0.50	1510.10	203.81	0.00	1274.8600
6	0.00	1510.10	203.81	0.00	1274.8600
	0.50	1526.78	-117.56	0.00	883.4478
7	0.00	1526.78	-117.56	0.00	883.4478
	0.50	1410.59	-330.64	0.00	550.5836
8	0.00	1410.59	-330.64	0.00	550.5836
	0.50	1211.36	-452.40	0.00	271.9396
9	0.00	1211.36	-452.40	0.00	271.9396
	0.50	970.87	-498.00	0.00	39.9545
10	0.00	970.87	-498.00	0.00	39.9545
	0.50	723.93	-480.05	0.00	-154.5493
11	0.00	723.93	-480.05	0.00	-154.5493
	0.50	499.77	-408.32	0.00	-321.0160

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



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12	0.00	499.77	-408.32	0.00	-321.0160
	0.50	323.38	-289.91	0.00	-468.0242
13	0.00	323.38	-289.91	0.00	-156.0081
	0.50	191.23	-236.46	0.00	-200.7986
14	0.00	191.23	-236.46	0.00	-200.7986
	0.50	89.09	-170.01	0.00	-243.0948
15	0.00	89.09	-170.01	0.00	-243.0948
	0.50	23.29	-91.12	0.00	-284.2049
16	0.00	23.29	-91.12	0.00	-284.2049
	0.50	0.00	0.00	0.00	-324.9696

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1726.6360
	0.50	1512.42	204.12	0.00	1276.8180
6	0.00	1512.42	204.12	0.00	1276.8180
	0.50	1529.13	-117.74	0.00	884.8048
7	0.00	1529.13	-117.74	0.00	884.8048
	0.50	1412.76	-331.14	0.00	551.4293
8	0.00	1412.76	-331.14	0.00	551.4293
	0.50	1213.22	-453.10	0.00	272.3573
9	0.00	1213.22	-453.10	0.00	272.3573
	0.50	972.36	-498.77	0.00	40.0158
10	0.00	972.36	-498.77	0.00	40.0158
	0.50	725.04	-480.78	0.00	-154.7867
11	0.00	725.04	-480.78	0.00	-154.7867
	0.50	500.53	-408.95	0.00	-321.5091
12	0.00	500.53	-408.95	0.00	-321.5091
	0.50	323.87	-290.35	0.00	-468.7432
13	0.00	323.87	-290.35	0.00	-156.2477
	0.50	191.52	-236.82	0.00	-201.1071
14	0.00	191.52	-236.82	0.00	-201.1071
	0.50	89.22	-170.27	0.00	-243.4682
15	0.00	89.22	-170.27	0.00	-243.4682

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0.50 23.32 -91.26 0.00 -284.6415

16 0.00 23.32 -91.26 0.00 -284.6415

0.50 0.00 0.00 0.00 -325.4687

Condizione : Mq

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	190.8505
	0.50	313.63	-47.02	0.00	125.5705
6	0.00	313.63	-47.02	0.00	125.5705
	0.50	282.13	-76.34	0.00	72.3443
7	0.00	282.13	-76.34	0.00	72.3443
	0.50	239.67	-91.39	0.00	29.9808
8	0.00	239.67	-91.39	0.00	29.9808
	0.50	192.61	-95.20	0.00	-3.1396
9	0.00	192.61	-95.20	0.00	-3.1396
	0.50	145.93	-90.25	0.00	-28.8188
10	0.00	145.93	-90.25	0.00	-28.8188
	0.50	103.49	-78.52	0.00	-48.8475
11	0.00	103.49	-78.52	0.00	-48.8475
	0.50	68.30	-61.43	0.00	-64.8553
12	0.00	68.30	-61.43	0.00	-64.8553
	0.50	42.78	-39.98	0.00	-78.1938
13	0.00	42.78	-39.98	0.00	-26.0646
	0.50	24.85	-31.59	0.00	-29.9516
14	0.00	24.85	-31.59	0.00	-29.9516
	0.50	11.38	-22.09	0.00	-33.5140
15	0.00	11.38	-22.09	0.00	-33.5140
	0.50	2.93	-11.55	0.00	-36.9244
16	0.00	2.93	-11.55	0.00	-36.9244
	0.50	0.00	0.00	0.00	-40.2912

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000

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	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	126.9606
	0.50	208.64	-31.28	0.00	83.5340
6	0.00	208.64	-31.28	0.00	83.5340
	0.50	187.68	-50.78	0.00	48.1260
7	0.00	187.68	-50.78	0.00	48.1260
	0.50	159.44	-60.80	0.00	19.9443
8	0.00	159.44	-60.80	0.00	19.9443
	0.50	128.13	-63.33	0.00	-2.0886
9	0.00	128.13	-63.33	0.00	-2.0886
	0.50	97.08	-60.04	0.00	-19.1713
10	0.00	97.08	-60.04	0.00	-19.1713
	0.50	68.84	-52.23	0.00	-32.4951
11	0.00	68.84	-52.23	0.00	-32.4951
	0.50	45.44	-40.86	0.00	-43.1441
12	0.00	45.44	-40.86	0.00	-43.1441
	0.50	28.46	-26.59	0.00	-52.0173
13	0.00	28.46	-26.59	0.00	-17.3391
	0.50	16.53	-21.01	0.00	-19.9249
14	0.00	16.53	-21.01	0.00	-19.9249
	0.50	7.57	-14.69	0.00	-22.2947
15	0.00	7.57	-14.69	0.00	-22.2947
	0.50	1.95	-7.68	0.00	-24.5634
16	0.00	1.95	-7.68	0.00	-24.5634
	0.50	0.00	0.00	0.00	-26.8031

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1128.84	0.00	0.0000
	0.50	564.42	1128.84	0.00	0.0000
2	0.00	564.42	1128.84	0.00	0.0000
	0.50	1128.84	1128.84	0.00	0.0000
3	0.00	1128.84	1128.84	0.00	0.0000
	0.50	1693.26	1128.84	0.00	0.0000
4	0.00	1693.26	1128.84	0.00	0.0000
	0.50	2257.68	1128.84	0.00	0.0000

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5	0.00	2257.68	1128.84	0.00	2989.4110
	0.50	2618.53	353.40	0.00	2210.6190
6	0.00	2618.53	353.40	0.00	2210.6190
	0.50	2647.46	-203.85	0.00	1531.9070
7	0.00	2647.46	-203.85	0.00	1531.9070
	0.50	2445.97	-573.33	0.00	954.7172
8	0.00	2445.97	-573.33	0.00	954.7172
	0.50	2100.51	-784.47	0.00	471.5458
9	0.00	2100.51	-784.47	0.00	471.5458
	0.50	1683.49	-863.54	0.00	69.2814
10	0.00	1683.49	-863.54	0.00	69.2814
	0.50	1255.31	-832.40	0.00	-267.9899
11	0.00	1255.31	-832.40	0.00	-267.9899
	0.50	866.60	-708.04	0.00	-556.6448
12	0.00	866.60	-708.04	0.00	-556.6448
	0.50	560.74	-502.70	0.00	-811.5585
13	0.00	560.74	-502.70	0.00	-270.5195
	0.50	331.59	-410.02	0.00	-348.1867
14	0.00	331.59	-410.02	0.00	-348.1867
	0.50	154.47	-294.81	0.00	-421.5286
15	0.00	154.47	-294.81	0.00	-421.5286
	0.50	40.38	-158.01	0.00	-492.8140
16	0.00	40.38	-158.01	0.00	-492.8140
	0.50	0.00	0.00	0.00	-563.5003

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	-10309.7000
	0.50	-5726.87	-2788.40	0.00	-7974.8560
6	0.00	-5726.87	-2788.40	0.00	-7974.8560
	0.50	-6578.92	-725.39	0.00	-5857.3750
7	0.00	-6578.92	-725.39	0.00	-5857.3750
	0.50	-6551.66	741.37	0.00	-3991.1900

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8	0.00	-6551.66	741.37	0.00	-3991.1900
	0.50	-5924.25	1687.75	0.00	-2376.1470
9	0.00	-5924.25	1687.75	0.00	-2376.1470
	0.50	-4938.57	2185.83	0.00	-988.7906
10	0.00	-4938.57	2185.83	0.00	-988.7906
	0.50	-3802.61	2298.36	0.00	208.2855
11	0.00	-3802.61	2298.36	0.00	208.2855
	0.50	-2695.98	2075.86	0.00	1258.3820
12	0.00	-2695.98	2075.86	0.00	1258.3820
	0.50	-1776.27	1555.86	0.00	2203.7380
13	0.00	-1776.27	1555.86	0.00	734.5793
	0.50	-1060.67	1291.97	0.00	1026.6020
14	0.00	-1060.67	1291.97	0.00	1026.6020
	0.50	-498.46	943.00	0.00	1304.8030
15	0.00	-498.46	943.00	0.00	1304.8030
	0.50	-131.34	511.93	0.00	1576.3760
16	0.00	-131.34	511.93	0.00	1576.3760
	0.50	0.00	0.00	0.00	1846.0060

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	8769.30	5243.84	0.00	0.0000
	0.50	11366.35	5029.34	0.00	0.0000
2	0.00	11366.35	5029.34	0.00	0.0000
	0.50	13683.68	4125.09	0.00	0.0000
3	0.00	13683.68	4125.09	0.00	0.0000
	0.50	15376.48	2531.09	0.00	0.0000
4	0.00	15376.48	2531.09	0.00	0.0000
	0.50	16099.77	247.09	0.00	0.0000
5	0.00	16099.77	247.09	0.00	9952.9180
	0.50	15595.47	-2104.20	0.00	6741.5120
6	0.00	15595.47	-2104.20	0.00	6741.5120
	0.50	14140.52	-3585.40	0.00	4129.4610
7	0.00	14140.52	-3585.40	0.00	4129.4610
	0.50	12126.34	-4368.31	0.00	2061.8210
8	0.00	12126.34	-4368.31	0.00	2061.8210
	0.50	9863.16	-4604.69	0.00	461.7903
9	0.00	9863.16	-4604.69	0.00	461.7903
	0.50	7591.41	-4421.60	0.00	-757.2791
10	0.00	7591.41	-4421.60	0.00	-757.2791
	0.50	5494.53	-3919.87	0.00	-1682.5490
11	0.00	5494.53	-3919.87	0.00	-1682.5490

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	0.50	3711.92	-3175.12	0.00	-2394.5660
12	0.00	3711.92	-3175.12	0.00	-2394.5660
	0.50	2350.95	-2240.53	0.00	-2961.8450
13	0.00	2350.95	-2240.53	0.00	-987.2816
	0.50	1352.88	-1743.89	0.00	-1145.7110
14	0.00	1352.88	-1743.89	0.00	-1145.7110
	0.50	614.46	-1202.78	0.00	-1286.4430
15	0.00	614.46	-1202.78	0.00	-1286.4430
	0.50	156.87	-620.99	0.00	-1418.9620
16	0.00	156.87	-620.99	0.00	-1418.9620
	0.50	0.00	0.00	0.00	-1549.1380

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	8769.30	5243.84	0.00	
		MIN	8769.30	5243.84	0.00	
	0.50	MAX	11366.35	5029.34	0.00	
		MIN	11366.35	5029.34	0.00	
2	0.00	MAX	11366.35	5029.34	0.00	
		MIN	11366.35	5029.34	0.00	
	0.50	MAX	13683.68	4125.09	0.00	
		MIN	13683.68	4125.09	0.00	
3	0.00	MAX	13683.68	4125.09	0.00	
		MIN	13683.68	4125.09	0.00	
	0.50	MAX	15376.48	2531.09	0.00	
		MIN	15376.48	2531.09	0.00	
4	0.00	MAX	15376.48	2531.09	0.00	
		MIN	15376.48	2531.09	0.00	
	0.50	MAX	16099.77	247.09	0.00	
		MIN	16099.77	247.09	0.00	
5	0.00	MAX	16099.77	247.09	0.00	9952.9180
		MIN	16099.77	247.09	0.00	9952.9180
	0.50	MAX	15595.47	-2104.20	0.00	6741.5120
		MIN	15595.47	-2104.20	0.00	6741.5120
6	0.00	MAX	15595.47	-2104.20	0.00	6741.5120
		MIN	15595.47	-2104.20	0.00	6741.5120
	0.50	MAX	14140.52	-3585.40	0.00	4129.4610
		MIN	14140.52	-3585.40	0.00	4129.4610
7	0.00	MAX	14140.52	-3585.40	0.00	4129.4610
		MIN	14140.52	-3585.40	0.00	4129.4610
	0.50	MAX	12126.34	-4368.31	0.00	2061.8210
		MIN	12126.34	-4368.31	0.00	2061.8210
8	0.00	MAX	12126.34	-4368.31	0.00	2061.8210
		MIN	12126.34	-4368.31	0.00	2061.8210
	0.50	MAX	9863.16	-4604.69	0.00	461.7903
		MIN	9863.16	-4604.69	0.00	461.7903
9	0.00	MAX	9863.16	-4604.69	0.00	461.7903

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		MIN	9863.16	-4604.69	0.00	461.7903
	0.50	MAX	7591.41	-4421.60	0.00	-757.2791
		MIN	7591.41	-4421.60	0.00	-757.2791
10	0.00	MAX	7591.41	-4421.60	0.00	-757.2791
		MIN	7591.41	-4421.60	0.00	-757.2791
	0.50	MAX	5494.53	-3919.87	0.00	-1682.5490
		MIN	5494.53	-3919.87	0.00	-1682.5490
11	0.00	MAX	5494.53	-3919.87	0.00	-1682.5490
		MIN	5494.53	-3919.87	0.00	-1682.5490
	0.50	MAX	3711.92	-3175.12	0.00	-2394.5660
		MIN	3711.92	-3175.12	0.00	-2394.5660
12	0.00	MAX	3711.92	-3175.12	0.00	-2394.5660
		MIN	3711.92	-3175.12	0.00	-2394.5660
	0.50	MAX	2350.95	-2240.53	0.00	-2961.8450
		MIN	2350.95	-2240.53	0.00	-2961.8450
13	0.00	MAX	2350.95	-2240.53	0.00	-987.2816
		MIN	2350.95	-2240.53	0.00	-987.2816
	0.50	MAX	1352.88	-1743.89	0.00	-1145.7110
		MIN	1352.88	-1743.89	0.00	-1145.7110
14	0.00	MAX	1352.88	-1743.89	0.00	-1145.7110
		MIN	1352.88	-1743.89	0.00	-1145.7110
	0.50	MAX	614.46	-1202.78	0.00	-1286.4430
		MIN	614.46	-1202.78	0.00	-1286.4430
15	0.00	MAX	614.46	-1202.78	0.00	-1286.4430
		MIN	614.46	-1202.78	0.00	-1286.4430
	0.50	MAX	156.87	-620.99	0.00	-1418.9620
		MIN	156.87	-620.99	0.00	-1418.9620
16	0.00	MAX	156.87	-620.99	0.00	-1418.9620
		MIN	156.87	-620.99	0.00	-1418.9620
	0.50	MAX	0.00	0.00	0.00	-1549.1380
		MIN	0.00	0.00	0.00	-1549.1380

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	11366.35	0.50	1	8769.30	0.00	1
2	13683.68	0.50	1	11366.35	0.00	1
3	15376.48	0.50	1	13683.68	0.00	1
4	16099.77	0.50	1	15376.48	0.00	1
5	16105.19	0.04	1	15595.47	0.50	1
6	15595.47	0.00	1	14140.52	0.50	1
7	14140.52	0.00	1	12126.34	0.50	1
8	12126.34	0.00	1	9863.16	0.50	1
9	9863.16	0.00	1	7591.41	0.50	1
10	7591.41	0.00	1	5494.53	0.50	1
11	5494.53	0.00	1	3711.92	0.50	1
12	3711.92	0.00	1	2350.95	0.50	1
13	2350.95	0.00	1	1352.88	0.50	1
14	1352.88	0.00	1	614.46	0.50	1
15	614.46	0.00	1	156.87	0.50	1
16	156.87	0.00	1	0.00	0.50	1



2) Combinazione di fessurazione

Geometria struttura

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	0
2	0.00	-0.50	0	0	0
3	0.00	-1.00	0	0	0
4	0.00	-1.50	0	0	0
5	0.00	-2.00	0	0	0
6	0.00	-2.50	0	0	0
7	0.00	-3.00	0	0	0
8	0.00	-3.50	0	0	0
9	0.00	-4.00	0	0	0
10	0.00	-4.50	0	0	0
11	0.00	-5.00	0	0	0
12	0.00	-5.50	0	0	0
13	0.00	-6.00	0	0	0
14	0.00	-6.50	0	0	0
15	0.00	-7.00	0	0	0
16	0.00	-7.50	0	0	0
17	0.00	-8.00	0	1	0

Caratteristiche delle aste

Elemento strutturale 0 :

asta	nodo i	nodo j	lunghezza
1	1	2	0.50
2	2	3	0.50
3	3	4	0.50
4	4	5	0.50
5	5	6	0.50
6	6	7	0.50
7	7	8	0.50
8	8	9	0.50
9	9	10	0.50
10	10	11	0.50
11	11	12	0.50
12	12	13	0.50
13	13	14	0.50
14	14	15	0.50
15	15	16	0.50
16	16	17	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.1447E9	0.0000	0.00
2	1	0.2785	0.006174	3.1447E9	0.0000	0.00
3	1	0.2785	0.006174	3.1447E9	0.0000	0.00
4	1	0.2785	0.006174	3.1447E9	0.0000	0.00
5	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
6	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
7	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
8	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
9	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
10	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
11	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
12	1	0.2785	0.006174	3.1447E9	3000000.0..	0.60
13	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
14	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

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15	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60
16	1	0.2785	0.006174	3.1447E9	1000000.0..	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura

Peso proprio

Peso proprio :

asta	carico lineare	peso asta
1	683.13	341.56
2	683.13	341.56
3	683.13	341.56
4	683.13	341.56
5	683.13	341.56
6	683.13	341.56
7	683.13	341.56
8	683.13	341.56
9	683.13	341.56
10	683.13	341.56
11	683.13	341.56
12	683.13	341.56
13	683.13	341.56
14	683.13	341.56
15	683.13	341.56
16	683.13	341.56

Peso totale struttura = 5465.03

M(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-5273.50

T(250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	2812.00	0.00	0.00

Mtrasp (T250)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2952.60

q

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	261.00	261.00	LL

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2	0.00	0.00	261.00	261.00	LL
3	0.00	0.00	261.00	261.00	LL
4	0.00	0.00	261.00	261.00	LL
5	0.00	0.00	261.00	261.00	LL
6	0.00	0.00	261.00	261.00	LL
7	0.00	0.00	261.00	261.00	LL
8	0.00	0.00	261.00	261.00	LL
9	0.00	0.00	261.00	261.00	LL
10	0.00	0.00	261.00	261.00	LL
11	0.00	0.00	261.00	261.00	LL
12	0.00	0.00	261.00	261.00	LL
13	0.00	0.00	354.00	354.00	LL
14	0.00	0.00	354.00	354.00	LL
15	0.00	0.00	354.00	354.00	LL
16	0.00	0.00	354.00	354.00	LL

Spinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	651.00	0.00	0.00

Tq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	652.00	0.00	0.00

Mq

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-326.20

Mspinta attiva

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-217.00

RITIRO+AT

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0023	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-1380.00	LL
	2	0.00	0.00	-1380.00	-2759.00	LL
	3	0.00	0.00	-2759.00	-4139.00	LL
	4	0.00	0.00	-4139.00	-5519.00	LL

Combinazioni di carico :

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combinazione P.P.. M(250) . T(250) . Mtr(250) .q Spinta attiva.. Tq Mg Mspinta att..
 FESSURAZIONE 1.00 0.5 0.5 0.5 1.00 1.00 1.00 1.00 1.00

combinazione RITIRO + AT.. spinta passiva..
 FESSURAZIONE 1.00 1.00

Sollecitazioni

Condizione : Peso proprio

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	-341.56	0.0000
2	0.00	0.00	0.00	-341.56	0.0000
	0.50	0.00	0.00	-683.13	0.0000
3	0.00	0.00	0.00	-683.13	0.0000
	0.50	0.00	0.00	-1024.69	0.0000
4	0.00	0.00	0.00	-1024.69	0.0000
	0.50	0.00	0.00	-1366.26	0.0000
5	0.00	0.00	0.00	-1366.26	0.0000
	0.50	0.00	0.00	-1707.82	0.0000
6	0.00	0.00	0.00	-1707.82	0.0000
	0.50	0.00	0.00	-2049.38	0.0000
7	0.00	0.00	0.00	-2049.38	0.0000
	0.50	0.00	0.00	-2390.95	0.0000
8	0.00	0.00	0.00	-2390.95	0.0000
	0.50	0.00	0.00	-2732.51	0.0000
9	0.00	0.00	0.00	-2732.51	0.0000
	0.50	0.00	0.00	-3074.08	0.0000
10	0.00	0.00	0.00	-3074.08	0.0000
	0.50	0.00	0.00	-3415.64	0.0000
11	0.00	0.00	0.00	-3415.64	0.0000
	0.50	0.00	0.00	-3757.21	0.0000
12	0.00	0.00	0.00	-3757.21	0.0000
	0.50	0.00	0.00	-4098.77	0.0000
13	0.00	0.00	0.00	-4098.77	0.0000
	0.50	0.00	0.00	-4440.33	0.0000
14	0.00	0.00	0.00	-4440.33	0.0000
	0.50	0.00	0.00	-4781.90	0.0000
15	0.00	0.00	0.00	-4781.90	0.0000
	0.50	0.00	0.00	-5123.46	0.0000
16	0.00	0.00	0.00	-5123.46	0.0000
	0.50	0.00	0.00	-5465.03	0.0000

Condizione : M(250)

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asta	x	M	T	N	P
1	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
2	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
3	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
4	0.00	5273.50	0.00	0.00	0.0000
	0.50	5273.50	0.00	0.00	0.0000
5	0.00	5273.50	0.00	0.00	3085.3770
	0.50	5070.31	-760.15	0.00	2030.0300
6	0.00	5070.31	-760.15	0.00	2030.0300
	0.50	4561.03	-1234.08	0.00	1169.5520
7	0.00	4561.03	-1234.08	0.00	1169.5520
	0.50	3874.61	-1477.45	0.00	484.6838
8	0.00	3874.61	-1477.45	0.00	484.6838
	0.50	3113.84	-1538.99	0.00	-50.7566
9	0.00	3113.84	-1538.99	0.00	-50.7566
	0.50	2359.15	-1459.08	0.00	-465.8979
10	0.00	2359.15	-1459.08	0.00	-465.8979
	0.50	1673.02	-1269.33	0.00	-789.6905
11	0.00	1673.02	-1269.33	0.00	-789.6905
	0.50	1104.20	-993.06	0.00	-1048.4810
12	0.00	1104.20	-993.06	0.00	-1048.4810
	0.50	691.68	-646.29	0.00	-1264.1160
13	0.00	691.68	-646.29	0.00	-421.3721
	0.50	401.66	-510.66	0.00	-484.2118
14	0.00	401.66	-510.66	0.00	-484.2118
	0.50	184.00	-357.09	0.00	-541.8023
15	0.00	184.00	-357.09	0.00	-541.8023
	0.50	47.36	-186.73	0.00	-596.9367
16	0.00	47.36	-186.73	0.00	-596.9367
	0.50	0.00	0.00	0.00	-651.3655

Condizione : T(250)

asta	x	M	T	N	P
1	0.00	0.00	2812.00	0.00	0.0000
	0.50	1406.00	2812.00	0.00	0.0000
2	0.00	1406.00	2812.00	0.00	0.0000
	0.50	2812.00	2812.00	0.00	0.0000
3	0.00	2812.00	2812.00	0.00	0.0000

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	0.50	4218.00	2812.00	0.00	0.0000
4	0.00	4218.00	2812.00	0.00	0.0000
	0.50	5624.00	2812.00	0.00	0.0000
5	0.00	5624.00	2812.00	0.00	7446.7790
	0.50	6522.90	880.34	0.00	5506.7690
6	0.00	6522.90	880.34	0.00	5506.7690
	0.50	6594.96	-507.79	0.00	3816.0600
7	0.00	6594.96	-507.79	0.00	3816.0600
	0.50	6093.05	-1428.18	0.00	2378.2500
8	0.00	6093.05	-1428.18	0.00	2378.2500
	0.50	5232.47	-1954.15	0.00	1174.6450
9	0.00	5232.47	-1954.15	0.00	1174.6450
	0.50	4193.67	-2151.12	0.00	172.5836
10	0.00	4193.67	-2151.12	0.00	172.5836
	0.50	3127.03	-2073.56	0.00	-667.5769
11	0.00	3127.03	-2073.56	0.00	-667.5769
	0.50	2158.75	-1763.76	0.00	-1386.6310
12	0.00	2158.75	-1763.76	0.00	-1386.6310
	0.50	1396.83	-1252.26	0.00	-2021.6350
13	0.00	1396.83	-1252.26	0.00	-673.8782
	0.50	826.02	-1021.37	0.00	-867.3513
14	0.00	826.02	-1021.37	0.00	-867.3513
	0.50	384.80	-734.37	0.00	-1050.0500
15	0.00	384.80	-734.37	0.00	-1050.0500
	0.50	100.60	-393.61	0.00	-1227.6250
16	0.00	100.60	-393.61	0.00	-1227.6250
	0.50	0.00	0.00	0.00	-1403.7090

Condizione : Mtrasp (T250)

asta	x	M	T	N	P
1	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
2	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
3	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
4	0.00	2952.60	0.00	0.00	0.0000
	0.50	2952.60	0.00	0.00	0.0000
5	0.00	2952.60	0.00	0.00	1727.4830
	0.50	2838.83	-425.60	0.00	1136.6010
6	0.00	2838.83	-425.60	0.00	1136.6010
	0.50	2553.69	-690.96	0.00	654.8247

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7	0.00	2553.69	-690.96	0.00	654.8247
	0.50	2169.37	-827.22	0.00	271.3715
8	0.00	2169.37	-827.22	0.00	271.3715
	0.50	1743.42	-861.67	0.00	-28.4183
9	0.00	1743.42	-861.67	0.00	-28.4183
	0.50	1320.87	-816.93	0.00	-260.8534
10	0.00	1320.87	-816.93	0.00	-260.8534
	0.50	936.71	-710.69	0.00	-442.1428
11	0.00	936.71	-710.69	0.00	-442.1428
	0.50	618.23	-556.01	0.00	-587.0381
12	0.00	618.23	-556.01	0.00	-587.0381
	0.50	387.27	-361.85	0.00	-707.7709
13	0.00	387.27	-361.85	0.00	-235.9236
	0.50	224.89	-285.91	0.00	-271.1072
14	0.00	224.89	-285.91	0.00	-271.1072
	0.50	103.02	-199.93	0.00	-303.3517
15	0.00	103.02	-199.93	0.00	-303.3517
	0.50	26.52	-104.55	0.00	-334.2212
16	0.00	26.52	-104.55	0.00	-334.2212
	0.50	0.00	0.00	0.00	-364.6955

Condizione : q

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	32.62	130.50	0.00	0.0000
2	0.00	32.63	130.50	0.00	0.0000
	0.50	130.50	261.00	0.00	0.0000
3	0.00	130.50	261.00	0.00	0.0000
	0.50	293.63	391.50	0.00	0.0000
4	0.00	293.62	391.50	0.00	0.0000
	0.50	522.00	522.00	0.00	0.0000
5	0.00	522.00	522.00	0.00	1245.1370
	0.50	726.98	306.58	0.00	1071.5660
6	0.00	726.98	306.58	0.00	1071.5660
	0.50	836.57	139.08	0.00	925.7693
7	0.00	836.57	139.08	0.00	925.7693
	0.50	872.54	10.46	0.00	812.0502
8	0.00	872.54	10.46	0.00	812.0502
	0.50	851.87	-89.14	0.00	731.8529
9	0.00	851.87	-89.14	0.00	731.8529
	0.50	786.57	-169.70	0.00	684.4175

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10	0.00	786.57	-169.70	0.00	684.4175			
	0.50	683.77	-240.67	0.00	667.2447			
11	0.00	683.77	-240.67	0.00	667.2447			
	0.50	546.08	-310.55	0.00	676.3719			
12	0.00	546.08	-310.55	0.00	676.3719			
	0.50	372.21	-386.45	0.00	706.4762			
13	0.00	372.21	-386.45	0.00	235.4921			
	0.50	205.27	-282.03	0.00	250.3264			
14	0.00	205.27	-282.03	0.00	250.3264			
	0.50	89.36	-182.49	0.00	267.8585			
15	0.00	89.36	-182.49	0.00	267.8585			
	0.50	21.87	-88.41	0.00	286.5931			
16	0.00	21.87	-88.41	0.00	286.5931			
	0.50	0.00	0.00	0.00	305.6582			
Condizione : Spinta attiva								
asta	x	M	T	N	P			
1	0.00	0.00	651.00	0.00	0.0000			
	0.50	325.50	651.00	0.00	0.0000			
2	0.00	325.50	651.00	0.00	0.0000			
	0.50	651.00	651.00	0.00	0.0000			
3	0.00	651.00	651.00	0.00	0.0000			
	0.50	976.50	651.00	0.00	0.0000			
4	0.00	976.50	651.00	0.00	0.0000			
	0.50	1302.00	651.00	0.00	0.0000			
5	0.00	1302.00	651.00	0.00	1723.9880			
	0.50	1510.10	203.81	0.00	1274.8600			
6	0.00	1510.10	203.81	0.00	1274.8600			
	0.50	1526.78	-117.56	0.00	883.4478			
7	0.00	1526.78	-117.56	0.00	883.4478			
	0.50	1410.59	-330.64	0.00	550.5836			
8	0.00	1410.59	-330.64	0.00	550.5836			
	0.50	1211.36	-452.40	0.00	271.9396			
9	0.00	1211.36	-452.40	0.00	271.9396			
	0.50	970.87	-498.00	0.00	39.9545			
10	0.00	970.87	-498.00	0.00	39.9545			
	0.50	723.93	-480.05	0.00	-154.5493			
11	0.00	723.93	-480.05	0.00	-154.5493			
	0.50	499.77	-408.32	0.00	-321.0160			
12	0.00	499.77	-408.32	0.00	-321.0160			
	0.50	323.38	-289.91	0.00	-468.0242			
13	0.00	323.38	-289.91	0.00	-156.0081			

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0.50 191.23 -236.46 0.00 -200.7986

14 0.00 191.23 -236.46 0.00 -200.7986

0.50 89.09 -170.01 0.00 -243.0948

15 0.00 89.09 -170.01 0.00 -243.0948

0.50 23.29 -91.12 0.00 -284.2049

16 0.00 23.29 -91.12 0.00 -284.2049

0.50 0.00 0.00 0.00 -324.9696

Condizione : Tq

asta	x	M	T	N	P
1	0.00	0.00	652.00	0.00	0.0000
	0.50	326.00	652.00	0.00	0.0000
2	0.00	326.00	652.00	0.00	0.0000
	0.50	652.00	652.00	0.00	0.0000
3	0.00	652.00	652.00	0.00	0.0000
	0.50	978.00	652.00	0.00	0.0000
4	0.00	978.00	652.00	0.00	0.0000
	0.50	1304.00	652.00	0.00	0.0000
5	0.00	1304.00	652.00	0.00	1726.6360
	0.50	1512.42	204.12	0.00	1276.8180
6	0.00	1512.42	204.12	0.00	1276.8180
	0.50	1529.13	-117.74	0.00	884.8048
7	0.00	1529.13	-117.74	0.00	884.8048
	0.50	1412.76	-331.14	0.00	551.4293
8	0.00	1412.76	-331.14	0.00	551.4293
	0.50	1213.22	-453.10	0.00	272.3573
9	0.00	1213.22	-453.10	0.00	272.3573
	0.50	972.36	-498.77	0.00	40.0158
10	0.00	972.36	-498.77	0.00	40.0158
	0.50	725.04	-480.78	0.00	-154.7867
11	0.00	725.04	-480.78	0.00	-154.7867
	0.50	500.53	-408.95	0.00	-321.5091
12	0.00	500.53	-408.95	0.00	-321.5091
	0.50	323.87	-290.35	0.00	-468.7432
13	0.00	323.87	-290.35	0.00	-156.2477
	0.50	191.52	-236.82	0.00	-201.1071
14	0.00	191.52	-236.82	0.00	-201.1071
	0.50	89.22	-170.27	0.00	-243.4682
15	0.00	89.22	-170.27	0.00	-243.4682
	0.50	23.32	-91.26	0.00	-284.6415
16	0.00	23.32	-91.26	0.00	-284.6415
	0.50	0.00	0.00	0.00	-325.4687

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Condizione : Mg

asta	x	M	T	N	P
1	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
2	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
3	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
4	0.00	326.20	0.00	0.00	0.0000
	0.50	326.20	0.00	0.00	0.0000
5	0.00	326.20	0.00	0.00	190.8505
	0.50	313.63	-47.02	0.00	125.5705
6	0.00	313.63	-47.02	0.00	125.5705
	0.50	282.13	-76.34	0.00	72.3443
7	0.00	282.13	-76.34	0.00	72.3443
	0.50	239.67	-91.39	0.00	29.9808
8	0.00	239.67	-91.39	0.00	29.9808
	0.50	192.61	-95.20	0.00	-3.1396
9	0.00	192.61	-95.20	0.00	-3.1396
	0.50	145.93	-90.25	0.00	-28.8188
10	0.00	145.93	-90.25	0.00	-28.8188
	0.50	103.49	-78.52	0.00	-48.8475
11	0.00	103.49	-78.52	0.00	-48.8475
	0.50	68.30	-61.43	0.00	-64.8553
12	0.00	68.30	-61.43	0.00	-64.8553
	0.50	42.78	-39.98	0.00	-78.1938
13	0.00	42.78	-39.98	0.00	-26.0646
	0.50	24.85	-31.59	0.00	-29.9516
14	0.00	24.85	-31.59	0.00	-29.9516
	0.50	11.38	-22.09	0.00	-33.5140
15	0.00	11.38	-22.09	0.00	-33.5140
	0.50	2.93	-11.55	0.00	-36.9244
16	0.00	2.93	-11.55	0.00	-36.9244
	0.50	0.00	0.00	0.00	-40.2912

Condizione : Mspinta attiva

asta	x	M	T	N	P
1	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
2	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000

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3	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
4	0.00	217.00	0.00	0.00	0.0000
	0.50	217.00	0.00	0.00	0.0000
5	0.00	217.00	0.00	0.00	126.9606
	0.50	208.64	-31.28	0.00	83.5340
6	0.00	208.64	-31.28	0.00	83.5340
	0.50	187.68	-50.78	0.00	48.1260
7	0.00	187.68	-50.78	0.00	48.1260
	0.50	159.44	-60.80	0.00	19.9443
8	0.00	159.44	-60.80	0.00	19.9443
	0.50	128.13	-63.33	0.00	-2.0886
9	0.00	128.13	-63.33	0.00	-2.0886
	0.50	97.08	-60.04	0.00	-19.1713
10	0.00	97.08	-60.04	0.00	-19.1713
	0.50	68.84	-52.23	0.00	-32.4951
11	0.00	68.84	-52.23	0.00	-32.4951
	0.50	45.44	-40.86	0.00	-43.1441
12	0.00	45.44	-40.86	0.00	-43.1441
	0.50	28.46	-26.59	0.00	-52.0173
13	0.00	28.46	-26.59	0.00	-17.3391
	0.50	16.53	-21.01	0.00	-19.9249
14	0.00	16.53	-21.01	0.00	-19.9249
	0.50	7.57	-14.69	0.00	-22.2947
15	0.00	7.57	-14.69	0.00	-22.2947
	0.50	1.95	-7.68	0.00	-24.5634
16	0.00	1.95	-7.68	0.00	-24.5634
	0.50	0.00	0.00	0.00	-26.8031

Condizione : RITIRO+AT

asta	x	M	T	N	P
1	0.00	0.00	1128.84	0.00	0.0000
	0.50	564.42	1128.84	0.00	0.0000
2	0.00	564.42	1128.84	0.00	0.0000
	0.50	1128.84	1128.84	0.00	0.0000
3	0.00	1128.84	1128.84	0.00	0.0000
	0.50	1693.26	1128.84	0.00	0.0000
4	0.00	1693.26	1128.84	0.00	0.0000
	0.50	2257.68	1128.84	0.00	0.0000
5	0.00	2257.68	1128.84	0.00	2989.4110
	0.50	2618.53	353.40	0.00	2210.6190

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6	0.00	2618.53	353.40	0.00	2210.6190
	0.50	2647.46	-203.85	0.00	1531.9070
7	0.00	2647.46	-203.85	0.00	1531.9070
	0.50	2445.97	-573.33	0.00	954.7172
8	0.00	2445.97	-573.33	0.00	954.7172
	0.50	2100.51	-784.47	0.00	471.5458
9	0.00	2100.51	-784.47	0.00	471.5458
	0.50	1683.49	-863.54	0.00	69.2814
10	0.00	1683.49	-863.54	0.00	69.2814
	0.50	1255.31	-832.40	0.00	-267.9899
11	0.00	1255.31	-832.40	0.00	-267.9899
	0.50	866.60	-708.04	0.00	-556.6448
12	0.00	866.60	-708.04	0.00	-556.6448
	0.50	560.74	-502.70	0.00	-811.5585
13	0.00	560.74	-502.70	0.00	-270.5195
	0.50	331.59	-410.02	0.00	-348.1867
14	0.00	331.59	-410.02	0.00	-348.1867
	0.50	154.47	-294.81	0.00	-421.5286
15	0.00	154.47	-294.81	0.00	-421.5286
	0.50	40.38	-158.01	0.00	-492.8140
16	0.00	40.38	-158.01	0.00	-492.8140
	0.50	0.00	0.00	0.00	-563.5003

Condizione : SPINTA PASSIVA

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.50	-57.50	-345.00	0.00	0.0000
2	0.00	-57.50	-345.00	0.00	0.0000
	0.50	-459.96	-1379.75	0.00	0.0000
3	0.00	-459.96	-1379.75	0.00	0.0000
	0.50	-1552.21	-3104.25	0.00	0.0000
4	0.00	-1552.21	-3104.25	0.00	0.0000
	0.50	-3679.21	-5518.75	0.00	0.0000
5	0.00	-3679.21	-5518.75	0.00	-10309.7000
	0.50	-5726.87	-2788.40	0.00	-7974.8560
6	0.00	-5726.87	-2788.40	0.00	-7974.8560
	0.50	-6578.92	-725.39	0.00	-5857.3750
7	0.00	-6578.92	-725.39	0.00	-5857.3750
	0.50	-6551.66	741.37	0.00	-3991.1900
8	0.00	-6551.66	741.37	0.00	-3991.1900
	0.50	-5924.25	1687.75	0.00	-2376.1470
9	0.00	-5924.25	1687.75	0.00	-2376.1470

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	0.50	-4938.57	2185.83	0.00	-988.7906
10	0.00	-4938.57	2185.83	0.00	-988.7906
	0.50	-3802.61	2298.36	0.00	208.2855
11	0.00	-3802.61	2298.36	0.00	208.2855
	0.50	-2695.98	2075.86	0.00	1258.3820
12	0.00	-2695.98	2075.86	0.00	1258.3820
	0.50	-1776.27	1555.86	0.00	2203.7380
13	0.00	-1776.27	1555.86	0.00	734.5793
	0.50	-1060.67	1291.97	0.00	1026.6020
14	0.00	-1060.67	1291.97	0.00	1026.6020
	0.50	-498.46	943.00	0.00	1304.8030
15	0.00	-498.46	943.00	0.00	1304.8030
	0.50	-131.34	511.93	0.00	1576.3760
16	0.00	-131.34	511.93	0.00	1576.3760
	0.50	0.00	0.00	0.00	1846.0060

Combinazione : ESERCIZIO

asta	x	M	T	N	P
1	0.00	4656.25	3837.84	0.00	0.0000
	0.50	6550.30	3623.34	0.00	0.0000
2	0.00	6550.30	3623.34	0.00	0.0000
	0.50	8164.63	2719.09	0.00	0.0000
3	0.00	8164.63	2719.09	0.00	0.0000
	0.50	9154.43	1125.09	0.00	0.0000
4	0.00	9154.43	1125.09	0.00	0.0000
	0.50	9174.72	-1158.91	0.00	0.0000
5	0.00	9174.72	-1158.91	0.00	3823.0980
	0.50	8379.45	-1951.49	0.00	2404.8120
6	0.00	8379.45	-1951.49	0.00	2404.8120
	0.50	7285.68	-2368.98	0.00	1309.2420
7	0.00	7285.68	-2368.98	0.00	1309.2420
	0.50	6057.82	-2501.88	0.00	494.6683
8	0.00	6057.82	-2501.88	0.00	494.6683
	0.50	4818.30	-2427.29	0.00	-85.9449
9	0.00	4818.30	-2427.29	0.00	-85.9449
	0.50	3654.57	-2208.03	0.00	-480.1953
10	0.00	3654.57	-2208.03	0.00	-480.1953
	0.50	2626.15	-1893.08	0.00	-732.8434
11	0.00	2626.15	-1893.08	0.00	-732.8434
	0.50	1771.33	-1518.71	0.00	-883.4910
12	0.00	1771.33	-1518.71	0.00	-883.4910
	0.50	1113.06	-1110.33	0.00	-965.0839

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13	0.00	1113.06	-1110.33	0.00	-321.6946
	0.50	626.60	-834.92	0.00	-334.3760
14	0.00	626.60	-834.92	0.00	-334.3760
	0.50	278.55	-557.07	0.00	-338.8410
15	0.00	278.55	-557.07	0.00	-338.8410
	0.50	69.63	-278.55	0.00	-339.5702
16	0.00	69.63	-278.55	0.00	-339.5702
	0.50	0.00	0.00	0.00	-339.2535

Inviluppo sollecitazioni

asta	x		M	T	N	P
1	0.00	MAX	4656.25	3837.84	0.00	
		MIN	4656.25	3837.84	0.00	
	0.50	MAX	6550.30	3623.34	0.00	
		MIN	6550.30	3623.34	0.00	
2	0.00	MAX	6550.30	3623.34	0.00	
		MIN	6550.30	3623.34	0.00	
	0.50	MAX	8164.63	2719.09	0.00	
		MIN	8164.63	2719.09	0.00	
3	0.00	MAX	8164.63	2719.09	0.00	
		MIN	8164.63	2719.09	0.00	
	0.50	MAX	9154.43	1125.09	0.00	
		MIN	9154.43	1125.09	0.00	
4	0.00	MAX	9154.43	1125.09	0.00	
		MIN	9154.43	1125.09	0.00	
	0.50	MAX	9174.72	-1158.91	0.00	
		MIN	9174.72	-1158.91	0.00	
5	0.00	MAX	9174.72	-1158.91	0.00	3823.0980
		MIN	9174.72	-1158.91	0.00	3823.0980
	0.50	MAX	8379.45	-1951.49	0.00	2404.8120
		MIN	8379.45	-1951.49	0.00	2404.8120
6	0.00	MAX	8379.45	-1951.49	0.00	2404.8120
		MIN	8379.45	-1951.49	0.00	2404.8120
	0.50	MAX	7285.68	-2368.98	0.00	1309.2420
		MIN	7285.68	-2368.98	0.00	1309.2420
7	0.00	MAX	7285.68	-2368.98	0.00	1309.2420
		MIN	7285.68	-2368.98	0.00	1309.2420
	0.50	MAX	6057.82	-2501.88	0.00	494.6683
		MIN	6057.82	-2501.88	0.00	494.6683
8	0.00	MAX	6057.82	-2501.88	0.00	494.6683
		MIN	6057.82	-2501.88	0.00	494.6683
	0.50	MAX	4818.30	-2427.29	0.00	-85.9449
		MIN	4818.30	-2427.29	0.00	-85.9449
9	0.00	MAX	4818.30	-2427.29	0.00	-85.9449
		MIN	4818.30	-2427.29	0.00	-85.9449
	0.50	MAX	3654.57	-2208.03	0.00	-480.1953
		MIN	3654.57	-2208.03	0.00	-480.1953

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10	0.00	MAX	3654.57	-2208.03	0.00	-480.1953
		MIN	3654.57	-2208.03	0.00	-480.1953
	0.50	MAX	2626.15	-1893.08	0.00	-732.8434
		MIN	2626.15	-1893.08	0.00	-732.8434
11	0.00	MAX	2626.15	-1893.08	0.00	-732.8434
		MIN	2626.15	-1893.08	0.00	-732.8434
	0.50	MAX	1771.33	-1518.71	0.00	-883.4910
		MIN	1771.33	-1518.71	0.00	-883.4910
12	0.00	MAX	1771.33	-1518.71	0.00	-883.4910
		MIN	1771.33	-1518.71	0.00	-883.4910
	0.50	MAX	1113.06	-1110.33	0.00	-965.0839
		MIN	1113.06	-1110.33	0.00	-965.0839
13	0.00	MAX	1113.06	-1110.33	0.00	-321.6946
		MIN	1113.06	-1110.33	0.00	-321.6946
	0.50	MAX	626.60	-834.92	0.00	-334.3760
		MIN	626.60	-834.92	0.00	-334.3760
14	0.00	MAX	626.60	-834.92	0.00	-334.3760
		MIN	626.60	-834.92	0.00	-334.3760
	0.50	MAX	278.55	-557.07	0.00	-338.8410
		MIN	278.55	-557.07	0.00	-338.8410
15	0.00	MAX	278.55	-557.07	0.00	-338.8410
		MIN	278.55	-557.07	0.00	-338.8410
	0.50	MAX	69.63	-278.55	0.00	-339.5702
		MIN	69.63	-278.55	0.00	-339.5702
16	0.00	MAX	69.63	-278.55	0.00	-339.5702
		MIN	69.63	-278.55	0.00	-339.5702
	0.50	MAX	0.00	0.00	0.00	-339.2535
		MIN	0.00	0.00	0.00	-339.2535

Massimi e minimi

asta	Mmax	X	comb.	Mmin	X	comb.
1	6550.30	0.50	1	4656.25	0.00	1
2	8164.63	0.50	1	6550.30	0.00	1
3	9154.43	0.50	1	8164.63	0.00	1
4	9307.85	0.26	1	9154.43	0.00	1
5	9174.72	0.00	1	8379.45	0.50	1
6	8379.45	0.00	1	7285.68	0.50	1
7	7285.68	0.00	1	6057.82	0.50	1
8	6057.82	0.00	1	4818.30	0.50	1
9	4818.30	0.00	1	3654.57	0.50	1
10	3654.57	0.00	1	2626.15	0.50	1
11	2626.15	0.00	1	1771.33	0.50	1
12	1771.33	0.00	1	1113.06	0.50	1
13	1113.06	0.00	1	626.60	0.50	1
14	626.60	0.00	1	278.55	0.50	1
15	278.55	0.00	1	69.63	0.50	1
16	69.63	0.00	1	0.00	0.50	1



ADDENDUM

La presente nota di calcolo conduce un riesame strutturale del cordolo di collegamento delle barriere antirumore su rilevato da installarsi sulla Linea AV/AC Torino-Venezia, tratta Milano-Verona, lotto funzionale Treviglio-Brescia sugli effetti del ritiro e della torsione connessa al passaggio dei treni.

Nel presente addendum si valutano appunto gli effetti nella trave porta barriere antirumore dovuti a ritiro/variazione di temperatura, nonché ulteriori effetti torsionali prodotti da altre disposizioni di carico dei convogli. In particolare per la torsione si considera la presenza sui vari tratti di trave di pressioni e depressioni emisimmetriche generate dalle azioni aerodinamiche del passaggio del treno. In accordo con quanto previsto dalle Normative Ferroviarie vigenti si considerano 2 tratti adiacenti di lunghezza 5 metri con pressione aerodinamica alternata; tale schema viene applicato in diverse posizioni lungo lo sviluppo della barriera.

Tali azioni vengono combinate con l'azione del vento su tutta la barriera, nonché con il ritiro e con le altre azioni permanenti e/o accidentali.

Si riporta nella sottostante tabella la lunghezza dei pali, il loro diametro e le dimensioni del cordolo di coronamento in funzione dell'altezza della barriera antirumore:

Tratta	Altezza barriere (m)	Lunghezza Palo (m)	Diametro Palo (m)	Trave di coronamento B*H (m)
Milano- Verona	3.75	8.00	0.60	0.85*1.00
	4.75	8.00	0.60	0.85*1.00
	5.75	10.00	0.80	1.00*1.00
	6.75	12.00	0.80	1.00*1.00

L'interasse tipico dei pali è di 3m, pari a quello dei montanti delle barriere.

Le verifiche vengono svolte per le barriere da 6.75m e 4.75m, in quanto dimensionanti rispettivamente anche per i casi di barriere di 5.75m e 3.75m (stessa sezione ed armatura del cordolo).

GENERAL CONTRACTOR

Cepav due



ALTA SORVEGLIANZA



Doc. N. 60001-00

Progetto

IN05

Lotto

00

Codifica Documento

DE2CLIM0006-007

Rev.

0

Foglio

354 di 394

Si anticipa sin da ora che tutte le verifiche prescritte dalla normativa vigente sono ancora soddisfatte.



1 TRAVE DI CORONAMENTO PALI

Per maggiore chiarezza si riportano sia le caratteristiche geometriche delle travi, al variare dell'altezza delle barriere, sia le azioni agenti, già riportate nella relazione di Calcolo tipologica con l'aggiunta degli effetti dovuti al ritiro e della diminuzione di temperatura. Verranno quindi aggiornate le verifiche a tenso-flessione e fessurazione, quindi verrà assegnato alle armature longitudinali del cordolo l'incremento di tensione longitudinale dovuto alla torsione.

Verranno inoltre effettuate le verifiche a taglio-torsione.

CARATTERISTICHE GEOMETRICHE TRAVE		
BARRIERA H=6.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=5.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=4.75m	B(m)	0.85
	H(m)	1.00
BARRIERA H=3.75m	B(m)	0.85
	H(m)	1.00

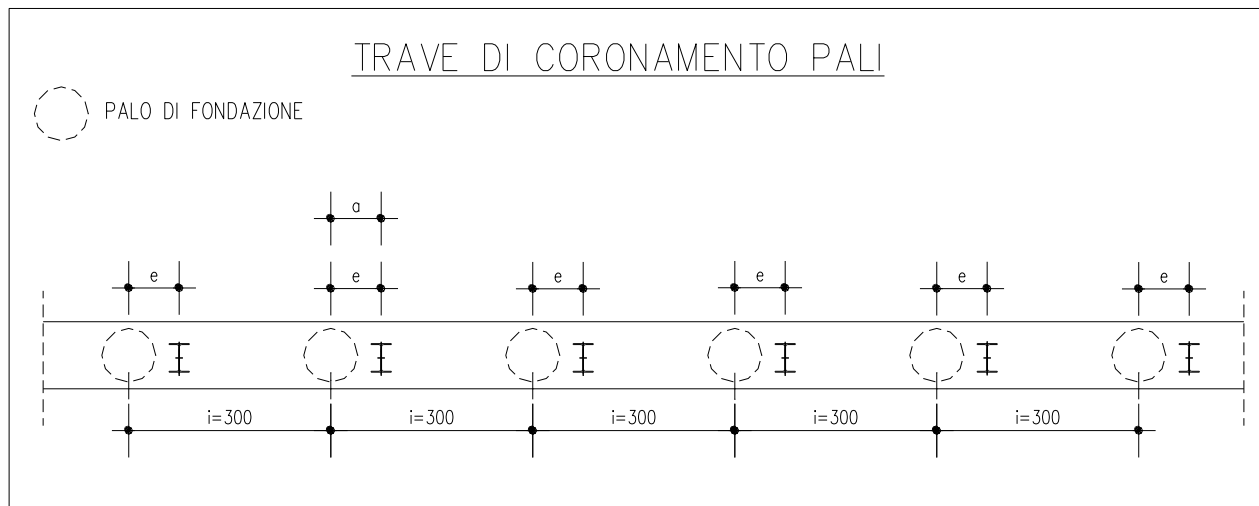
1.1 AZIONI AGENTI

Le azioni considerate per il dimensionamento e verifica delle travi di coronamento pali sono:

- 1) Azioni trasmesse dai montanti delle barriere antirumore
- 2) Peso proprio cordolo
- 3) Spinta attiva del terreno a tergo delle travi di coronamento
- 4) Azioni dovute al ritiro/variazioni termiche

1.a) Azioni trasmesse dai montanti delle barriere antirumore: valutazioni effettuate nella Relazione di Calcolo tipologica

Si riporta, per completezza e per comodità di raffronto, la valutazione di tali azioni effettuata nella Relazione di Calcolo tipologica.



Poiché i montanti delle barriere non sono in asse-palo ma sono eccentrici con $e=0.75\text{m}$ (vedi figura), definite:

N_B = azione verticale trasmessa da un montante delle barriere antirumore alla base del montante

M_B = azione torcente trasmessa da un montante delle barriere antirumore alla base del montante

T_B = azione di taglio trasmessa da un montante delle barriere antirumore alla base del montante

e

N_{BAT} = N_B azione verticale trasmessa da un montante delle barriere antirumore portata in asse trave

M_{BAT} = $M_B + T_B \cdot (H/2 + s)$ azione torcente trasmessa da un montante delle barriere antirumore portata in asse trave

(con H =altezza trave e s = spessore della piastra)

T_{BAT} = T_B azione di taglio trasmessa da un montante delle barriere antirumore portata in asse trave

si ha che in corrispondenza dell'attacco trave-palo, le azioni massime agenti in asse trave, trasmesse dai montanti delle barriere e calcolate col metodo delle aree di influenza (definita la quantità $((i-e)/i = \rho = 0.75)$, valgono:

$V_{BATP} = N_{BAT} \cdot 0.75$ (taglio max verticale in prossimità del palo al lato del varco)

$M_{BATP} = M_{BAT} \cdot 0.75$ (momento torcente max in prossimità del palo al lato del varco)

$T_{BATP} = T_{BAT} \cdot 0.75$ (taglio max orizzontale in prossimità del palo al lato del varco)



Nella tabella sotto riportata sono riassunte le azioni agenti nella trave dovute alle azioni aerodinamiche + vento agenti sui montanti.

Considerando un'azione $p_{tot}=q_{ik}+p$ (pressione aerodinamica + vento) alternativamente di segno opposto si ha che l'azione massima torcente e il taglio max orizzontale sulla trave risultano pari a:

	AZIONI TRASMESSE DA UN MONTANTE		SOLLECITAZIONI MAX IN ASSE TRAVE	
	IN ASSE TRAVE		IN CORRISPONDENZA PALI	
BARRIERA H=6.75m	$N_{BAT} = N_B$ (daN)	4'725.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	3543.8
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	19'870.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	14902.7
	$T_{BAT} = T_B$ (daN)	5'062.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	3796.9
BARRIERA H=5.75m	$N_{BAT} = N_B$ (daN)	4'560.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	3420.0
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	14'770.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	11077.7
	$T_{BAT} = T_B$ (daN)	4'312.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	3234.4
BARRIERA H=4.75m	$N_{BAT} = N_B$ (daN)	4'347.5	$V_{BATP} = \rho * N_{BAT}$ (daN)	3260.6
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	10'420.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	7815.2
	$T_{BAT} = T_B$ (daN)	3'562.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	2671.9
BARRIERA H=3.75m	$N_{BAT} = N_B$ (daN)	4'192.5	$V_{BATP} = \rho * N_{BAT}$ (daN)	3144.4
	$M_{BAT} = M_B + T_B * (H/2+s)$ (daNm)	6'820.4	$M_{BATP} = \rho * M_{BAT}$ (daNm)	5115.3
	$T_{BAT} = T_B$ (daN)	2'812.5	$T_{BATP} = \rho * T_{BAT}$ (daN)	2109.4

1.b) Azioni trasmesse dai montanti delle barriere antirumore: valutazioni ulteriori effettuate nel presente documento considerando le pressioni/depressioni dovute al transito dei convogli in varie posizioni lungo il cordolo.

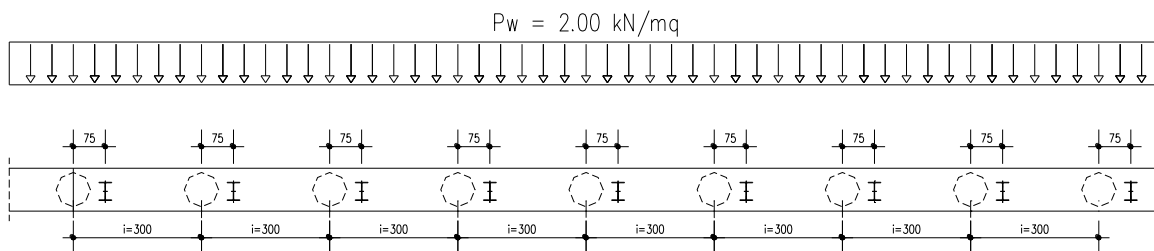
Condizioni di carico

Prudenzialmente si considera una pressione del vento $p_w=2.00\text{kN/m}^2$ ed una pressione/depressione aerodinamica prodotta dal transito dei convogli $p_{aerod}=0.50\text{kN/m}^2$.

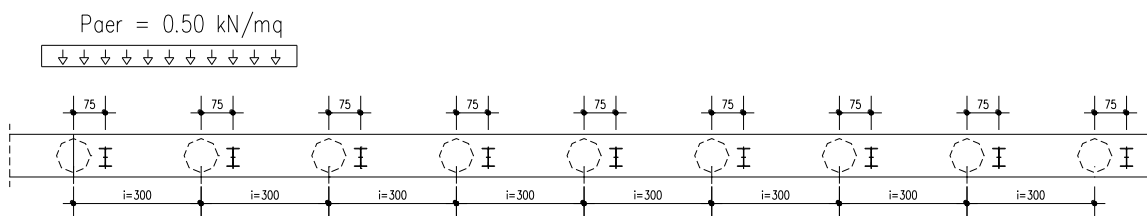
Sempre prudenzialmente ed a favore di sicurezza (nonché per comodità di input), la lunghezza dei due tratti adiacenti con pressione/depressione aerodinamica p_{aerod} discorde viene assunta pari a 6m anziché i 5m indicati in normativa.



CONDIZIONE 1

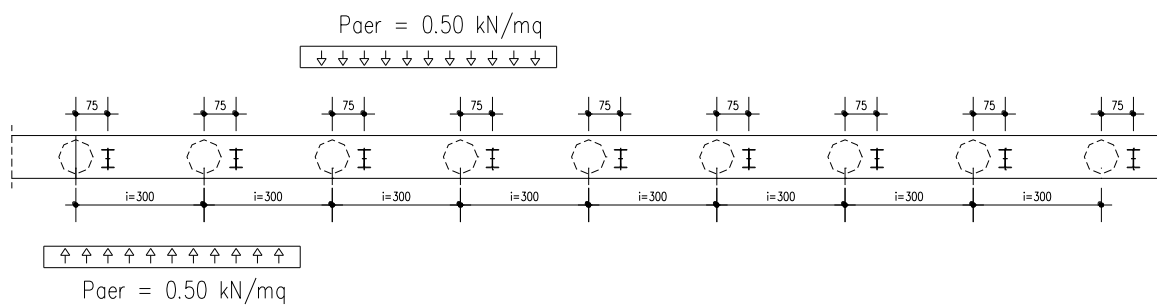


CONDIZIONE 2

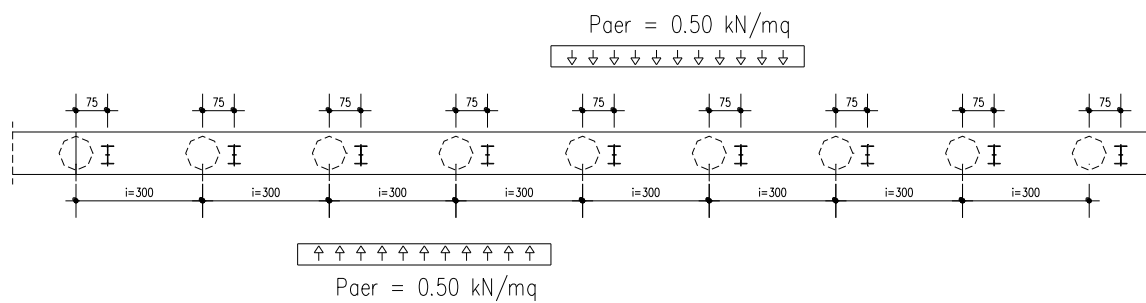




CONDIZIONE 3

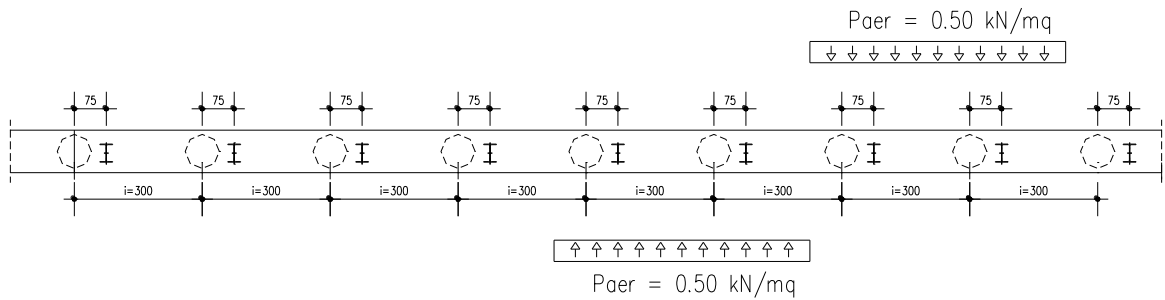


CONDIZIONE 4

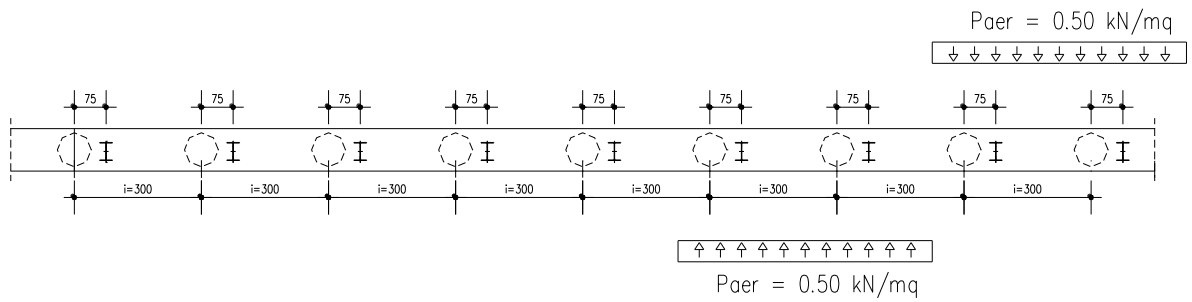


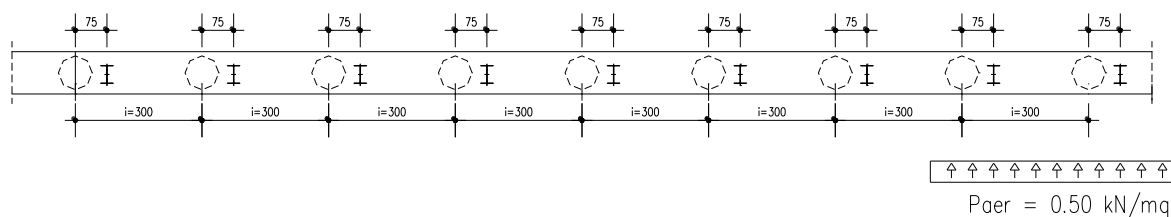
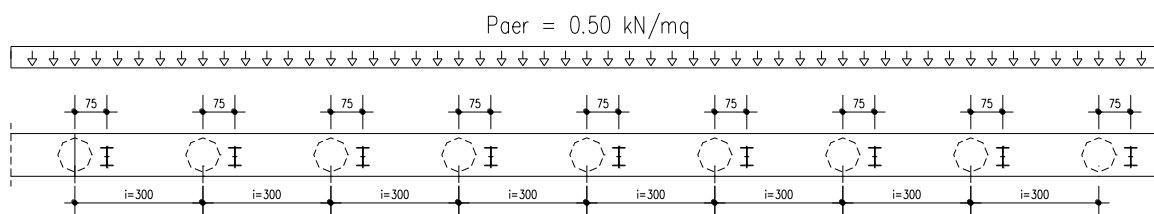


CONDIZIONE 5



CONDIZIONE 6



CONDIZIONE 7CONDIZIONE 8

Vengono analizzate le seguenti combinazioni di carico:

Comb. 1: Condizione 1 + Condizione 8 (ossia 2.50kN/mq ovunque)

Comb. 2: Condizione 1 + Condizione 2

Comb. 3: Condizione 1 + Condizione 3

Comb. 4: Condizione 1 + Condizione 4

Comb. 5: Condizione 1 + Condizione 5

Comb. 6: Condizione 1 + Condizione 6

Comb. 7: Condizione 1 + Condizione 7



Per valutare gli effetti torsionali e taglianti conseguenti alla flessione del cordolo nel piano orizzontale per diversa rotazione della sommità dei pali vengono messi a punto dei semplici ma efficaci modelli tridimensionali agli elementi finiti costituiti da graticci piani soggetti a carichi agenti ortogonalmente a tale piano. E' stato utilizzato il programma di calcolo "Eng".

La modellazione è stata così realizzata:

- si è modellato la trave con elementi di tipo beam aventi lunghezza pari alla distanza dei pali ed aventi la medesima inerzia della trave.

- si sono implementati i pali di fondazione con elementi tipo beam di lunghezza complessiva pari alla lunghezza effettiva dei pali, aventi la medesima inerzia del palo, larghezza pari al diametro del palo, ed immersi in molle indipendenti tra loro (suolo elastico alla Winkler).

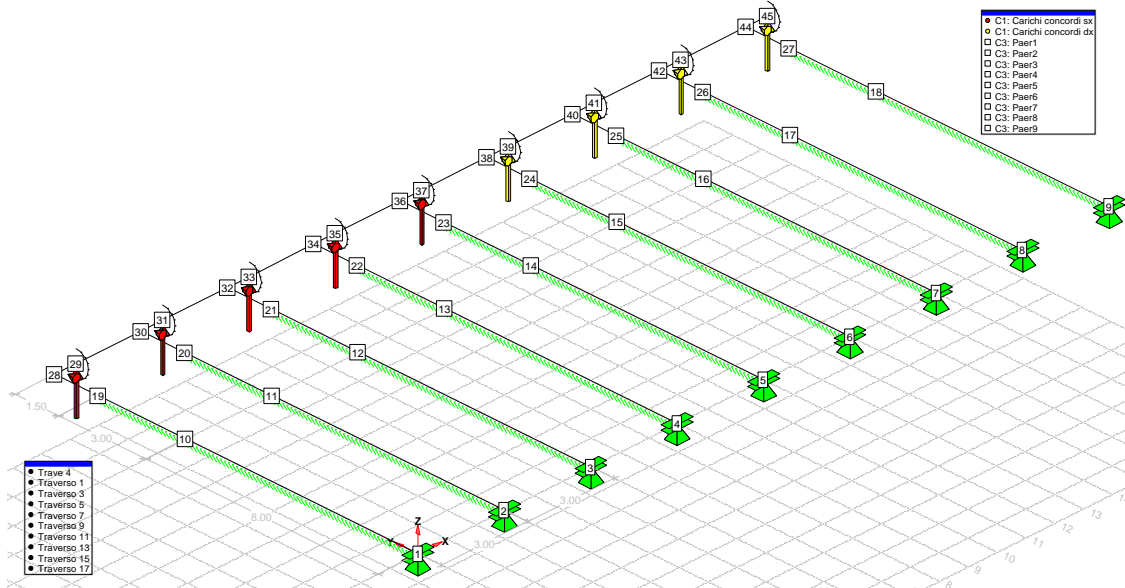
Per quanto riguarda il comportamento dei pali alle azioni orizzontali, si fa riferimento ad un modulo di reazione orizzontale del terreno uniforme con la profondità, assunto pari a $k=3.0\text{kg/cm}^3$ nello strato di rilevato e pari a $k=1.0\text{kg/cm}^3$ al di sotto di tale strato. Al primo metro di terreno a partire dalla testa palo non viene assegnato modulo di reazione orizzontale.

Viene considerato il caso di rilevato di altezza pari a 3.0m, ma i risultati sono significativi anche per quello di altezza pari a 7.0m.

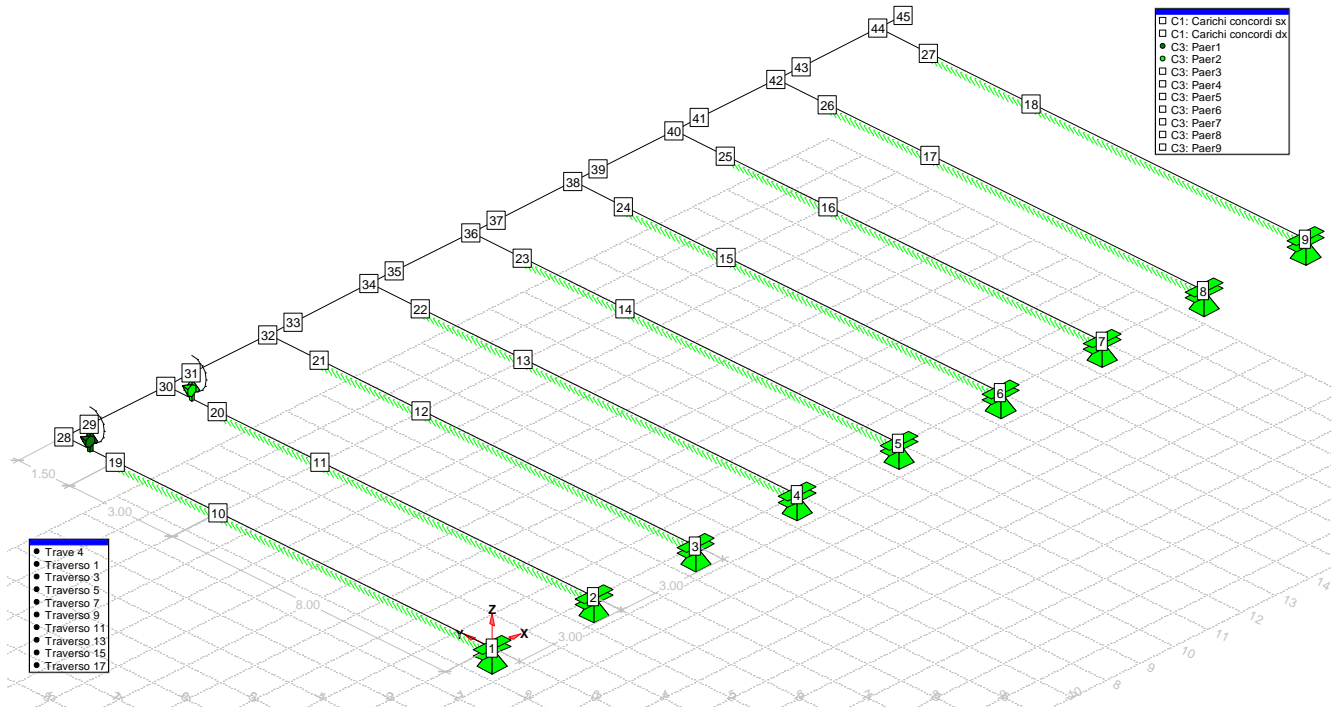
Si effettua l'analisi relativamente al caso di fondazione per barriere di $h=6.75\text{m}$ ed $h=4.75\text{m}$. I risultati sono significativi rispettivamente anche per quelle di altezza $h=5.75\text{m}$ ed $h=3.75\text{m}$.

Si riporta di seguito lo schema di calcolo implementato con la raffigurazione di alcuni casi di carico, quindi si riportano, per il solo cordolo, gli involucri dei diagrammi del momento flettente nel piano orizzontale, del taglio nel piano orizzontale e del momento torcente.

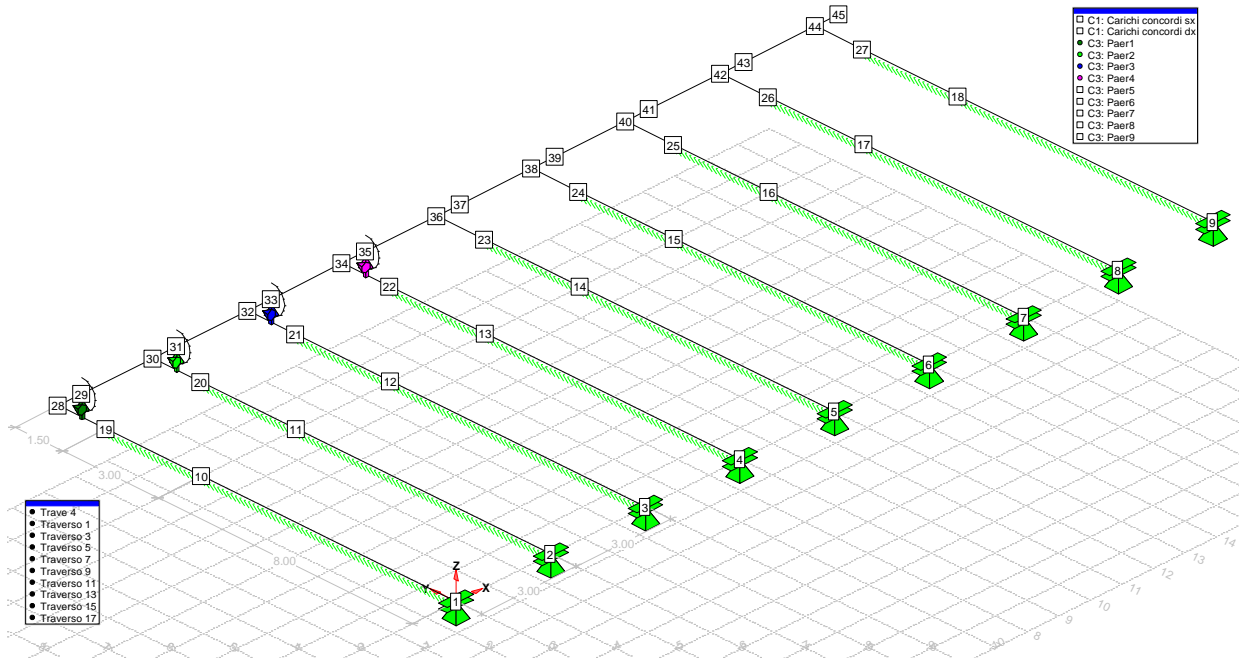
Schema di calcolo per trave di coronamento con barriere di h=6.75m



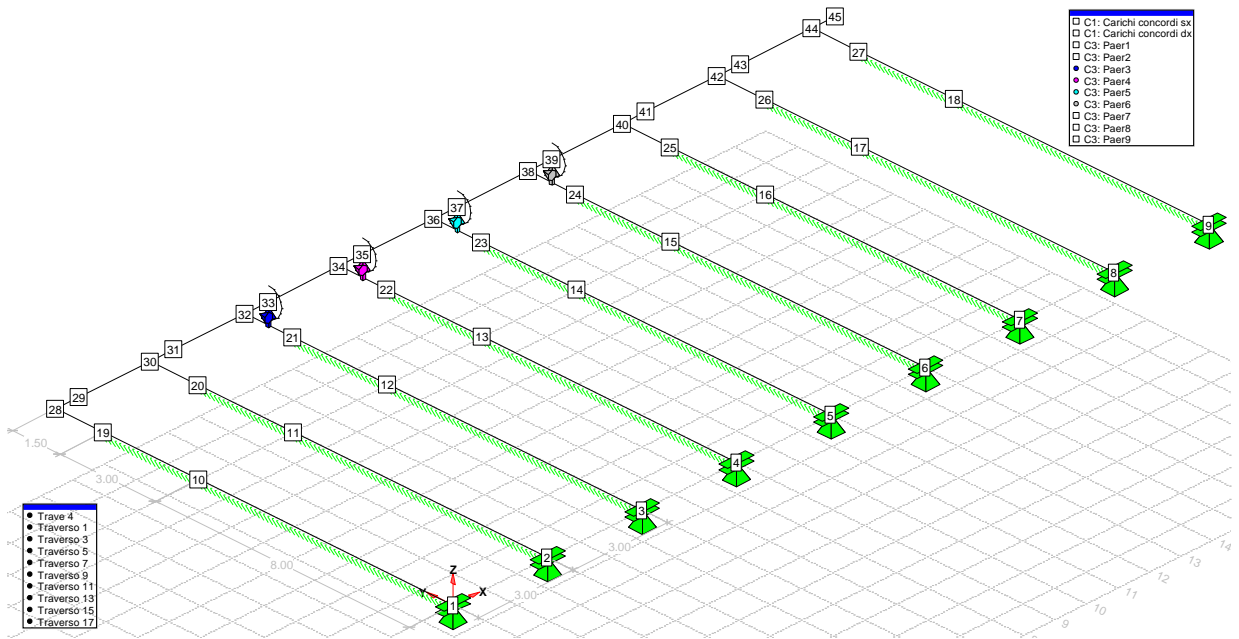
Condizioni di carico 1 e 8



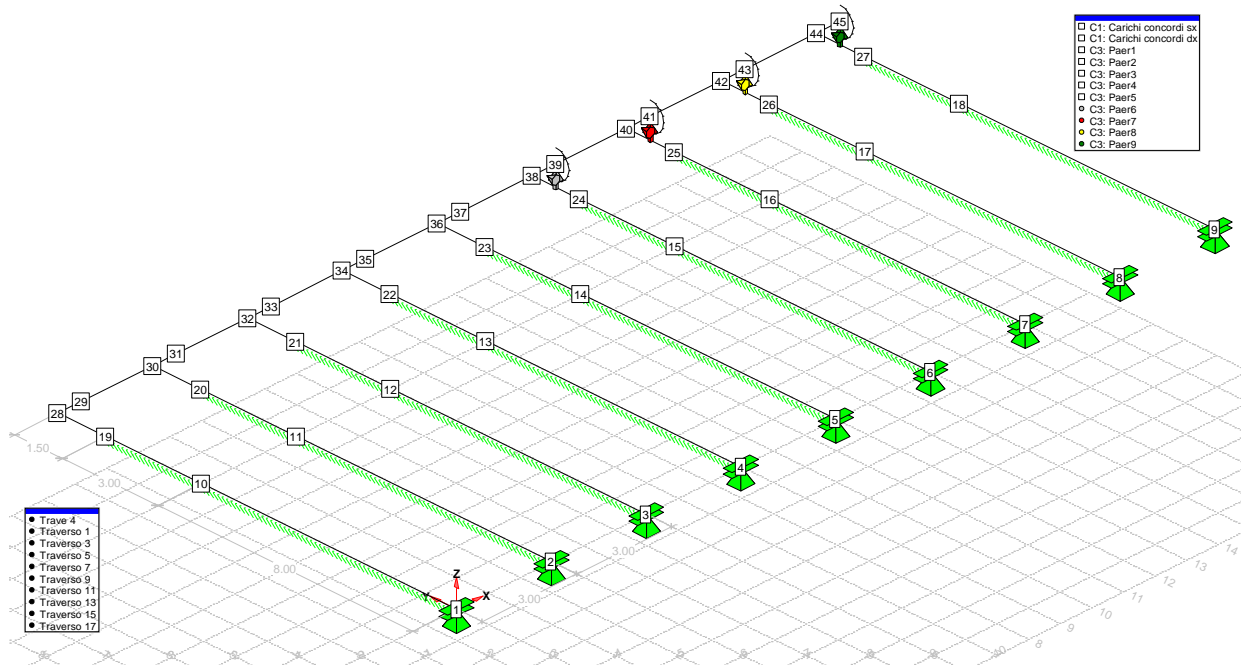
Condizione di carico 2



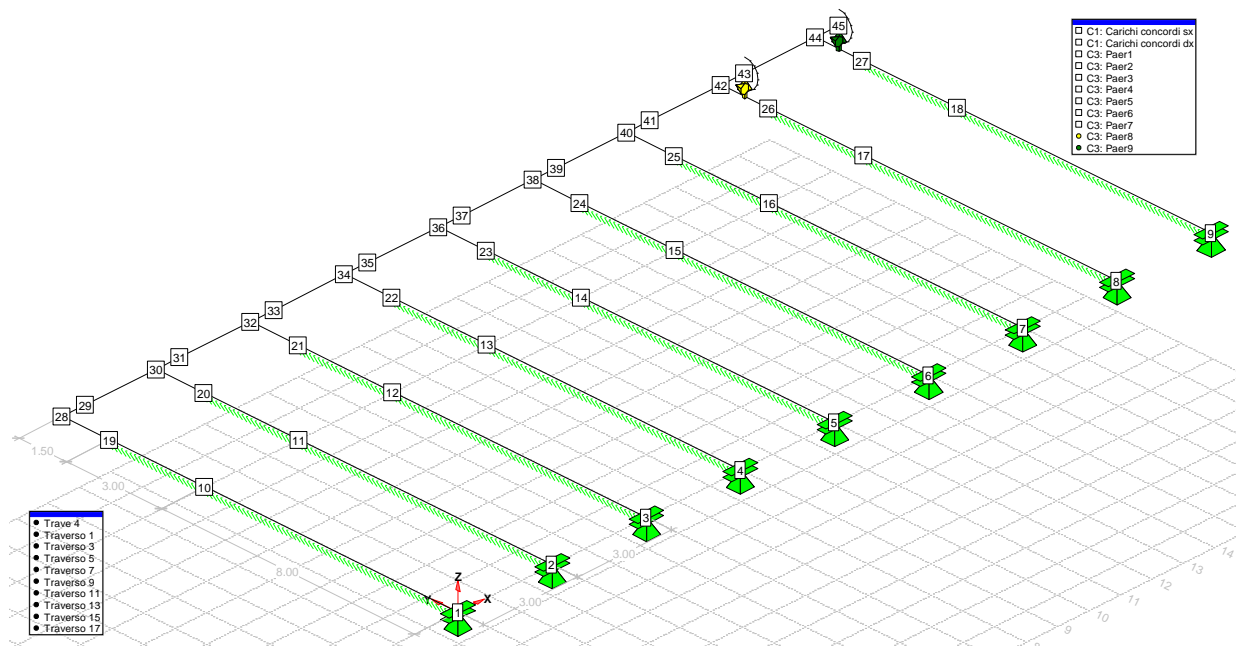
Condizione di carico 3 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)



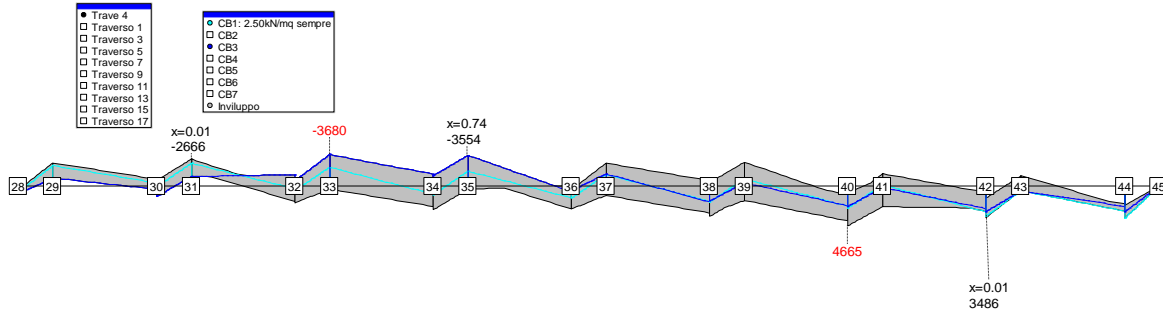
Condizione di carico 4 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)



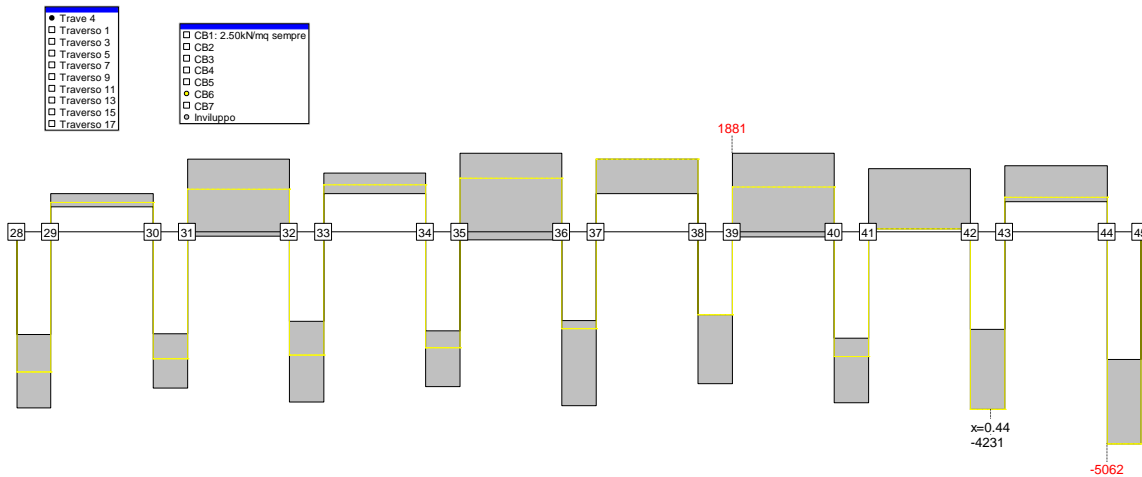
Condizione di carico 6 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)



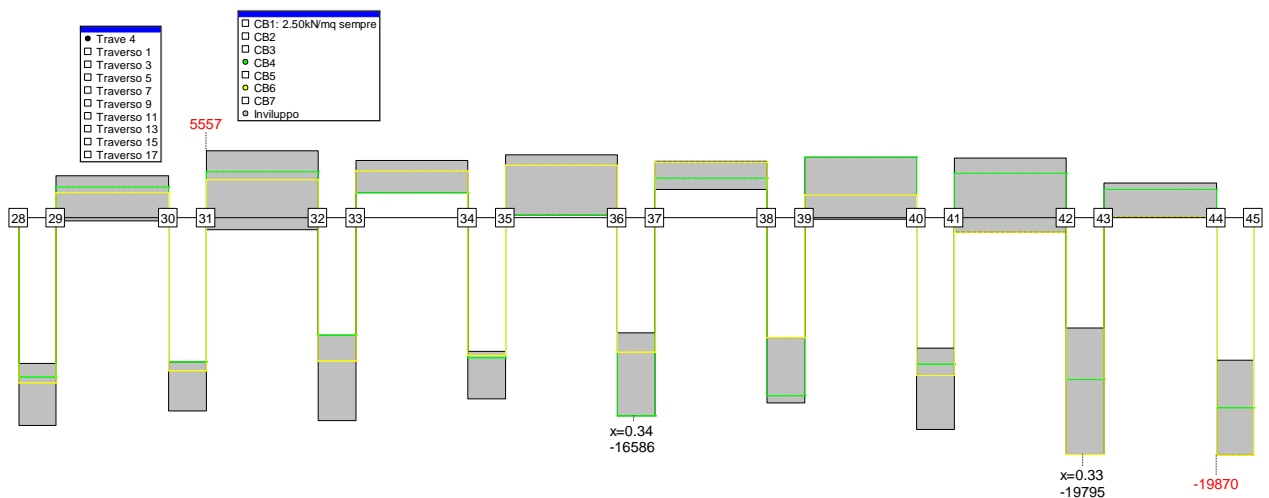
Condizione di carico 7 (in cui i due carichi vengono combinati cambiati di segno)



Inviluppo Momento Flettente Orizzontale: vista in pianta (daNm)

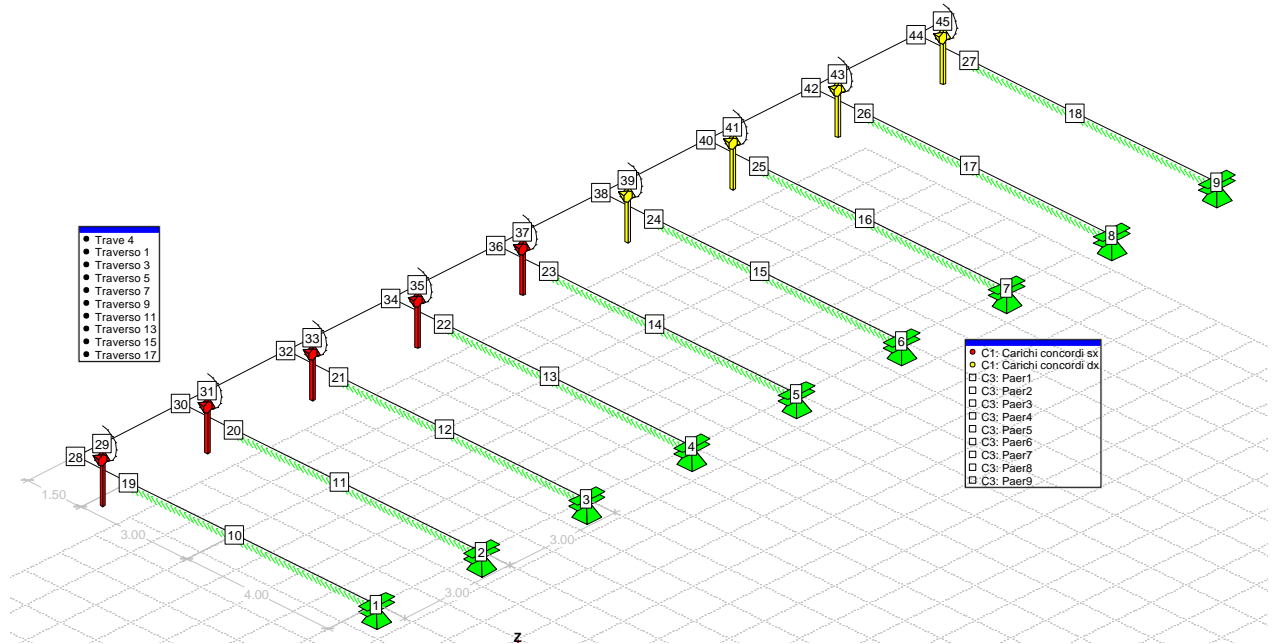


Inviluppo Taglio Orizzontale: vista in pianta (daN)

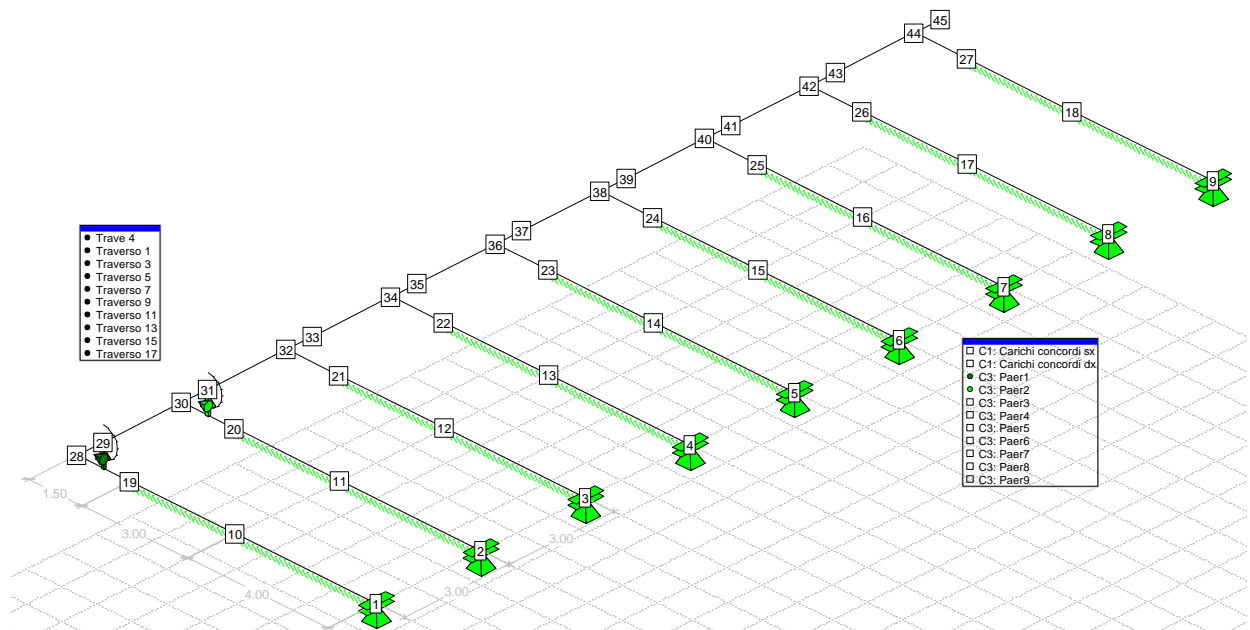


Inviluppo Momento Torcente: vista in pianta (daNm)

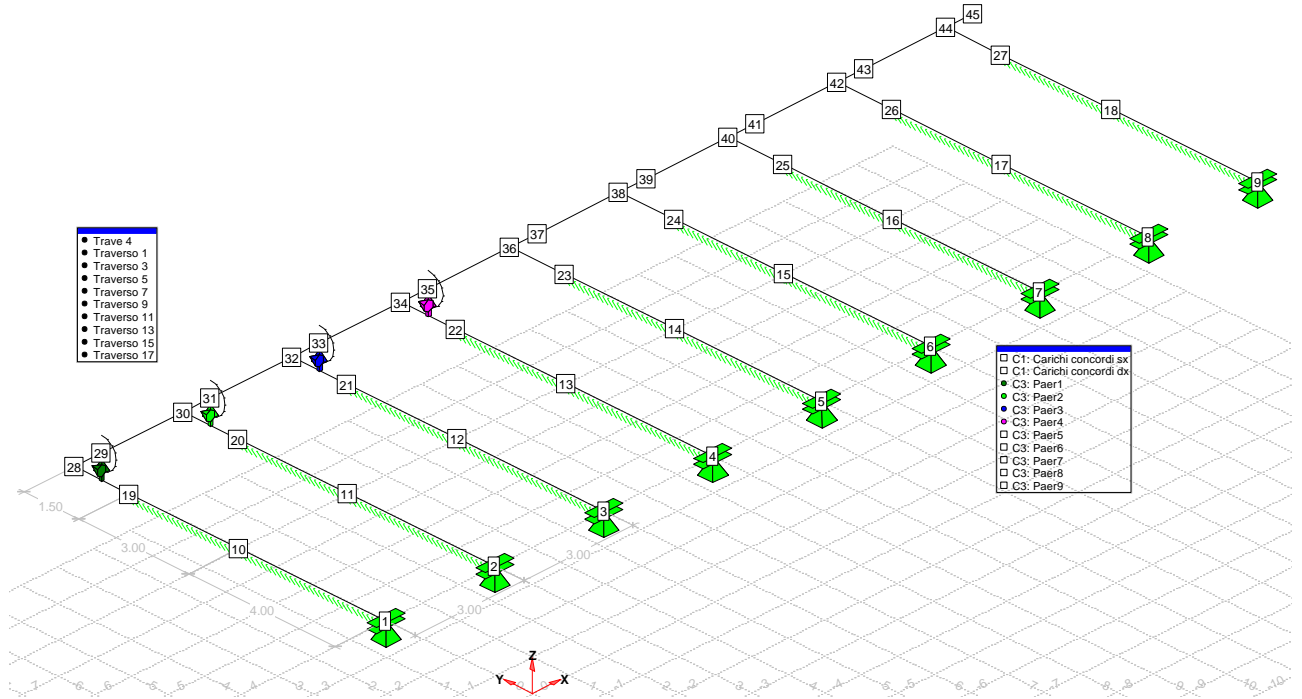
Schema di calcolo per trave di coronamento con barriere di h=4.75m



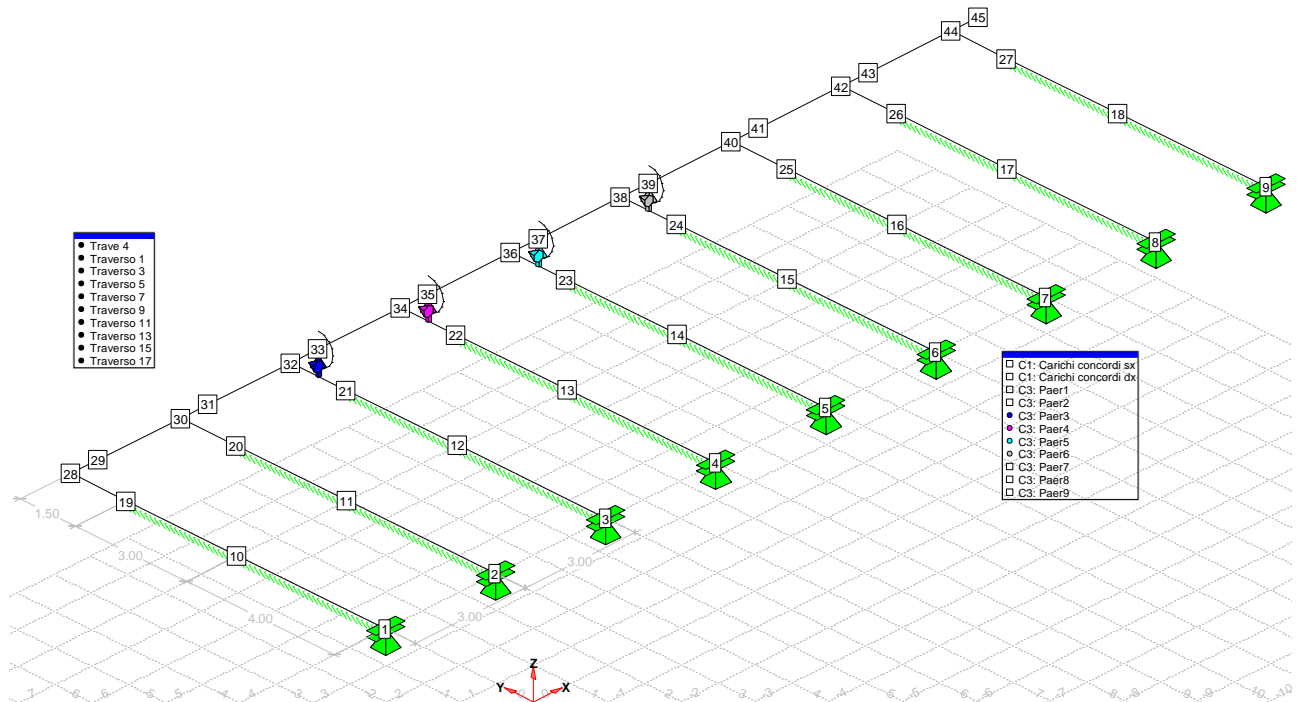
Condizioni di carico 1 e 8



Condizione di carico 2

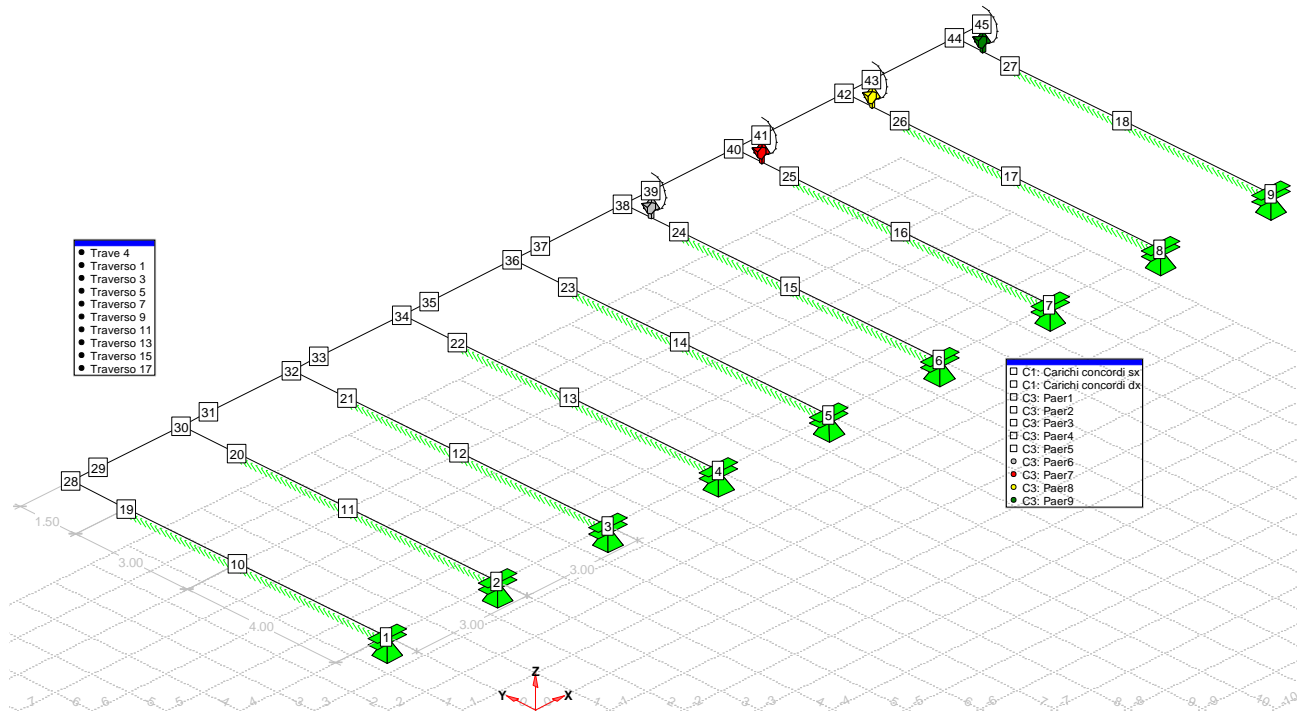


Condizione di carico 3 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)

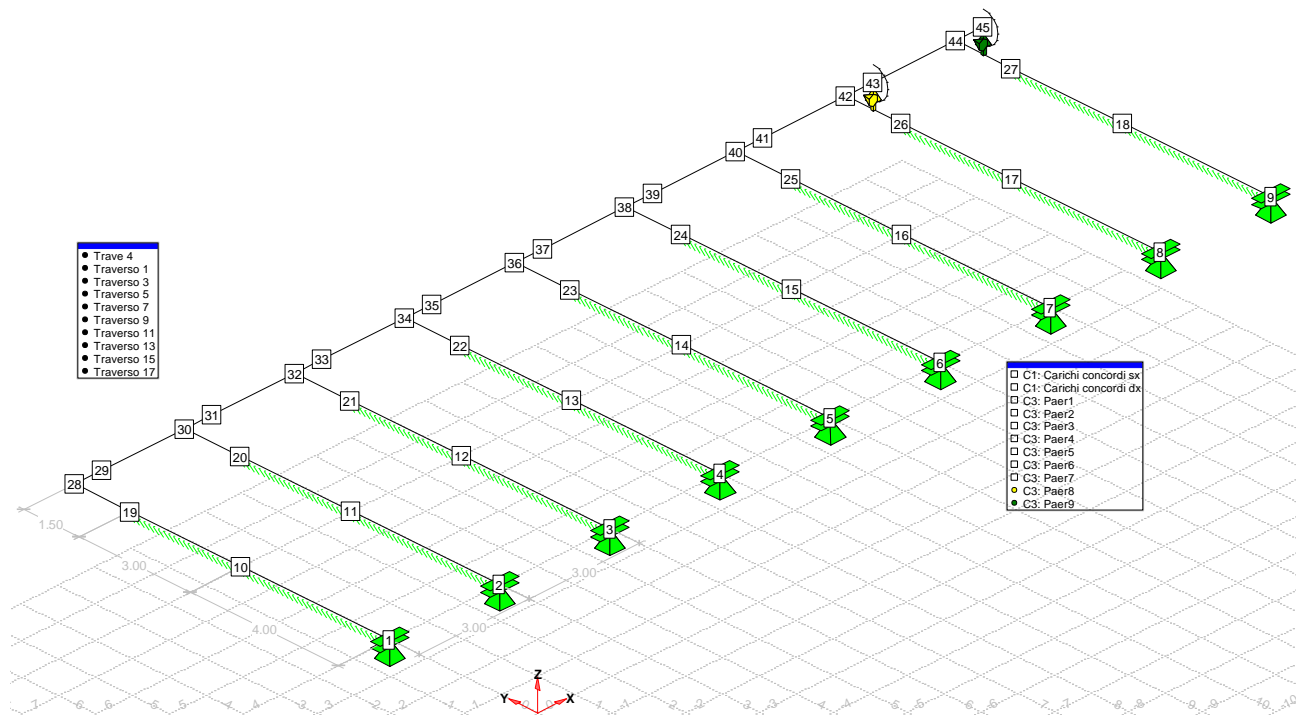




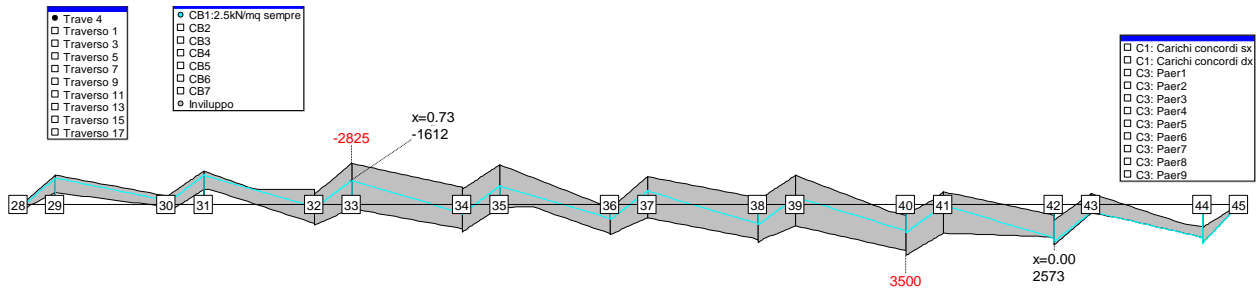
Condizione di carico 4 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)



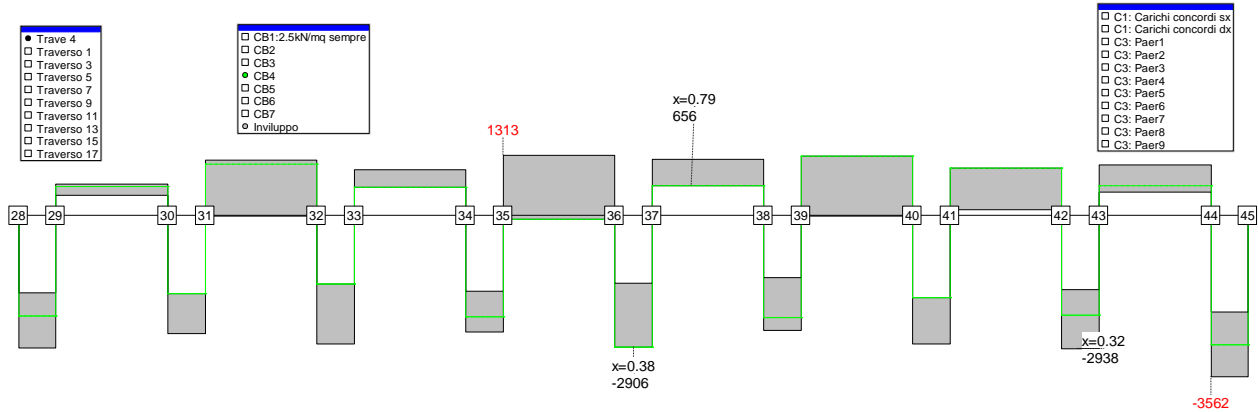
Condizione di carico 6 (in cui i primi due carichi di sinistra vengono combinati cambiati di segno)



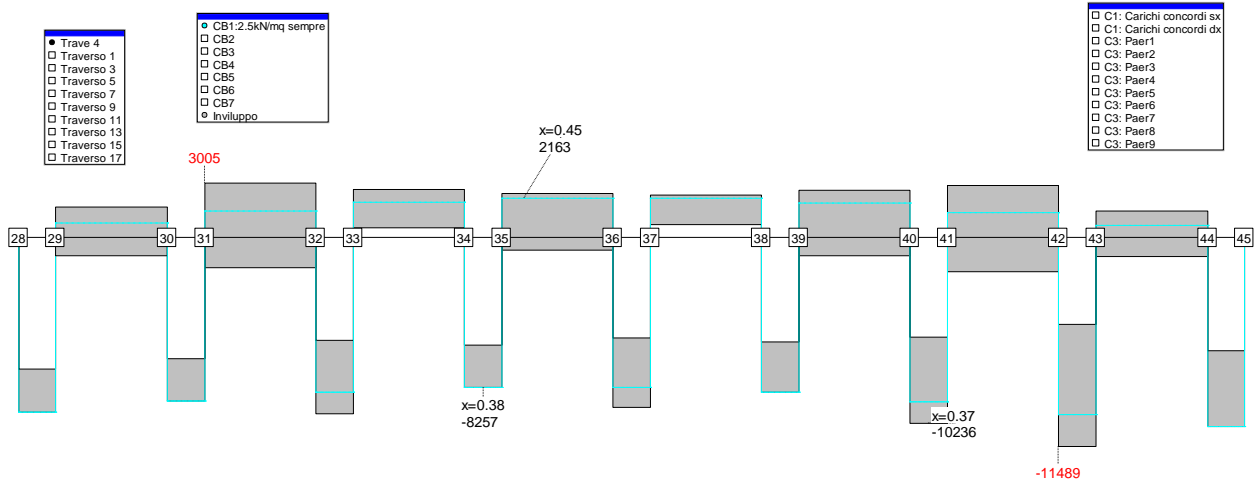
Condizione di carico 7 (in cui i due carichi vengono combinati cambiati di segno)



Inviluppo Momento Flettente Orizzontale: vista in pianta (daNm)



Inviluppo Taglio Orizzontale: vista in pianta (daN)



Inviluppo Momento Torcente: vista in pianta (daNm)



2) Peso proprio cordolo

Considerando uno schema di trave semi-incastrata, con luce i =interasse pali, si ha che le azioni dovute al peso proprio sono:

$$T_{pp} = B \cdot H \cdot \gamma_{cls} \cdot (i/2)$$

$$M_{pp} = (B \cdot H \cdot \gamma_{cls}) \cdot i^2/12$$

Con i =interasse pali

Sostituendo i valori numerici:

CASO TIPICO	PESO PROPRIO: SOLLECITAZIONI TRAVE	
BARRIERA H=6.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2/12 \text{ (daNm)}$	1'875.0
	$T_{pp} = B \cdot H \cdot \gamma \cdot i/2 \text{ (daN)}$	3'750.0
BARRIERA H=5.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2/12 \text{ (daNm)}$	1'875.0
	$T_{pp} = B \cdot H \cdot \gamma \cdot i/2 \text{ (daN)}$	3'750.0
BARRIERA H=4.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2/12 \text{ (daNm)}$	1'593.8
	$T_{pp} = B \cdot H \cdot \gamma \cdot i/2 \text{ (daN)}$	3'187.5
BARRIERA H=3.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2/12 \text{ (daNm)}$	1'593.8
	$T_{pp} = B \cdot H \cdot \gamma \cdot i/2 \text{ (daN)}$	3'187.5

3) Spinta attiva del terreno a tergo delle travi

Si considera un terreno con $\gamma=20 \text{ kN/m}^3$ e $\varphi = 35^\circ$, con un sovraccarico $q_{acc}= 10 \text{ kN/m}^2$.

Il coefficiente di spinta attiva vale $\lambda_a = \text{tg}^2(45 - \varphi/2) = 0.271$.

Spinta del terreno per unità di lunghezza: $\gamma \cdot h^2/2 \cdot \lambda_a = 20 \text{ kN/m}^3 \cdot 1.0\text{m}^2/2 \cdot 0.271 = 2.71 \text{ kN/m}$

Spinta del sovraccarico per unità di lunghezza: $q_{acc} \cdot h \cdot \lambda_a = 10.0 \text{ kN/m}^2 \cdot 1.0\text{m} \cdot 0.271 = 2.71 \text{ kN/m}$

Spinta totale per unità di lunghezza: 5.42 kN/m



Momento orizzontale= $5.42 \text{ kN/m} * 3.0\text{m}^2/12 = 4.07 \text{ kNm}$

Taglio orizzontale= $5.42 \text{ kN/m} * 3.0\text{m}/2 = 8.13 \text{ kN}$

4) Azioni dovute al ritiro ed alla diminuzione di temperatura

Nella relazione di calcolo tipologica (cui si rimanda) si era già tenuto conto degli effetti prodotti dal ritiro e dalla diminuzione di temperatura nel calcolo delle sollecitazioni sui pali di fondazione (ma appunto non sul cordolo).

Tali sollecitazioni nella trave di coronamento vengono calcolate nel presente documento con un semplice modello agli elementi finiti costituito da elementi “beam” con il programma di calcolo “Eng”.

La modellazione è stata così realizzata:

- si è modellato la trave con elementi di tipo beam aventi lunghezza pari alla distanza dei pali ed aventi la medesima inerzia della trave.
- si sono implementati i pali di fondazione con elementi tipo beam di lunghezza complessiva pari alla lunghezza effettiva dei pali, aventi la medesima inerzia del palo, larghezza pari al diametro del palo, ed immersi in molle indipendenti tra loro (suolo elastico alla Winkler).

Per quanto riguarda il comportamento dei pali alle azioni orizzontali, si fa riferimento ad un modulo di reazione orizzontale del terreno uniforme con la profondità, assunto pari a $k=3.0\text{kg/cm}^3$ nello strato di rilevato e pari a $k=1.0\text{kg/cm}^3$ al di sotto di tale strato. Al primo metro di terreno a partire dalla testa palo non viene assegnato modulo di reazione orizzontale.

Viene considerato il caso di rilevato di altezza pari a 3.0m, ma i risultati sono significativi anche per quello di altezza pari a 7.0m.

Esprimendo il ritiro in termini di variazione termica, come specificato nel paragrafo 5.3.3. nella relazione di calcolo tipologica, nel modello implementato viene applicata alla trave di coronamento una variazione termica pari a $\Delta T=22^\circ$. Infatti, poiché la coazione da ritiro è un fenomeno “lento”, mentre quella da variazione di temperatura è “veloce”, adottando un modulo elastico del calcestruzzo “non abbattuto” ($E_c=31'200\text{N/mm}^2$) il valore equivalente di variazione di temperatura risulta:

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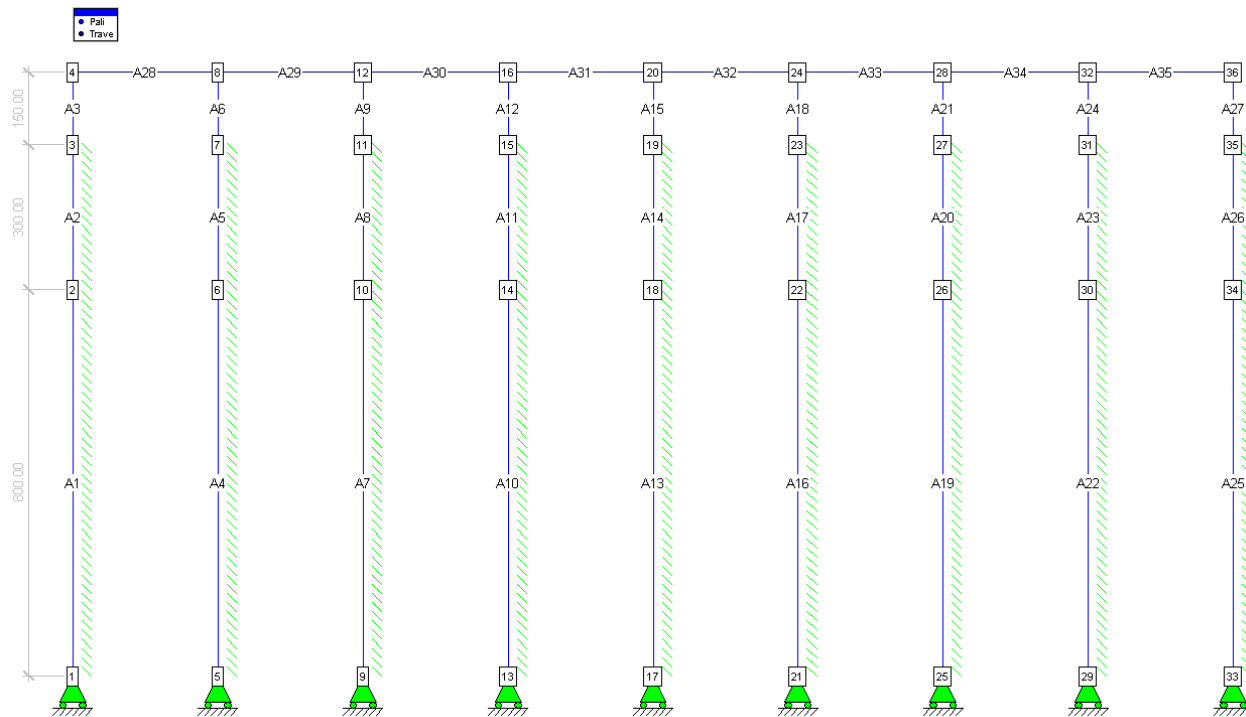
$$\Delta T = \Delta t_{rit}/3 + \Delta t_r = 21/3 + 15 = 22^{\circ}\text{C}$$

Si effettua l'analisi relativamente al caso di fondazione per barriere di $h=6.75\text{m}$ ed $h=4.75\text{m}$. I risultati sono significativi rispettivamente anche per quelle di altezza $h=5.75\text{m}$ ed $h=3.75\text{m}$.

Si riporta di seguito lo schema di calcolo implementato e i diagrammi dello sforzo normale nel cordolo.



Schema di calcolo per trave di coronamento con barriere di h=6.75m



Schema di calcolo per trave di coronamento con barriere di h=4.75m

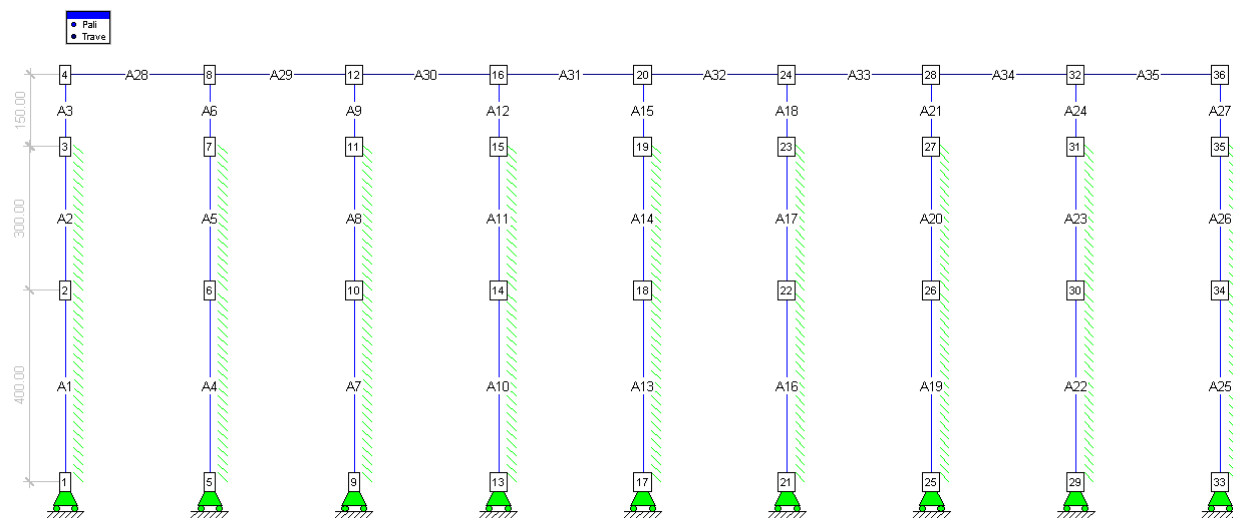




Diagramma dello sforzo normale nella trave di coronamento con barriere di h=6.75m

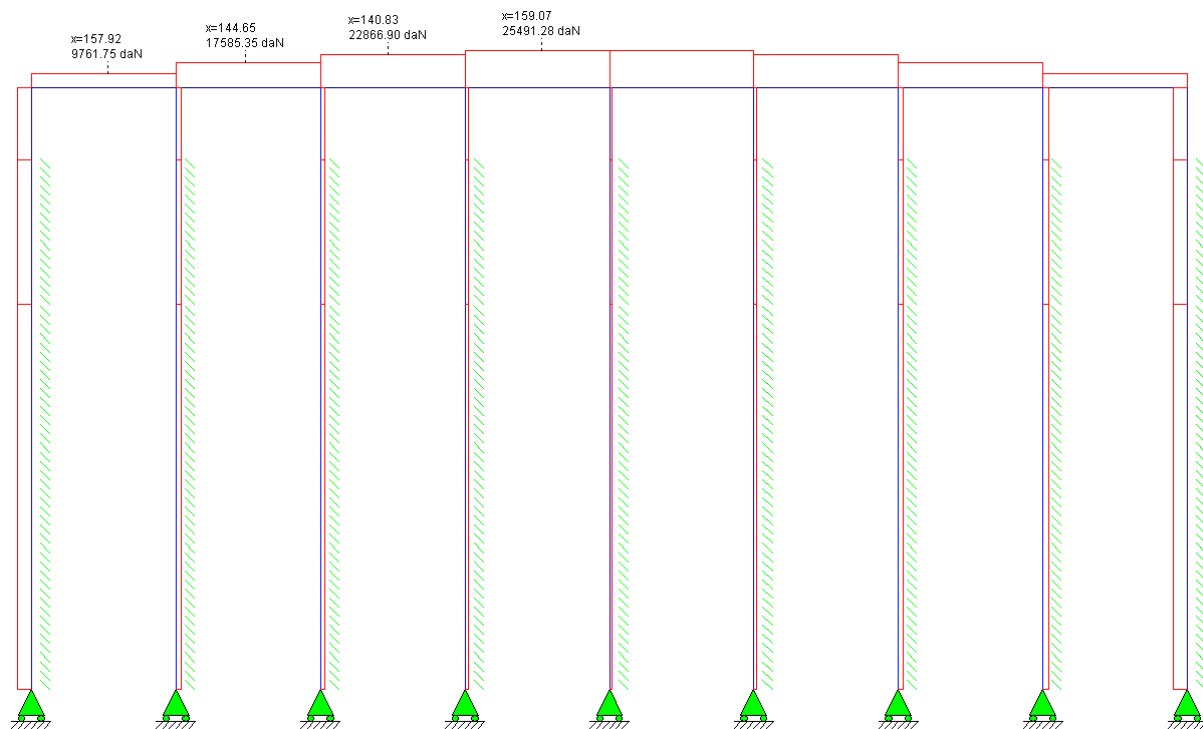
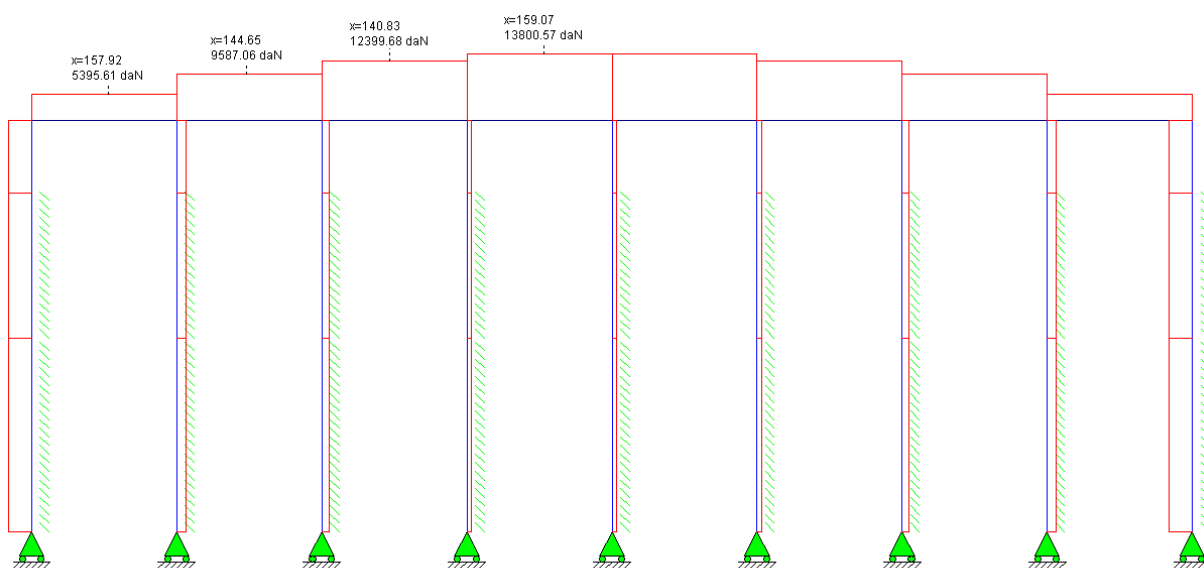


Diagramma dello sforzo normale nella trave di coronamento con barriere di h=4.75m





5) Sollecitazioni totali

Nella tabella seguente si riportano le sollecitazioni complessive dovute alle azioni trasmesse dai montanti (pesi permanenti, pressioni aerodinamiche + vento), al peso proprio del cordolo, alla spina del terreno e del sovraccarico a tergo del cordolo nonché al ritiro nelle sezioni più significative ai fini delle verifiche.

I valori di taglio e momento orizzontale sono comprensivi anche del contributo dovuto alla spinta del terreno e del sovraccarico a tergo del cordolo.

Per le barriere di $H=6.75\text{m}$ le verifiche vengono svolte sia nella zona centrale del cordolo (generalmente sede delle massime trazioni prodotte dal ritiro), sia nelle zone di bordo vicine ai giunti (in cui generalmente sono massime le azioni flettenti e/o torcenti, ma non la trazione prodotta dal ritiro).

Per le barriere di $H=4.75\text{m}$ si esegue, per brevità ed a favore di sicurezza, un'unica verifica assumendo nella medesima sezione le massime azioni assiali di trazione, flessionali, torcenti e taglianti riscontrate lungo l'intero sviluppo del cordolo.



	SOLLECITAZIONI TRAVE DI CORONAMENTO PALI	
BARRIERA H=6.75m (zona centrale)	$N_{TC} = (\text{daN})$	25,500.0
	$M_{TCV} = N_b \cdot (i \cdot (i-e)) / i + M_{pp} (\text{daNm})$	4,532.8
	$M_{TCO} (\text{daNm})$	3,960.0
	$T_{TCV} = T_{PP} + V_{BATP} (\text{daN})$	7,293.8
	$T_{TCO} = T_{BATP} (\text{daN})$	5,044.0
	$M_{TORSIONE} (\text{daNm})$	16,586.0
BARRIERA H=6.75m (zona di bordo)	$N_{TC} = (\text{daN})$	17,600.0
	$M_{TCV} = N_b \cdot (i \cdot (i-e)) / i + M_{pp} (\text{daNm})$	4,532.8
	$M_{TCO} (\text{daNm})$	3,890.0
	$T_{TCV} = T_{PP} + V_{BATP} (\text{daN})$	7,293.8
	$T_{TCO} = T_{BATP} (\text{daN})$	5,044.0
	$M_{TORSIONE} (\text{daNm})$	19,795.0
BARRIERA H=4.75m	$N_{TC} = (\text{daN})$	13,800.0
	$M_{TCV} = N_b \cdot (i \cdot (i-e)) / i + M_{pp} (\text{daNm})$	4,039.2
	$M_{TCO} (\text{daNm})$	3,907.0
	$T_{TCV} = T_{PP} + V_{BATP} (\text{daN})$	6,448.1
	$T_{TCO} = T_{BATP} (\text{daN})$	3,751.0
	$M_{TORSIONE} (\text{daNm})$	11,490.0

Nella tabella i simboli “v” ed “o” dopo il momento flettente e/o il taglio indicano rispettivamente la direzione verticale ed orizzontale della sollecitazione stessa nella trave cordolo.

La sollecitazione flessionale verticale dovuta al peso dei montanti viene determinata considerando cautelativamente uno schema di trave appoggiata, con luce i =interasse pali, soggetta ad una azione N_b applicata a distanza $e=0.75\text{m}$ da una estremità; a tale valore viene sommato il momento prodotto dal peso proprio del cordolo. Analogo discorso vale ovviamente per il taglio verticale. Per quanto riguarda il momento flettente orizzontale, il taglio orizzontale ed il momento torcente, i valori ivi indicati sono la somma del contributo fornito da vento e pressione aerodinamica dei convogli attraverso i montanti (valori ricavati dalle modellazioni a graticcio) + le azioni di spinta di terreno e sovraccarico agenti a tergo del cordolo (pertanto. $1b+3$).



1.2 VERIFICA DI RESISTENZA TRAVI

Si aggiornano le seguenti verifiche:

- 1) verifiche a tenso-flessione tenendo conto anche dello sforzo normale di trazione dovuto al ritiro e alla variazione di temperatura;
- 2) verifiche di fessurazione tenendo conto anche dello sforzo normale di trazione dovuto al ritiro e alla variazione di temperatura.

Quindi:

- 3) si valuta l'incremento di tensione nelle barre longitudinali dovuto alla torsione;
- 4) si calcola la tensione longitudinale complessiva nelle barre (tensoflessione più torsione).
- 5) si effettua la verifica a taglio-torsione.

Le analisi sono state svolte con l'ausilio del programma "VcaSLU" del prof. Gelfi per quanto riguarda la verifica a flessione (svolta alle tensioni ammissibili), e utilizzando fogli di calcolo di excel per le verifiche di fessurazione, per la valutazione dell'incremento di tensione nelle barre per effetto della torsione della trave, e per le verifiche a taglio-torsione.

1.2.1 Verifica a tenso-flessione

Si riportano le verifiche a tenso-flessione delle travi di coronamento con altezza barriere pari a $h=6.75m$ e $h=4.75m$.

Tali verifiche risultano significative rispettivamente anche per le travi con barriere di $h=5.75m$ e $3.75m$ poiché

caratterizzate dalla stessa geometria ed armatura ma sottoposte a sollecitazioni inferiori.

Trave di coronamento per le barriere antirumore di $h=6.75m$

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 7.0cm$

$A_{tot} = 18 \Phi 16 = 36.18 \text{ cm}^2$

Sollecitazioni - ZONA CENTRALE



$$M_{O \max} = 3960 \text{ daNm}$$

$$M_{V \max} = 4530 \text{ daNm}$$

$$N_{\max} = 25500 \text{ daN}$$

Verifica C.A. S.L.U. - File: RIL-NV-H6-ZC

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

Titolo : _____

N° Vertici Zoom N° barre Zoom

N°	x [cm]	y [cm]	N°	As [cm²]	x [cm]	y [cm]
1	50	50	1	2.011	-42.5	42.5
2	-50	50	2	2.011	-25.5	42.5
3	-50	-50	3	2.011	-8.5	42.5
4	50	-50	4	2.011	8.5	42.5
			5	2.011	25.5	42.5
			6	2.011	42.5	42.5

Sollecitazioni S.L.U. Metodo n

N_{Ed} -255 kN
M_{xEd} 45.3 kNm
M_{yEd} 39.6

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

Tipo Sezione
 Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Metodo di calcolo
 S.L.U.+ S.L.U.-
 Metodo n

Materiali B450C C25/30

ε_{su} ‰ ε_{c2} ‰
f_{yd} N/mm² ε_{cu} ‰
E_s N/mm² f_{cd} ‰
E_s/E_c f_{cc}/f_{cd} ?
ε_{syd} ‰ σ_{c,adm} ‰
σ_{s,adm} N/mm² τ_{co} ‰
τ_{c1} ‰

σ_c N/mm²
σ_s N/mm²
ε_s ‰
d cm
x x/d
δ

Verifica N° iterazioni:

Precompresso

Si ha quindi che $\sigma_{\max} = 1475 \text{ daN/cm}^2$

Sollecitazioni - ZONA DI BORDO



$$M_{O \max} = 3890 \text{ daNm}$$

$$M_{V \max} = 4530 \text{ daNm}$$

$$N_{\max} = 17600 \text{ daN}$$

Verifica C.A. S.L.U. - File: RIL-NV-H6-ZB

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

Tipo Sezione
 Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

N° Vertici Zoom N° barre Zoom

N°	x [cm]	y [cm]
1	50	50
2	-50	50
3	-50	-50
4	50	-50

N°	As [cm²]	x [cm]	y [cm]
1	2.011	-42.5	42.5
2	2.011	-25.5	42.5
3	2.011	-8.5	42.5
4	2.011	8.5	42.5
5	2.011	25.5	42.5
6	2.011	42.5	42.5

Sollecitazioni
 S.L.U. Metodo n

N_{Ed} -176 kN
 M_{xEd} 45.3 kNm
 M_{yEd} 38.9

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

Metodo di calcolo
 S.L.U.+ S.L.U.-
 Metodo n

Materiali

B450C	C25/30
ε _{su} 67.5 ‰	ε _{c2} 2 ‰
f _{yd} 391.3 N/mm²	ε _{cu} 3.5 ‰
E _s 200.000 N/mm²	f _{cd} 14.17
E _s /E _c 15	f _{cc} /f _{cd} 0.8 ?
ε _{syd} 1.957 ‰	σ _{c,adm} 9.75
σ _{s,adm} 255 N/mm²	τ _{co} 0.6
	τ _{c1} 1.829

σ_c -1.433 N/mm²
 σ_s 118.1 N/mm²
 ε_s 0.5906 ‰
 d 130.7 cm
 x 20.12 w/d 0.1539
 δ 0.7

Verifica N° iterazioni:

Precompresso

Si ha quindi che $\sigma_{\max} = 1181 \text{ daN/cm}^2$

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Trave di coronamento per le barriere antirumore di h =4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 85cm

c = c' = 7.0cm

$A_{tot} = 16 \Phi 16 = 32.16 \text{ cm}^2$

Sollecitazioni

$M_{O \max} = 3910 \text{ daNm}$

$M_{V \max} = 4040 \text{ daNm}$

$N_{\max} = 13800 \text{ daN}$



Verifica C.A. S.L.U. - File: RIL-NV-H4.75 1

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

Titolo : _____

N° Vertici Zoom N° barre Zoom

N°	x [cm]	y [cm]
1	42.5	50
2	-42.5	50
3	-42.5	-50
4	42.5	-50

N°	As [cm²]	x [cm]	y [cm]
1	2	-35	42.5
2	2	-12	42.5
3	2	0	42.5
4	2	12	42.5
5	2	35	42.5
6	2	-35	21.25

Tipo Sezione
 Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Sollecitazioni
 S.L.U. Metodo n

N_{Ed} -138 kN
 M_{xEd} 40.4 kNm
 M_{yEd} 39.1

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

Metodo di calcolo
 S.L.U.+ S.L.U.-
 Metodo n

Materiali
 B450C C25/30
 ε_{su} ‰ ε_{c2} ‰
 f_{yd} N/mm² ε_{cu} ‰
 E_s N/mm² f_{cd} ‰
 E_s/E_c f_{cc}/f_{cd} ?
 ε_{syd} ‰ σ_{c,adm} ‰
 σ_{s,adm} N/mm² τ_{co} ‰
 τ_{cl} ‰

σ_c N/mm²
 σ_s N/mm²
 ε_s ‰
 d cm
 x x/d
 δ

Verifica

N° iterazioni:

Precompresso

Si ha quindi che $\sigma_{max} = 1205 \text{ daN/cm}^2$



1.2.2 Verifica a fessurazione

Per le verifiche a fessurazione (coerentemente con quanto prescritto nelle norme FS vigenti) si assume la variazione di temperatura ΔT fattorizzata per un coefficiente pari a 0.6; gli effetti del ritiro si assumono per intero.

Esprimendo il ritiro in funzione della variazione di temperatura si ha che:

$$\Delta T_{\text{fess}} = \Delta T_{\text{rit}} + 0.6 * \Delta T_{\Delta t} = 7^{\circ} + 0.6 * 15^{\circ} = 16^{\circ} = 0.727 * \Delta T$$

Ovvero si assume quale sforzo normale della trave dovuto a ritiro e variazione di temperatura per la combinazione di fessurazione quello ottenuto per la combinazione di esercizio fattorizzato per un coefficiente pari a 0.727, pertanto si ha che:

$$N_{\text{fessurazione}} = 0.727 * N_{\text{esercizio}}$$

Si considerano inoltre tutte le condizioni di carico su riportate, assumendo $p_w = 0.6 * 20.0 \text{ kN/mq} = 12.0 \text{ kN/mq}$.

A favore di sicurezza si effettua la verifica a fessurazione considerando una tenso-flessione retta con momento sollecitante pari alla somma dei momenti M_V e M_O .

Si riportano le verifiche a fessurazione per le travi di coronamento con altezza delle barriere pari a $h=6.75\text{m}$ e $h=4.75\text{m}$.

Tali verifiche risultano significative rispettivamente anche per le travi con barriere di $h=5.75\text{m}$ e 3.75m poiché caratterizzate dalla stessa geometria ed armatura ma sottoposte a sollecitazioni inferiori.

Trave di coronamento per le barriere antirumore di $h=6.75\text{m}$

Caratteristiche geometriche trave

H trave = 100cm



B trave = 100cm

c = c' = 7.0cm

A_{tot} = 6 + 6 Φ16

Sollecitazioni

M_{esercizio} = M_v + M_o = 4530 + 3960 = 8490 daNm

M_{fessurazione} = M_v + M_o = 4530 + 3440 = 7970 daNm

N_{esercizio} = 25500 daN

N_{fessurazione} = 25500 * 0.727 = 18538 daN

Lo svolgimento per esteso della verifica a fessurazione è riportato nella tabella seguente.

Caratteristiche dei materiali				
Coefficiente di omogeneizzazione	n =	15		
Classe cls	R _{ck} =	30	N/mm ²	
Modulo elastico acciaio	E _s =	2.1E+05	N/mm ²	
Caratteristiche geometriche della sezione				
Altezza	H =	100	cm	
Larghezza	B =	100	cm	
Area acciaio teso	A _s =	12.00	cm ²	
Copriferro baricentro acciaio teso	c _s =	7.5	cm	
Area acciaio compresso	A' _s =	12.00	cm ²	
Copriferro baricentro acciaio compresso	c' _s =	7.5	cm	
Ricoprimento barre più esterne tese	c =	6.4	cm	
Ricoprimento barre più interne tese	c+S =	6.4	cm	
Diametro massimo barre tese	Φ =	1.6	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	M _{es} =	84.90	kNm	
Sforzo assiale in condizioni di esercizio	N _{es} =	255.00	kN	
Rapporto sforzo normale/momento	res =	0.0300	cm ⁻¹	
Resistenza media a trazione semplice del cls	f _{ctm} =	2.56	N/mm ²	
Resistenza limite per formazione fessure	σ _t =	2.13	N/mm ²	
Distanza baricentro da lembo compresso	x _g =	50.00	cm	
Modulo di resistenza non fessurato	W _{sr} =	179672	cm ³	
Momento di formazione delle fessure	M _{ff} =	383.02	kNm	
Trazione nel cls prodotta da M _{es} ed N _{es}	σ _{ct} =	0.72	N/mm ²	< sigmat

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Trave di coronamento per le barriere antirumore di h=4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 85cm

c = c' = 7.0cm

A_{tot} = 5 + 5 Φ16

Sollecitazioni

M_{esercizio} = M_v + M_o = 4040 + 3910 = 7950 daNm

M_{fessurazione} = M_v + M_o = 4040 + 3290 = 6330 daNm

N_{esercizio} = 13800 daN

N_{fessurazione} = 13800 * 0.727 = 10032 daN

Lo svolgimento per esteso della verifica a fessurazione è riportato nella tabella seguente.



Caratteristiche dei materiali			
Coefficiente di omogeneizzazione	$n =$	15	
Classe cls	$R_{ck} =$	30	N/mm ²
Modulo elastico acciaio	$E_s =$	2.1E+05	N/mm ²
Caratteristiche geometriche della sezione			
Altezza	$H =$	100	cm
Larghezza	$B =$	85	cm
Area acciaio teso	$A_s =$	10.00	cm ²
Coprifero baricentro acciaio teso	$c_s =$	7.5	cm
Area acciaio compresso	$A'_s =$	10.00	cm ²
Coprifero baricentro acciaio compresso	$c'_s =$	7.5	cm
Ricoprimento barre più esterne tese	$c =$	6.4	cm
Ricoprimento barre più interne tese	$c+S =$	6.4	cm
Diametro massimo barre tese	$\Phi =$	1.6	cm
Sezione non fessurata: formazione fessure			
Momento flettente in condizioni di esercizio	$M_{es} =$	79.50	kNm
Sforzo assiale in condizioni di esercizio	$N_{es} =$	138.00	kN
Rapporto sforzo normale/momento	$r_{es} =$	0.0174	cm ⁻¹
Resistenza media a trazione semplice del cls	$f_{ctm} =$	2.56	N/mm ²
Resistenza limite per formazione fessure	$\sigma_t =$	2.13	N/mm ²
Distanza baricentro da lembo compresso	$x_g =$	50.00	cm
Modulo di resistenza non fessurato	$W_{sr} =$	152504	cm ³
Momento di formazione delle fessure	$M_{ff} =$	325.10	kNm
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	0.68	N/mm ² < σ_{ct}

Verifica soddisfatta

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1.2.3 Incremento di tensione nelle barre prodotto dalla torsione e verifiche a taglio e torsione

Nelle tabelle seguenti si riporta l'incremento di tensione nelle barre prodotto dalla torsione, con verifica della tensione totale, e le verifiche a taglio e torsione.

Trave di coronamento per le barriere antirumore di h=6.75m (Zona centrale)



VERIFICA A TORSIONE E TAGLIO

$M_{\text{TORSIONE}}: M_t =$	16,586.0	daNm		Momento torcente
$T_{\text{TCV}} =$	7,293.8	daN		Taglio verticale
$T_{\text{Tco}} =$	5,044.0	daN		Taglio orizzontale
$R_{ck} =$	300	daN/cm ²		
$\tau_{CO} =$	6.00	daN/cm ²		
$\tau_{C1} =$	18.29	daN/cm ²		
$1.1 * \tau_{C1} =$	20.11	daN/cm ²		
$C =$	6.5	cm		
$\sigma_{\text{amm}} =$	2,600	daN/cm ²		
Caratteristiche Geometriche				
$B =$	100	cm		
$H =$	100	cm		
$\tau_{\text{vert. torsione}} =$	7.96	daN/cm ²		OK
$\tau_{\text{oriz. torsione}} =$	7.96	daN/cm ²		OK
$\tau_{\text{vert. taglio}} =$	0.87	daN/cm ²		
$\tau_{\text{oriz. taglio}} =$	0.60	daN/cm ²		
$\tau_{\text{vert. (torsione+taglio)}} =$	8.83	daN/cm ²		ARMARE A TORSIONE
$\tau_{\text{orizz. (torsione+taglio)}} =$	8.56	daN/cm ²		ARMARE A TORSIONE
$\rho =$	348	cm		(sviluppo linea media)
$A_1 =$	7569	cm ²		(area racchiusa dalla linea media)
Armatura Longitudinale				
n°tot ferri nei lati orizzontali: no=			12	
diámetro ferri nei lati orizz.:			1.6	cm
Area tot. ferri lati orizz: Aorizz=			24.12	cm ²
n°tot ferri nei lati verticali: nv=			6	
diámetro ferri nei lati vert.:			1.6	cm
Area tot. ferri lati vert.: Avert=			12.06	cm ²
Aorizz+Avert=Along			36.17	cm ²
Incremento di trazione su Along:				
$\Delta\sigma_{\text{long}} = M_t * \rho / (2 * \text{Along} * A_1) =$			1054.1	daN/cm ²
Trazione da pressofl. su Along: $\sigma_{\text{long}} =$			1475.0	daN/cm ²
$\sigma_{\text{long}} + \Delta\sigma_{\text{long}} =$			2529.1	daN/cm ² (<samm:VERIFICA SODDISFATTA)

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390 di 394**Staffatura verticale**

diámetro staffe presenti:		1.4	cm		
passo staffe presenti		25	cm		
numero braccia per torsione.:	bt:	1			
numero braccia per taglio vert.:	bv:	4			
$S_{\text{staffe per torsione vert.}} / m: A_{\text{stMt}} =$		6.15	cm ² /m		
$S_{\text{staffe per taglio vert.}} / m: A_{\text{stTv}} =$		24.62	cm ² /m		
$\sigma_{\text{staffe per torsione}} = Mt * 100 / (2 * A_{\text{stMt}} * A_1) =$		1,780.3	daN/cm ²		
$\sigma_{\text{staffe per taglio verticale}} = Tv * 100 / (0.9 * h * A_{\text{stTv}}) =$		352.1	daN/cm ²		
$\sigma_{\text{staffe per torsione+taglio verticale}} =$		2,132.4	daN/cm ²	(<samm:VERIFICA SODDISFATTA)	

Staffatura orizzontale

diámetro staffe presenti:		1.4	cm		
passo staffe presenti		25	cm		
numero braccia per torsione.:	bt:	1			
numero braccia per taglio orizz.:	bo:	2			
$S_{\text{staffe per torsione orizz.}} / m: A_{\text{stMt}} =$		6.15	cm ² /m		
$S_{\text{staffe per taglio orizz.}} / m: A_{\text{stTo}} =$		12.31	cm ² /m		
$\sigma_{\text{staffe per torsione}} = Mt * 100 / (2 * A_{\text{stMt}} * A_1) =$		1,780.3	daN/cm ²		
$\sigma_{\text{staffe per taglio orizzontale}} = To * 100 / (0.9 * b * A_{\text{stTo}}) =$		487.0	daN/cm ²		
$\sigma_{\text{staffe per torsione+taglio orizzontale}} =$		2,267.2	daN/cm ²	(<samm:VERIFICA SODDISFATTA)	



Trave di coronamento per le barriere antirumore di h=6.75m (Zona di bordo)

VERIFICA A TORSIONE E TAGLIO			
$M_{\text{TORSIONE}} \cdot Mt =$	19,795.0	daNm	Momento torcente
$T_{\text{TCV}} =$	7,293.8	daN	Taglio verticale
$T_{\text{Tco}} =$	5,044.0	daN	Taglio orizzontale
$R_{ck} =$	300	daN/cm ²	
$\tau_{\text{CO}} =$	6.00	daN/cm ²	
$\tau_{\text{C1}} =$	18.29	daN/cm ²	
$1.1 \cdot \tau_{\text{C1}} =$	20.11	daN/cm ²	
$c =$	6.5	cm	
$\sigma_{\text{amm}} =$	2,600	daN/cm ²	
Caratteristiche Geometriche			
$B =$	100	cm	
$H =$	100	cm	
$\tau_{\text{vert. torsione}} =$	9.50	daN/cm ²	OK
$\tau_{\text{oriz. torsione}} =$	9.50	daN/cm ²	OK
$\tau_{\text{vert taglio}} =$	0.87	daN/cm ²	
$\tau_{\text{oriz. taglio}} =$	0.60	daN/cm ²	
$\tau_{\text{vert (torsione+taglio)}} =$	10.37	daN/cm ²	ARMARE A TORSIONE
$\tau_{\text{orizz (torsione+taglio)}} =$	10.10	daN/cm ²	ARMARE A TORSIONE
$p =$	348	cm	(sviluppo linea media)
$A_1 =$	7569	cm ²	(area racchiusa dalla linea media)
Armatura Longitudinale			
n°tot ferri nei lati orizzontali: no=		12	
diametro ferri nei lati orizz.:		1.6	cm
Area tot. ferri lati orizz: Aorizz=		24.12	cm ²
n°tot ferri nei lati verticali: nv=		6	
diametro ferri nei lati vert.:		1.6	cm
Area tot. ferri lati vert.: Avert=		12.06	cm ²
Aorizz+Avert=Along		36.17	cm ²
Incremento di trazione su Along:			
$\Delta\sigma_{\text{long}} = Mt \cdot p / (2 \cdot \text{Along} \cdot A_1) =$		1258.0	daN/cm ²
Trazione da pressofl. su Along: $\sigma_{\text{long}} =$		1181.0	daN/cm ²
$\sigma_{\text{long}} + \Delta\sigma_{\text{long}} =$		2439.0	daN/cm ² (<samm:VERIFICA SODDISFATTA)



Staffatura verticale				
diámetro staffe presenti:			1.4	cm
passo staffe presenti			25	cm
numero braccia per torsione.:	bt:		1	
numero braccia per taglio vert.:	bv:		4	
$S_{\text{staffe per torsione vert.}}/m: A_{\text{stMt}} =$			6.15	cm ² /m
$S_{\text{staffe per taglio vert.}}/m: A_{\text{stTv}} =$			24.62	cm ² /m
$\sigma_{\text{staffe per torsione}} = Mt \cdot 100 / (2 \cdot A_{\text{stMt}} \cdot A_1) =$			2,018.5	daN/cm ²
$\sigma_{\text{staffe per taglio verticale}} = Tv \cdot 100 / (0.9 \cdot h \cdot A_{\text{stTv}}) =$			352.1	daN/cm ²
$\sigma_{\text{staffe per torsione+taglio verticale}} =$			2,370.6	daN/cm ² (<samm:VERIFICA SODDISFATTA)
Staffatura orizzontale				
diámetro staffe presenti:			1.4	cm
passo staffe presenti			25	cm
numero braccia per torsione.:	bt:		1	
numero braccia per taglio orizz.:	bo:		2	
$S_{\text{staffe per torsione orizz.}}/m: A_{\text{stMt}} =$			6.15	cm ² /m
$S_{\text{staffe per taglio orizz.}}/m: A_{\text{stTo}} =$			12.31	cm ² /m
$\sigma_{\text{staffe per torsione}} = Mt \cdot 100 / (2 \cdot A_{\text{stMt}} \cdot A_1) =$			2,018.5	daN/cm ²
$\sigma_{\text{staffe per taglio orizzontale}} = To \cdot 100 / (0.9 \cdot b \cdot A_{\text{stTo}}) =$			487.0	daN/cm ²
$\sigma_{\text{staffe per torsione+taglio orizzontale}} =$			2,505.5	daN/cm ² (<samm:VERIFICA SODDISFATTA)



Trave di coronamento per le barriere antirumore di h=4.75m

VERIFICA A TORSIONE E TAGLIO			
$M_{\text{TORSIONE}}: Mt =$	11,490.0	daNm	Momento torcente
$T_{\text{TCV}} =$	6,448.0	daN	Taglio verticale
$T_{\text{Tco}} =$	3,751.0	daN	Taglio orizzontale
$R_{ck} =$	300	daN/cm ²	
$\tau_{\text{CO}} =$	6.00	daN/cm ²	
$\tau_{\text{C1}} =$	18.29	daN/cm ²	
$1.1 * \tau_{\text{C1}} =$	20.11	daN/cm ²	
$c =$	6.5	cm	
$\sigma_{\text{amm}} =$	2,600	daN/cm ²	
Caratteristiche Geometriche			
$B =$	85	cm	
$H =$	100	cm	
$\tau_{\text{vert. torsione}} =$	7.20	daN/cm ²	OK
$\tau_{\text{oriz. torsione}} =$	5.20	daN/cm ²	OK
$\tau_{\text{vert. taglio}} =$	0.90	daN/cm ²	
$\tau_{\text{oriz. taglio}} =$	0.53	daN/cm ²	
$\tau_{\text{vert. (torsione+taglio)}} =$	8.11	daN/cm ²	ARMARE A TORSIONE
$\tau_{\text{orizz. (torsione+taglio)}} =$	5.74	daN/cm ²	NON SERVE ARMARE A TORSIONE
$p =$	318	cm	(sviluppo linea media)
$A_1 =$	6264	cm ²	(area racchiusa dalla linea media)
Armatura Longitudinale			
n°tot ferri nei lati orizzontali: no=			10
diámetro ferri nei lati orizz.:			1.6 cm
Area tot. ferri lati orizz: Aorizz=			20.10 cm ²
n°tot ferri nei lati verticali: nv=			6
diámetro ferri nei lati vert.:			1.6 cm
Area tot. ferri lati vert.: Avert=			12.06 cm ²
Aorizz+Avert=Along			32.15 cm ²
Incremento di trazione su Along:			
$\Delta\sigma_{\text{long}} = Mt * p / (2 * \text{Along} * A_1) =$			907.1 daN/cm ²
Trazione da pressofl. su Along: $\sigma_{\text{long}} =$			1205.0 daN/cm ²
$\sigma_{\text{long}} + \Delta\sigma_{\text{long}} =$			2112.1 daN/cm ² (<samm:VERIFICA SODDISFATTA)



Staffatura verticale							
diametro staffe presenti:				1.2	cm		
passo staffe presenti				25	cm		
numero braccia per torsione.:	bt:			1			
numero braccia per taglio vert.:	bv:			4			
$S_{\text{staffe per torsione vert.}}/m: A_{\text{stMt}} =$				4.52	cm ² /m		
$S_{\text{staffe per taglio vert.}}/m: A_{\text{stTv}} =$				18.09	cm ² /m		
$\sigma_{\text{staffe per torsione}} = Mt \cdot 100 / (2 \cdot A_{\text{stMt}} \cdot A_1) =$				1,926.9	daN/cm ²		
$\sigma_{\text{staffe per taglio verticale}} = Tv \cdot 100 / (0.9 \cdot h \cdot A_{\text{stTv}}) =$				504.6	daN/cm ²		
$\sigma_{\text{staffe per torsione+taglio verticale}} =$				2,431.6	daN/cm ²	(<samm:VERIFICA SODDISFATTA)	
Staffatura orizzontale							
diametro staffe presenti:				1.2	cm		
passo staffe presenti				25	cm		
numero braccia per torsione.:	bt:			1			
numero braccia per taglio orizz.:	bo:			2			
$S_{\text{staffe per torsione orizz.}}/m: A_{\text{stMt}} =$				4.52	cm ² /m		
$S_{\text{staffe per taglio orizz.}}/m: A_{\text{stTo}} =$				9.04	cm ² /m		
$\sigma_{\text{staffe per torsione}} = Mt \cdot 100 / (2 \cdot A_{\text{stMt}} \cdot A_1) =$				1,926.9	daN/cm ²		
$\sigma_{\text{staffe per taglio orizzontale}} = To \cdot 100 / (0.9 \cdot b \cdot A_{\text{stTo}}) =$				587.1	daN/cm ²		
$\sigma_{\text{staffe per torsione+taglio orizzontale}} =$				2,514.0	daN/cm ²	(<samm:VERIFICA SODDISFATTA)	