

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 ESECUTIVO

**VARIANTE DI TRACCIATO IN CORRISPONDENZA PROPRIETA' ANCAP
BA00 - APPLICAZIONE SU RILEVATO (V=300 km/h). FONDAZIONI SU PALI
PER BARRIERE ANTIRUMORE IN ASSENZA DI VARCHI PER SOTTOSERVIZI.
RELAZIONE DI CALCOLO**

GENERAL CONTRACTOR	DIRETTORE LAVORI
Consorzio Cepav due Consorzio Cepav due Il Direttore del Consorzio (Ing. T. Taranta)	
Data: _____	Data: _____

COMMESSA	LOTTO	FASE	ENTE	TIPODOC	OPERA/DISCIPLINA	PROGR	REV
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PROGETTAZIONE						IL PROGETTISTA	
Rev.	Descrizione	Redatto	Data	Verificato	Data	Progettista	Data
A	Emissione	Montuschi	29/03/21	Palai	29/03/21	 R. Ianni	29/03/21
B							
C							

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Progetto cofinanziato dalla Unione Europea

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- **ALLEGATO N°2.** Fondazioni su pali per Barriere di h=6.75m con rilevato di H=3.0m – Effetti indotti dal ritiro e dalla diminuzione di temperatura. Calcolo agli elementi finiti con il programma di calcolo “ENG”
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- **ALLEGATO N°7.** 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”
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- **ALLEGATO N°11.** 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”
- **ALLEGATO N°12.** Fondazioni su pali per Barriere di h=3.75m con rilevato di H=7.0m – Effetti indotti dal ritiro e dalla diminuzione di temperatura. 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 e pali) da installarsi sulla Linea AV/AC Torino-Venezia, tratta Milano-Verona, lotto funzionale Brescia-Verona.

Applicazione barriere: su rilevato, in assenza di varchi per sottoservizi.

Velocità di progetto assunta: $V = 300$ km/h.

Tipologia dei pannelli: pannellature verticali miste in calcestruzzo e acciaio supportate da montanti costituiti da profilati in acciaio; tutte le barriere presentano una pannellatura costituita da uno zoccolo in cls di 0.75m, un'altezza di 3m di pannelli in cls fonoassorbente e la parte restante, ove presente, in pannelli in acciaio inox.

L'installazione di tali barriere è prevista sia su opere d'arte che in rilevato ed in trincea ed in particolare i montanti sono collegati o direttamente alle strutture delle opere d'arte o a cordoli di fondazione mediante piastre in acciaio costolate e tirafondi.

Le barriere sono poste ad una distanza minima dall'asse del binario più vicino pari a 4.65m.

In base al momento della loro posa in opera vengono individuate due categorie di barriere:

- 1) **Barriere già presenti in Prima Fase** (alcune delle quali innalzate in uno scenario futuro);
- 2) **Barriere presenti solo in Fase di Regime**

Le tabelle sotto riportate sintetizzano le altezze di barriera esaminate nel presente documento e la loro posizione. Le altezze indicate sono riferite al piano del ferro; le altezze di calcolo delle barriere sono state aumentate di 0.75m per tenere conto della differenza tra il piano di imposta del montante ed il piano del ferro, pari proprio a circa 0.75m.

L'altezza effettiva del montante sarà ulteriormente aumentata di 0.20m.

A) Barriere già presenti in Prima Fase

Tratta	Prima Fase	Fase di Regime
	Altezza barriera rispetto al P.F. (m)	Altezza barriera rispetto al P.F. (m)
AV (300 km/h)	3.50	6.00
	4.00	6.00
	6.00	6.00

Dalla tabella si evince che le barriere già presenti in Prima Fase possono essere rialzate in Fase di Regime.

Pertanto, per tale categoria di barriere, in Prima Fase si realizzano già pali, cordoli e tirafondi (ovviamente dimensionati per l'altezza di barriera definitiva), mentre i montanti vengono posti in opera avendo già altezza definitiva e pannellature con altezza di Prima Fase. In Fase di Regime saranno pertanto solo innalzate le pannellature.

B) Barriere presenti solo in Fase di Regime

Tratta	Prima Fase	Fase di Regime
	Altezza barriera rispetto al P.F. (m)	Altezza barriera rispetto al P.F. (m)
AV (300 km/h)	/	3.00

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	/	4.00
	/	5.50-6.00

Per tale categoria di barriere, in Prima Fase si realizzano ovviamente pali e cordoli, mentre si esegue la sola predisposizione per i tirafondi, che saranno realizzati mediante inghisaggio in Fase di Regime (unitamente alla posa dei montanti e delle pannellature).

Le operazioni indicate nella Fase di Regime non fanno parte degli obblighi dell'Appaltatore, e saranno eseguite da Altri (RFI).

Nel presente documento vengono svolte le verifiche dei pali e dei cordoli di fondazione sia per le barriere previste già in Prima Fase, sia per quelle previste per la sola Fase di Regime. Viene esaminata la situazione di assenza di varchi per il passaggio di sottoservizi; il caso di fondazioni in presenza di varchi viene trattato in un altro documento.

Ovviamente il dimensionamento di pali e cordoli sarà eseguito con riferimento all'altezza finale dei montanti (ossia al loro valore massimo).

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

I tipologici sviluppati fanno riferimento a barriere antirumore tipo di altezza di calcolo 3.75, 4.75m 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.

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 90*100cm ed a 100*100cm.

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

Tratta	Altezza da calcolo barriere (m)	Lunghezza Palo (m)	Diametro Palo (m)	Trave di coronamento B*H (m)
Milano- Verona	3.75	11.00	0.60	0.90*1.00
	4.75	11.00	0.80	1.00*1.00
	6.75	13.00-19.00m(*)	0.80	1.00*1.00

(*) I pali di lunghezza 19.00m sono previsti solo nei rilevati del Comune di Desenzano del Garda, sede di terreni in situ dalle caratteristiche geotecniche particolarmente scadenti (da pk 122km a pk 126.575km). In tali zone non sono previste barriere con altezza di calcolo finale 4.75m o 3.75, ma solo 6.75m.

Si anticipa sin da ora che tutte le verifiche prescritte dalla normativa vigente sono ancora soddisfatte.

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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

Istruzione UNI 9503/2007

Procedimento analitico per valutare la resistenza al fuoco degli elementi costruttivi in acciaio.

D. M. Min. II. TT. del 14 Gennaio 2008 – Norme tecniche per le costruzioni;

Circolare 2 Febbraio 2009, n. 617 – Istruzioni per l'applicazione delle "Nuove norme tecniche per le costruzioni" di cui al D.M. 14 gennaio 2008;

Rete Ferroviaria Italiana – “Manuale di progettazione delle opere civili – Parte II, Sezione 1 – Ambiente” doc. RFI DTC SI AG MA IFS 001 A del 30/12/2016.

Rete Ferroviaria Italiana – “Manuale di progettazione delle opere civili – Parte II, Sezione 2 – Ponti e strutture” doc. RFI DTC SI PS MA IFS 001 A del 30/12/2016.

Rete Ferroviaria Italiana – “Capitolato Generale Tecnico di Appalto delle Opere Civili” doc. RFI DTC SI SP IFS 001 A del 30/12/2016.

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3. DOCUMENTI DI RIFERIMENTO

TITOLO	CODICE DOCUMENTO										
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE IN ASSENZA DI VARCHI PER SOTTOSERVIZI. RELAZIONE DI CALCOLO	INOR	10	E	E2	C	L	BA	00	0	1	001
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE IN PRESENZA DI VARCHI PER SOTTOSERVIZI. RELAZIONE DI CALCOLO	INOR	10	E	E2	C	L	BA	00	0	1	002
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE IN PRESENZA DI AGGIRAMENTI. RELAZIONE DI CALCOLO	INOR	10	E	E2	C	L	BA	00	0	1	003
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). FONDAZIONI SU PALI PER BARRIERE ANTIRUMORE. RELAZIONE GEOTECNICA	INOR	10	E	E2	R	B	BA	00	0	1	001
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO E SOTTOVIA (V=300km/h). TIPOLOGIE MONTANTI, CARATTERISTICHE DEI MATERIALI, NOTE GENERALI	INOR	10	E	E2	4	T	BA	00	0	0	001
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE. CORDOLI DI FONDAZIONE. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	001
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	002
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	003
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	004
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=6.00m - H=5.50m. CORDOLI DI FONDAZIONE. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	005
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=6.00m - H=5.50m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	006
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=6.00m - H=5.50m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	007
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=6.00m - H=5.50m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	008

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WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	010
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	011
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	012
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=3.00m. CORDOLI DI FONDAZIONE. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	013
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	014
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	015
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. CASSERATURA	INOR	10	E	E2	B	Z	BA	00	0	1	016
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE. PALI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	017
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=4.00m. PALI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	018
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=3.00m. PALI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	019
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE O SOLO IN FASE DI REGIME, H=5.50-6.00m. CORDOLI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	020
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE O SOLO IN FASE DI REGIME, H=5.50-6.00m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	021

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WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE O SOLO IN FASE DI REGIME, H=5.50-6.00m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	022
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE GIA' PRESENTI IN PRIMA FASE O SOLO IN FASE DI REGIME, H=5.50-6.00m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	023
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=4.00m. CORDOLI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	024
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	025
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	026
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=4.00m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	027
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=3.00m. CORDOLI DI FONDAZIONE. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	028
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=6.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	029
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=9.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	030
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300km/h). BARRIERE PRESENTI SOLO IN FASE DI REGIME, H=3.00m. CORDOLI DI FONDAZIONE CON VARCO L=12.00m. ARMATURA	INOR	10	E	E2	B	Z	BA	00	0	1	031

TITOLO

WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO E SOTTOVIA (V=300 km/h). MONTANTI. VERIFICHE STATICHE, DINAMICHE ED A FATICA	INOR	10	E	E2	C	L	BA	00	0	2	001
WBS BA00 - TIPOLOGICO BARRIERE BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO E SOTTOVIA (V=300 km/h). MONTANTI. VERIFICHE AL FUOCO	INOR	10	E	E2	C	L	BA	00	0	2	002
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300 km/h). MONTANTI D'ANGOLO PRESSO AGGIRAMENTI. VERIFICHE STATICHE, DINAMICHE ED A FATICA	INOR	10	E	E2	C	L	BA	00	0	2	003

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WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300 km/h). PASSERELLA METALLICA DI ISPEZIONE BARRIERE ANTURUMORE. RELAZIONE DI CALCOLO	INOR	10	E	E2	C	L	BA	00	0	2	004
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO E SOTTOVIA (V=300km/h). MONTANTE PER BARRIERE DI ALTEZZA FINALE H=6.00m. CARPENTERIA E DETTAGLI	INOR	10	E	E2	B	Z	BA	00	0	2	001
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300 km/h). PASSERELLA METALLICA DI ISPEZIONE BARRIERE ANTIRUMORE. SEZIONI E DETTAGLI. TAV 1	INOR	10	E	E2	B	Z	BA	00	0	2	002
WBS BA00 - TIPOLOGICO BARRIERE ANTIRUMORE. APPLICAZIONE SU RILEVATO (V=300 km/h). PASSERELLA METALLICA DI ISPEZIONE BARRIERE ANTIRUMORE. SEZIONI E DETTAGLI. TAV 2	INOR	10	E	E2	B	Z	BA	00	0	2	003

Definizione dei requisiti prestazionali dei calcestruzzi: IN0500DE2RHMD0000004

4. MATERIALI PRESCRITTI

I materiali prescritti per l'esecuzione dell'opera sono

4.1. CALCESTRUZZO

4.1.1 Pali di fondazione

Per i pali di fondazione si adotta un calcestruzzo di classe C25/30

$$R_{ck} = 30 \text{ N/mm}^2$$

$$f_{ck} = 0.83 R_{ck} = 24.90 \text{ N/mm}^2$$

Resistenza di progetto allo SLU

$$f_{cd} = \alpha_{cc} * f_{ck} / \gamma_c = 0.85 * 24.9 / 1.5 = 14.11 \text{ N/mm}^2 \text{ resistenza di calcolo a compressione}$$

$$- \gamma_c = 1.50 \text{ N/mm}^2 \text{ coefficiente di sicurezza}$$

$$- \alpha_{cc} = 0.85 \text{ N/mm}^2 \text{ coeff. riduttivo per resistenze di lunga durata}$$

Si assume a rottura un diagramma tensione-deformazione a "parabola rettangolo" ovvero il diagramma tipo (a) di cui al par. 4.1.2.1.2.2 del Testo Unico.

Tassi di lavoro limite agli SLE

$$\text{Tensione di compressione per combinazioni rare: } 13.69 \text{ N/mm}^2 \text{ (pari a } 0.55 f_{ck})$$

$$\text{Tensione di compressione per combinazioni quasi permanenti } 9.96 \text{ N/mm}^2 \text{ (pari a } 0.40 f_{ck})$$

Classe di esposizione/condizioni ambientali

Conformemente al Capitolato Generale Tecnico di Appalto delle opere Civili RFI si assume una classe di esposizione XC4, corrispondente secondo norma ad un ambiente aggressivo.

Il valore limite di aperture delle fessure risulta pertanto pari a $\delta_f \leq 0.20 \text{ mm}$

Modulo elastico

$$E_c = 22000 * [f_{cm}/10]^{0.3} = 31447 \text{ N/mm}^2$$

$$f_{cm} = f_{ck} + 8 = 32.9 \text{ N/mm}^2$$

Copriferro minimo

- ricoprimento minimo per i pali di fondazione: $c_{min} = 60 \text{ mm}$

4.1.2 Travi di coronamento

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Per le travi di coronamento pali si adotta un calcestruzzo di classe C32/40

$$R_{ck} = 40 \text{ N/mm}^2$$

$$f_{ck} = 0.83 R_{ck} = 33.20 \text{ N/mm}^2$$

Resistenza di progetto allo SLU

$$f_{cd} = \alpha_{cc} * f_{ck} / \gamma_c = 0.85 * 33.20 * /1.5 = 18.81 \text{ N/mm}^2 \text{ resistenza di calcolo a compressione}$$

$$- \gamma_c = 1.50 \text{ N/mm}^2 \quad \text{coefficiente di sicurezza}$$

$$- \alpha_{cc} = 0.85 \text{ N/mm}^2 \quad \text{coeff. riduttivo per resistenze di lunga durata}$$

Si assume a rottura un diagramma tensione-deformazione a "parabola rettangolo" ovvero il diagramma tipo (a) di cui al par. 4.1.2.1.2.2 del Testo Unico.

Tassi di lavoro limite agli SLE

$$\text{Tensione di compressione per combinazioni rare: } 18.29 \text{ N/mm}^2 \text{ (pari a } 0.55 f_{ck})$$

$$\text{Tensione di compressione per combinazioni quasi permanenti } 13.61 \text{ N/mm}^2 \text{ (pari a } 0.40 f_{ck})$$

Classe di esposizione/condizioni ambientali

Conformemente al Capitolato Generale Tecnico di Appalto delle opere Civili RFI si assume una classe di esposizione XC4, corrispondente secondo norma ad un ambiente aggressivo.

Il valore limite di aperture delle fessure risulta pertanto pari a $\delta_f \leq 0.20 \text{ mm}$

Modulo elastico

$$E_c = 22000 * [f_{cm}/10]^{0.3} = 33643 \text{ N/mm}^2$$

$$f_{cm} = f_{ck} + 8 = 41.2 \text{ N/mm}^2$$

Copriferro minimo

- ricoprimento minimo per i cordoli di fondazione: $c_{min} = 50 \text{ mm}$

4.2. ACCIAIO IN BARRE

Si prevede l'impiego di acciaio tipo B450C avente le seguenti caratteristiche meccaniche:

Tensione di Rottura $f_{tk} = 540 \text{ N/mm}^2$
Tensione di Snervamento $f_{yk} = 450 \text{ N/mm}^2$

Resistenze di progetto allo SLU

$f_{yd} = f_{yk} / \gamma_s = 391.3 \text{ N/mm}^2$
 $\gamma_s = 1.15$ coefficiente di sicurezza
 $\epsilon_{cuk} = 75\%$ allungamento caratteristico a rottura
 $\epsilon_{cuk} = 67.5\%$ allungamento a rottura di calcolo

Si assume a rottura un diagramma tensione-deformazione bilineare finito con incrudimento ovvero il diagramma tipo (a) di cui al par. 4.1.2.1.2.3 del Testo Unico.

Tensione di lavoro limite agli SLE

Trazione massima in esercizio per Combinazione Caratteristica Rara = $337.5 \text{ N/mm}^2 (0.75 f_{yk})$

Il massimo interasse delle barre ad aderenza migliorata è indicato nella tabella sottostante:

$\gamma_s = 1.15$ coefficiente di sicurezza
 $\epsilon_{cuk} = 75\%$ allungamento caratteristico a rottura

Massimo diametro delle barre [mm]	Massimo interasse delle barre [mm]
20	200
25	250
30	300

Verifiche di resistenza e fessurazione

Le verifiche a fessurazione sono state condotte considerando la Combinazione Caratteristica Rara

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 D.M. LL.PP. relativo alle "Norme Tecniche per le costruzioni" (D.M. 14.01.2008), cui fa riferimento il "Manuale di progettazione delle opere civili" di RFI.

La massima apertura ammissibile risulta (assumendo una classe di esposizione XC4 strutture poste a permanente contatto con il terreno):

$$w_{amm} = w_1 = 0.20 \text{ mm}$$

NOTE GENERALI ED ULTERIORI CARATTERISTICHE DEI MATERIALI

Vedere elaborato grafico n° INOR10EE24TBA0000001.

5. CARATTERIZZAZIONE GEOTECNICA DEI TERRENI

5.1. RILEVATO FERROVIARIO (TERRENO TIPO 1)

Le caratteristiche del rilevato ferroviario sono di seguito riassunte:

- $\gamma = 20 \text{ kN/m}^3$ (peso di volume secco)
- $\phi = 38^\circ$ (utilizzabile nelle verifiche in oggetto)
- $\delta = 0^\circ$
- $c = 0 \text{ kPa}$

Considerando tali parametri si ha che i coefficienti di spinta attiva e passiva sono:

$$\lambda_a = 0.238$$

$$\lambda_p = 4.204$$

5.2. TERRENO SOTTOSTANTE AL RILEVATO (TERRENO TIPO 2)

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

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 32^\circ$
- $c = 0 \text{ kPa}$

Considerando tali parametri si ha che i coefficienti di spinta attiva e passiva sono:

$$\lambda_a = 0.307$$

$$\lambda_p = 3.255$$

5.3. TERRENO SOTTOSTANTE AL RILEVATO (TERRENO TIPO 3)

Nel comune di Desenzano del Garda per il terreno sottostante al rilevato (da pk 122km a pk136.575m) le caratteristiche sono le seguenti:

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 28^\circ$
- $c = 0$
- $C_u = 30 \text{ kPa}$ (coesione non drenata)

5.4. TERRENO SOTTOSTANTE AL RILEVATO (TERRENO TIPO 4)

Nel comune di Peschiera del Garda per il terreno sottostante al rilevato (da pk 126.575km a pk 135km) le caratteristiche sono le seguenti:

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 28^\circ$
- $c = 0$
- $C_u = 70 \text{ kPa}$ (coesione non drenata)

6. CRITERI DI VERIFICA

Le strutture devono essere progettate secondo i criteri di cui al DM 14.1.2008 “Norme tecniche per le costruzioni” e alla Circolare 2 Febbraio 2009, n.617 C.S.LL.PP. “Istruzioni per l’applicazione delle Nuove norme Tecniche per le costruzioni di cui al Decreto ministeriale 14 Gennaio 2008”. Per le barriere da realizzare sui ponti ferroviari si farà riferimento anche al Manuale di progettazione Opere Civili Parte II Sezione 2 Ponti e Strutture.

Le strutture delle barriere devono essere verificate:

- per gli Stati Limite Ultimi, che possono presentarsi in conseguenza alle diverse combinazioni delle azioni (verifica di resistenza);
- per gli Stati Limite di Esercizio (Combinazione Rara).

6.1. CRITERI DI COMBINAZIONE DELLE AZIONI

Per le verifiche agli SLE andrà considerata la combinazione caratteristica rara:

$$G_1 + G_2 + P + Q_{k1} + \psi_{02} * Q_{k2} + \psi_{03} * Q_{k3}$$

$\psi_{02} = 1$ con il vento e con la pressione aerodinamica

per le verifiche agli SLU andrà considerata la combinazione fondamentale:

$$\gamma_{G1} * G_1 + \gamma_{G2} * G_2 + \gamma_P * P + \gamma_{Q1} * Q_{k1} + \gamma_{Q2} * \psi_{02} * Q_{k2} + \dots$$

$$\gamma_{G1} = 1.35$$

$$\gamma_{G2} = 1.50 \text{ con i permanenti non strutturali}$$

$$\gamma_{Qi} = 1.50$$

$\psi_{02,03,\dots} = 1$ con il vento e con la pressione aerodinamica

In ogni caso, il valore della combinazione “vento + effetto aerodinamico” (ptot) sarà assunto pari a:

- pvento + paerod = ptot $\geq 1.5 \text{ kN/m}^2$ per linee percorse a velocità $V \leq 200 \text{ km/h}$

- pvento + paerod = ptot $\geq 2.5 \text{ kN/m}^2$ per linee percorse a velocità $V \geq 200 \text{ km/h}$

7. 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) Azione trasmessa dalla passerella metallica di ispezione
- 6) Effetti indotti dal ritiro e dalla diminuzione di temperatura (15°C) della trave di coronamento testa pali.
- 7) Azioni sismiche

7.1. PESO PROPRIO STRUTTURE DI FONDAZIONE

Peso proprio: = 25.00 kN/m³

7.2. AZIONI TRASMESSE DALLE BARRIERE ANTIRUMORE

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

7.2.1 *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.:

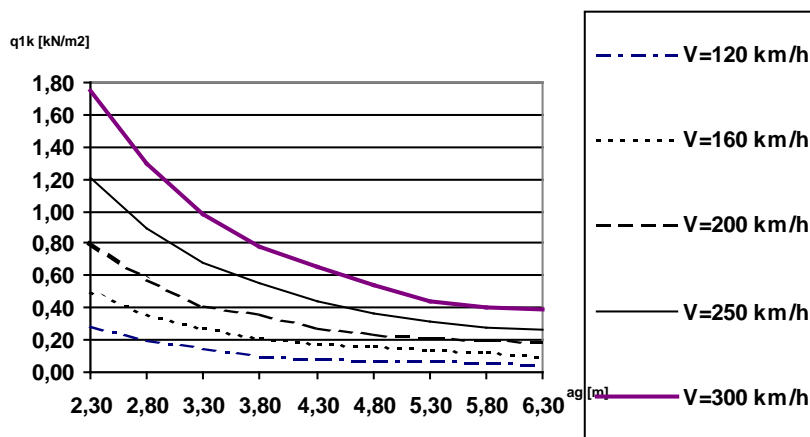
Peso proprio pannelli in cls:	= 3.00 kN/m ²
Peso proprio pannelli fonoisolanti in cls e argilla:	= 3.50 kN/m ²
Peso proprio pannelli fonoisolanti in acciaio:	= 0.25 kN/m ²
Peso proprio pannelli fonoisolanti in acciaio (bagnati):	= 1.00 kN/m ²
Montanti in acciaio con sezione ad H	= 78.50 kN/m ³

7.2.2 *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 (ora riportate anche nel DM 14.01.2008, e successivi aggiornamenti normativi).

Nel caso specifico 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 per:

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



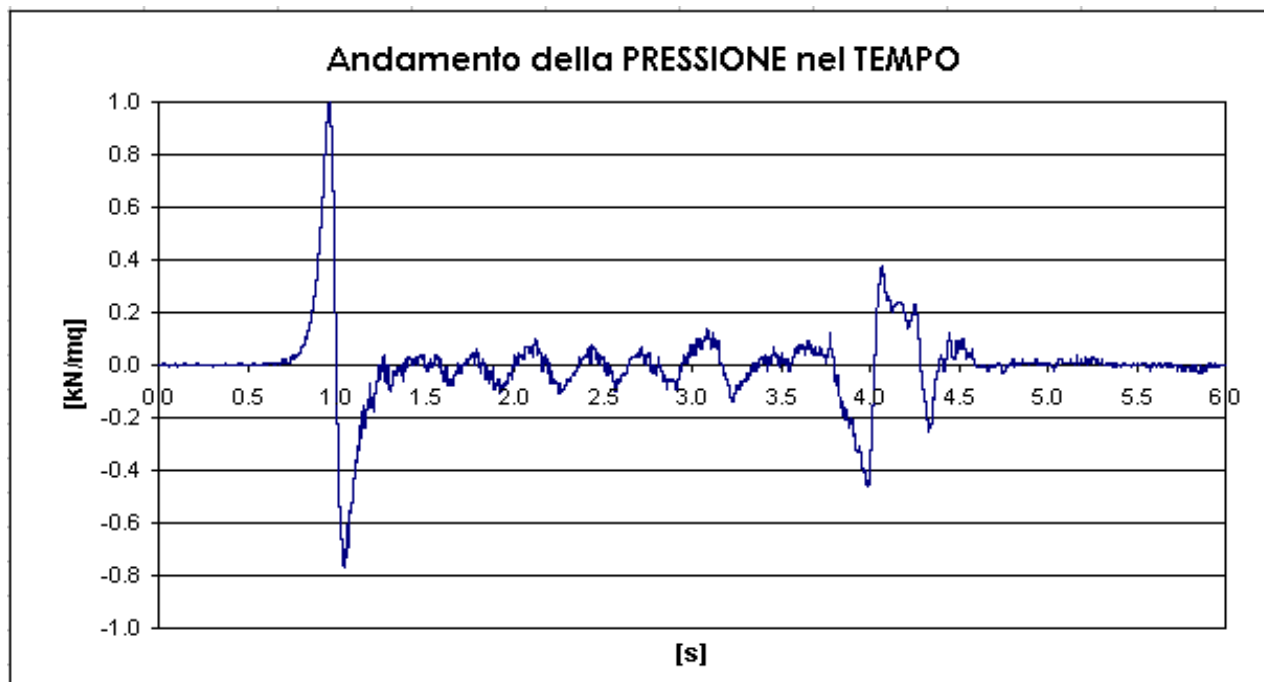
si ha:

$$f(300; a_g) = 1.95 \cdot 10^{-5} \cdot v^2 \cdot (2.3 / a_g)^{1.58} = 1.95 \cdot 10^{-5} \cdot 300^2 \cdot (2.3 / 4.65)^{1.58} = 0.58 \text{ kN/m}^2;$$

$$q_{1k} = k_1 \cdot f(300, a_g) = 0.60 \cdot 0.58 = 0.348 \text{ kN/m}^2$$

7.2.3 Analisi dinamica

L'analisi dinamica, richiesta nelle linee con velocità $v > 200 \text{ km/h}$ per verificare che non si instaurino condizioni di risonanza nelle barriere antirumore, è eseguita utilizzando la Time History History delle pressioni rilevata dalle misurazioni effettuate sulle barriere antirumore della RM-NA del 2004 (indicata nel "Manuale di Progettazione delle Opere Civili. Parte II-Sezione 3. Corpo Stradale", Allegato B3 "Relazione di calcolo", par. 2.2.3.2 "Pressione per effetti aerodinamici del treno", figura 2-7), ove l'andamento della pressione è normalizzato ad 1:



La distribuzione delle pressioni lungo l'altezza della barriera viene considerata in favore di sicurezza costante lungo tutta l'altezza della barriera.

L'analisi dinamica è stata condotta con l'ausilio di un programma ad elementi finiti (SAP2000), il passo di integrazione nel modello di calcolo è stato assunto pari a 0.001 per 10000 punti ed il coefficiente di smorzamento è stato posto pari a 0.02.

Si riporta di seguito l'analisi dinamica effettuata per la velocità di progetto pari a 300 km/h poiché quelle eseguite con velocità di progetto inferiori non risultano significative.

L'analisi dinamica è stata eseguita solamente per le velocità di progetto: 300km/h, 250km/h e 200km/h.

Le masse distribuite dei pannelli applicate al montante, aggiuntive alla massa distribuita del montante stesso ($\gamma_{\text{acciaio}} = 78.5 \text{ kN/m}^3$), sono le seguenti:

$$\begin{aligned}
 m_{\text{cls},0.75\text{m}} &= 3.00 \text{ kN/m}^2 \times 3 \text{ m} / 9.81 = 0.917 \text{ t/m} \\
 m_{\text{cls},0.75-3.00\text{m}} &= 3.50 \text{ kN/m}^2 \times 3 \text{ m} / 9.81 = 1.070 \text{ t/m} \\
 m_{\text{Inox},3.00-6.00\text{m}} &= 0.25 \text{ kN/m}^2 \times 3 \text{ m} / 9.81 = 0.076 \text{ t/m} \\
 m_{\text{Inox},3.00-6.00\text{m}(\text{bagnato})} &= 1.00 \text{ kN/m}^2 \times 3 \text{ m} / 9.81 = 0.306 \text{ t/m}
 \end{aligned}$$

7.2.4 Pressione del vento

La pressione del vento è stata calcolata secondo quanto riportato D.M. del 14/01/2008 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	$v_{\text{ref},0}$ [m/s]	a_0 [m]	k_a [1/s]
Lombardia Veneto	1	25	1000	0.01
a_s	200	[m]	Altitudine del sito ove sorge la costruzione	

V_{ref}	25	[m/s]
q_{ref}	390.625	[N/m ²]

ZONA	1
Aree prive di ostacoli	Cl. Rugosità D

CATEGORIA DI ESPOSIZIONE	k_r	z_0 [m]	z_{min} [m]
II	0.19	0.05	4

z	7	[m]	Altezza della costruzione sul (dal) suolo
C_t	1.5		coefficiente di topografia
C_e	3.857		coefficiente di esposizione

C_d	1		coefficiente dinamico
C_p	1.2		coefficiente di forma o aerodinamico

$p = q_{ref} \cdot C_e \cdot C_p \cdot C_d =$	180.8	[dN/m ²]
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7.2.5 Azioni considerate

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

$$p_{tot} = q_{ik} + p = 0.348 + 1.808 = 2.156 \text{ kN/m}^2$$

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, assunto il valore di progetto della velocità minimo pari a 200 km/h, i carichi di progetto restano definiti come segue: Sia per le verifiche statiche che per quelle di deformabilità, si assumerà il valore di progetto:

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

Per le verifiche a fatica, si procede solo in funzione del carico ciclico:

$$p_{fat} = p(x, V) \text{ kN/m}^2$$

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

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

$$\text{analisi dinamica: } p_{fat} = p(x, V) \times 3.00 \text{ [kN/m]}$$

7.2.6 Estratto sollecitazioni a base montante delle barriere

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

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AZIONI BASE MONTANTE		
BARRIERA H=6.75m	$N_B = (\text{daN})$	5'757.5
	$M_B = (\text{daNm})$	17'085.9
	$T_B = (\text{daN})$	5'062.5
BARRIERA H=4.75m	$N_B = (\text{daN})$	5'482.5
	$M_B = (\text{daNm})$	8'460.9
	$T_B = (\text{daN})$	3'562.5
BARRIERA H=3.75m	$N_B = (\text{daN})$	4'895.0
	$M_B = (\text{daNm})$	5'273.4
	$T_B = (\text{daN})$	2'812.5

in cui:

 $N_B = \text{Peso montante} + \text{Peso pannelli (kN)}$ $M_B = p_{\text{tot}} * i * H^2 / 2 \text{ (kNm)}$ $T_B = p_{\text{tot}} * i * H \text{ (kN)}$

essendo:

 $i = 3.0\text{m}$ $p_{\text{tot}} = 2.50 \text{ kN/m}^2$ $H = \text{altezza barriera}$

7.3. SPINTA DELLE TERRE

Spinta prodotta dai carichi permanenti

Vista la geometria della fondazione, si considera gravante sul palo la spinta del terreno agente sul cordolo di coronamento. In base a quanto indicato in precedenza nella caratterizzazione di terreni, si ottengono i seguenti coefficienti di spinta attiva e passiva:

Terreno sommitale

$$\lambda_a = \lambda_a(\phi=38^\circ) = \operatorname{tg}^2(\pi/4 - \phi/2) = 0.238$$

$$\lambda_p = \lambda_p(\phi=38^\circ) = \operatorname{tg}^2(\pi/4 + \phi/2) = 4.204$$

Mentre per il terreno sottostante essendo $\phi = 32^\circ$ si ha:

$$\lambda_a = \lambda_a(\phi=32^\circ) = \operatorname{tg}^2(\pi/4 - \phi/2) = 0.307$$

$$\lambda_p = \lambda_p(\phi=32^\circ) = \operatorname{tg}^2(\pi/4 + \phi/2) = 3.255$$

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:

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

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

S. ATT. TERRENO RIL SU CORD.		
BARRIERA H=6.75m	$p_{sac-max} = i \cdot \gamma \cdot H \cdot \lambda_{a1}$ (daN/m)	1'427.30
BARRIERA H=4.75m	$p_{sac-max} = i \cdot \gamma \cdot H \cdot \lambda_{a1}$ (daN/m)	1'427.30
BARRIERA H=3.75m	$p_{sac-max} = i \cdot \gamma \cdot H \cdot \lambda_{a1}$ (daN/m)	1'427.30

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 $q=10$ kN/m²;

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

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

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 pari a:

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

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

BARRIERA H=6.75m	$q_{ct} = q \cdot \lambda_{a1} \cdot i$ (daN/m)	1'427.30
BARRIERA H=4.75m	$q_{ct} = q \cdot \lambda_{a1} \cdot i$ (daN/m)	1'427.30
BARRIERA H=3.75m	$q_{ct} = q \cdot \lambda_{a1} \cdot i$ (daN/m)	1'427.30

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 $q_1=20$ kN/m² (valore che tiene conto della presenza delle fondazioni e portali T.E.).

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

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

dove D_{palo} = diametro del palo considerato

7.4. AZIONI TRASMESSE DALLA PASSERELLA METALLICA DI ISPEZIONE

Si riporta di seguito un riassunto delle sollecitazioni trasmesse dalla passerella di servizio per metro di sviluppo longitudinale. Esse dapprima si riferiscono alla sezione di attacco passerella-cordolo, pertanto dovranno poi essere trasportate in asse palo. Si rimanda alla relazione INOR10EE2CLBA0002004.doc per il calcolo in dettaglio delle sollecitazioni.

Spinta folla sul parapetto=1.00kN/m

Peso parapetto=0.20kN/m

Altezza parapetto=1.10m

Peso grigliato=1.00kN/m²

Larghezza passerella=0.60m

Accidentale sul grigliato= 2.00kN/m²

Larghezza cordolo=1.00m

T_O = Taglio Orizzontale

T_V = Taglio verticale

M = Momento flettente

A) Rispetto all'attacco passerella-cordolo

T_O = spinta folla sul parapetto=1.00kN/m

T_V = peso parapetto+peso grigliato+accidentale=0.20+1.00*0.60+2.0*0.60= 2.0kN/m

M_A = parapetto+grigliato+accidentale+spinta sul parapetto=0.20*0.60+1.0*0.60²/2+2.0*0.60²/2+1.0*1.10= 0.66+1.10= 1.76kN/m

B) Rispetto all'asse palo

T_O = 1.00kN/m

T_V = 2.0kN/m

M_B = 1.76+2.0*1.00/2= 2.76kN/m

7.5. 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 90x100cm.

Il ritiro del calcestruzzo si può esprimere come:

$$\varepsilon_{cs} = \varepsilon_{cd} + \varepsilon_{ca}$$

dove:

ε_{cs} è la deformazione per ritiro

ε_{cd} è la deformazione per ritiro da essiccamento

ε_{ca} è la deformazione per ritiro autogeno

a) Il valore medio a tempo infinito della deformazione per ritiro da essiccamento si può esprimere come:

$$\varepsilon_{cd_{\infty}} = k_h * \varepsilon_{c0}$$

può essere valutato mediante i valori riportati nelle Tab. 11.2. Va-b (DM 14 Gennaio 2008) in funzione della resistenza caratteristica a compressione, dell'umidità relativa e del paramento h_0 .

Considerando una umidità relativa del 70% e una resistenza $f_{ck} = 32 \text{ N/mm}^2$ si ottiene:

$$\varepsilon_{c0} = \varepsilon_{c0}(f_{ck}, u_{r\%}) = \varepsilon_{c0}(32, 70\%) = -0.35\% = -35 * 10^{-5}$$

$$k_h = k_h(h_0) = k_h(1000) = 0.70$$

dove h_0 è la dimensione fittizia (in mm) pari al rapporto $h_0 = 2 * A_c / u = 2 * 1000 * 1000 / 2000 = 1000 \text{ mm}$

$$\varepsilon_{cd} = -0.70 * 35 * 10^{-5} = -24.5 * 10^{-5}$$

b) Il valore medio a tempo infinito della deformazione per ritiro autogeno $\varepsilon_{ca_{\infty}}$ si può esprimere come:

$$\varepsilon_{ca_{\infty}} = -2.5 * (f_{ck} - 10) * 10^{-6} = -2.5 * (32 - 10) * 10^{-6} = -5.50 * 10^{-5}$$

Poiché il ritiro per essiccamento è un fenomeno "lento", mentre quello autogeno è "veloce", si adotta un valore efficace del ritiro pari a:

$$\varepsilon_{cs} = \varepsilon_{cd} + 3 * \varepsilon_{ca_{\infty}} = -24.5 * 10^{-5} - 3 * 5.50 * 10^{-5} = -41.00 * 10^{-5}$$

Dalle seguenti uguaglianze:

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

$$\Delta l = \varepsilon_{rit} * l_0$$

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

$$\alpha_{\Delta t} * \Delta t = \varepsilon_{rit}$$

sostituendo i valori numerici:

$$\Delta t_{rit} = \varepsilon_{rit} / \alpha_{\Delta t} = (0.4100 * 10^{-3}) / (1.0 * 10^{-5}) = 41.0^{\circ}\text{C}$$

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:

$$\Delta T = \Delta t_{rit} / 3 + \Delta t_t = 41.00 / 3 + 15 = 28.6^{\circ}\text{C}$$

Tale variazione termica viene messa in conto imponendo alla sommità del palo maggiormente sollecitato (ossia quello più distante dal centro di simmetria del cordolo) uno spostamento impresso pari a:

$$\Delta l = \alpha * L / 2 * \Delta T = 1.0 * 10^{-5} * 3000 / 2 * 28.6^{\circ}\text{C} = 0.429 \text{ cm (si assume } 0.43 \text{ cm)}$$

7.6. AZIONE SISMICA

Considerando le masse degli elementi strutturali e delle pannellature presenti, l'azione sismica genera sollecitazioni nettamente inferiori rispetto a quelle di vento+sovrappressione dei treni, con le quali non andrebbe comunque combinata.

Ad es. anche considerando un'accelerazione sismica di 0.3g (valore alquanto prudenziale), ed un peso dei pannelli $p_{pann} = 3.5 \text{ kN/m}^2$, risulterebbe:

$$p_{sis} = 0.3 * 3.5 = 1.05 \text{ kN/m}^2 \ll 2.50 \text{ kN/m}^2$$

Pertanto si trascurano gli effetti sulle strutture dovuti alle azioni sismiche in quanto non dimensionanti.

8. PALI DI FONDAZIONE

8.1. COMPORTAMENTO DEI PALI ALLE AZIONI ORIZZONTALI E VERTICALI

8.1.1 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 $E_1=3.0*80=240\text{daN/cm}^2$ ed $E_2=1.0*80=80\text{daN/cm}^2$).

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.

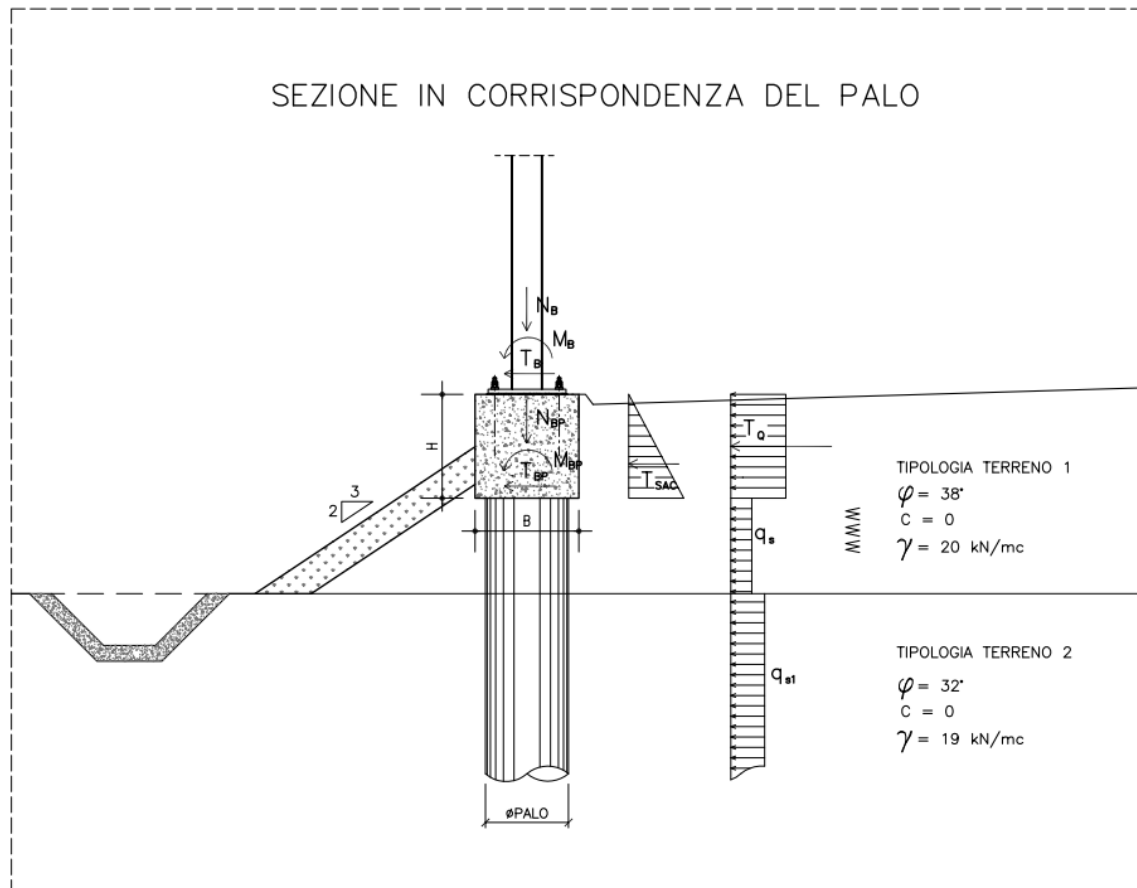
Le azioni considerate in testa palo sono:

-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.

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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8.1.1.1 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	$N_B = (\text{daN})$	5'757.5
	$M_B = (\text{daNm})$	17'085.9
	$T_B = (\text{daN})$	5'062.5
BARRIERA H=4.75m	$N_B = (\text{daN})$	5'482.5
	$M_B = (\text{daNm})$	8'460.9
	$T_B = (\text{daN})$	3'562.5
BARRIERA H=3.75m	$N_B = (\text{daN})$	4'895.0
	$M_B = (\text{daNm})$	5'273.4
	$T_B = (\text{daN})$	2'812.5

- 1.1) Caratteristiche cordolo

CARATTERISTICHE GEOMETRICHE		
CORDOLO	B(m)	0.90, 1.00
	H(m)	1.00
	s(cm)=PIASTRA+EMACO	0.05

1.2) 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	$N_{BP} =$ (daN)	5'757.5
	$M_{BP}=M_B+ T_B*(H+s)$ (daNm)	22'401.6
	$T_{BP}= T_B$ (daN)	5'062.5
BARRIERA H=4.75m	$N_{BP} =$ (daN)	5'482.5
	$M_{BP}=M_B+ T_B*(H+s)$ (daNm)	12'201.6
	$T_{BP}= T_B$ (daN)	3'562.5
BARRIERA H=3.75m	$N_{BP} =$ (daN)	4'895.0
	$M_{BP}=M_B+ T_B*(H+s)$ (daNm)	8'226.6
	$T_{BP}= T_B$ (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 (°)	38
	λa_1	0.238
	λp_1	4.204
CARATTERISTICHE TERRENO		
TERRENO SOTTOSTANTE AL RILEVATO	γ (kN/m ³)	19.00
	φ (°)	32
(TERRENO TIPO 2)	λa_2	0.307
	λp_2	3.255

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

BARRIERA H=6.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{sac} * H/3 (\text{daNm})$	237.88
	$T_{SACP} = i * \gamma * H^2 * \lambda_{a1} / 2 (\text{daN})$	713.65
BARRIERA H=4.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{sac} * H/3 (\text{daNm})$	237.88
	$T_{SACP} = i * \gamma * H^2 * \lambda_{a1} / 2 (\text{daN})$	713.65
BARRIERA H=3.75m	$N_{SACP} = (\text{daN})$	0.0
	$M_{SACP} = T_{sac} * H/3 (\text{daNm})$	237.88
	$T_{SACP} = i * \gamma * H^2 * \lambda_{a1} / 2 (\text{daN})$	713.65

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

SOVRACCARICO AGENTE SUL TERRENO	
$q (\text{kN/m}^2)$	20.00

BARRIERA H=6.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_Q * H/2 (\text{daNm})$	713.65
	$T_Q = q * \lambda_{a1} * H * i (\text{daN})$	1'427.30
BARRIERA H=4.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_Q * H/2 (\text{daNm})$	713.65
	$T_Q = q * \lambda_{a1} * H * i (\text{daN})$	1'427.30
BARRIERA H=3.75m	$N_{QP} = (\text{daN})$	0.0
	$M_{QP} = T_Q * H/2 (\text{daNm})$	713.65
	$T_Q = q * \lambda_{a1} * H * i (\text{daN})$	1'427.30

2.4) 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 in direzione asse cordolo pari a 0.43cm, in base a quanto determinato in precedenza.

Tali effetti sono agenti in direzione parallela al cordolo, pertanto saranno combinati in quadratura con le altre azioni precedenti (agenti trasversalmente al cordolo).

8.1.1.2 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/m² (valore che tiene conto della presenza delle fondazioni e dei portali T.E.).

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

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

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.

H BARRIERA	D. PALO (cm)	L. PALO (m)
BARRIERA H=6.75m	80	13.0
BARRIERA H=4.75m	80	11.0
BARRIERA H=3.75m	60	11.0

SOVRACCARICO AGENTE SUL PALO	
q_1 (kN/m ²)	20.00

	SPINTA SOVRACCARICO " q_1 "		TERRENO
	TERRENO TIPO 1	TIPO 2	
BARRIERA H=6.75m	$q_{s1} = q_1 \cdot \lambda_{a1} \cdot D_{palo}$ (daN/m)	380.61	491.61
	$q_{s2} = q_1 \cdot \lambda_{a2}$ (daN/m)		
BARRIERA H=4.75m	$q_{s1} = q_1 \cdot \lambda_{a1} \cdot D_{palo}$ (daN/m)	380.61	491.61
	$q_{s2} = q_1 \cdot \lambda_{a2}$ (daN/m)		
BARRIERA H=3.75m	$q_{s1} = q_1 \cdot \lambda_{a1} \cdot D_{palo}$ (daN/m)	285.46	368.71
	$q_{s2} = q_1 \cdot \lambda_{a2}$ (daN/m)		

8.1.1.3 Azioni trasmesse dalla passerella di servizio

Definendo:

T_{vpm} = Taglio verticale estremità cordolo

T_{opm} = Taglio orizzontale estremità cordolo

M_{pm} = Momento flettente estremità cordolo

e = eccentricità asse palo estremità cordolo

Si ha che le azioni agente in sommità palo dovute alle azioni trasmesse dalla passerella di servizio valgono:

BARRIERA H=6.75m	$N_{ppm} = T_{vpm}$ (daN)	600.0
	$M_{ppm} = M_{pm} + T_{vpm} \cdot (e)$ (daNm)	828.0
	$T_{ppm} = T_{opm}$ (daN)	300.0
BARRIERA H=4.75m	$N_{ppm} = T_{vpm}$ (daN)	600.0
	$M_{ppm} = M_{pm} + T_{vpm} \cdot (e)$ (daNm)	828.0
	$T_{ppm} = T_{opm}$ (daN)	300.0
BARRIERA H=3.75m	$N_{ppm} = T_{vpm}$ (daN)	600.0
	$M_{ppm} = M_{pm} + T_{vpm} \cdot (e)$ (daNm)	828.0
	$T_{ppm} = T_{opm}$ (daN)	300.0

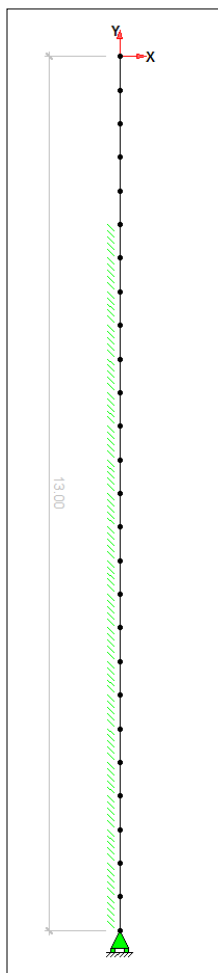
8.1.2 Combinazioni di carico

Gli effetti dei carichi, sia verticali che orizzontali, sono combinati utilizzando i coefficienti previsti dalla vigente norma ferroviaria.

Combinazione di carico	a) Peso Montante	b) Pressioni aerod.+Vento	c) Spinta delle terre	d) Spinta dovuta al sovrac. q	e) Spinta dovuta al sovrac. q ₁	f) Azioni dovute alla passerella	g) Ritiro e variazione di temp.
Verifiche SLU	1.35	1.5	1.35	1.5	1.5	1.5	1.5
Verifiche SLE (Comb. Rara)	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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=6.75m.

Schema di calcolo



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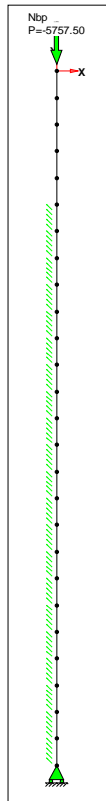
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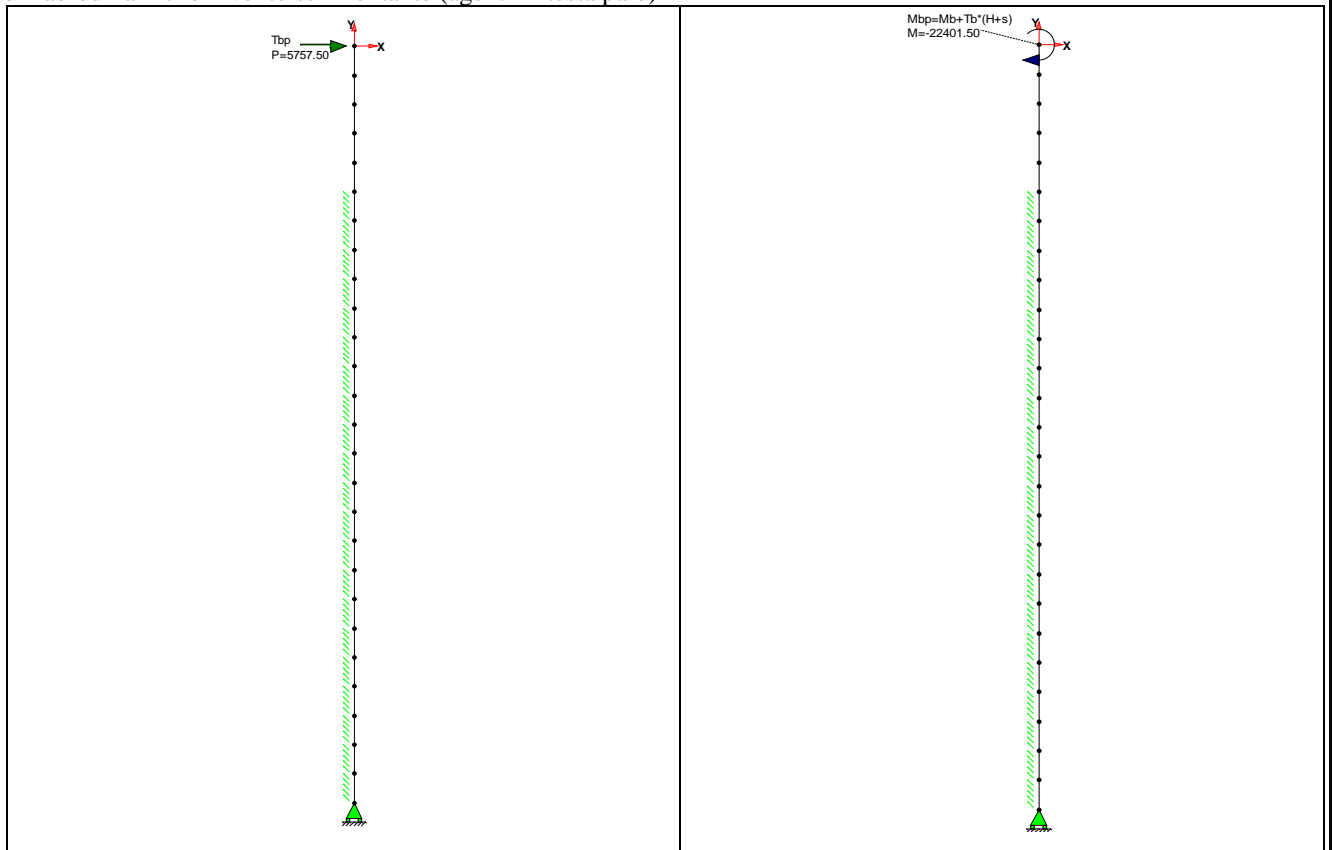
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Carichi applicati

a) Peso montante (agente testa palo)



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



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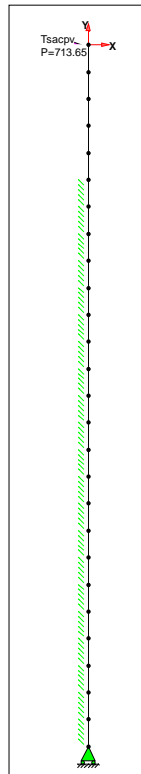
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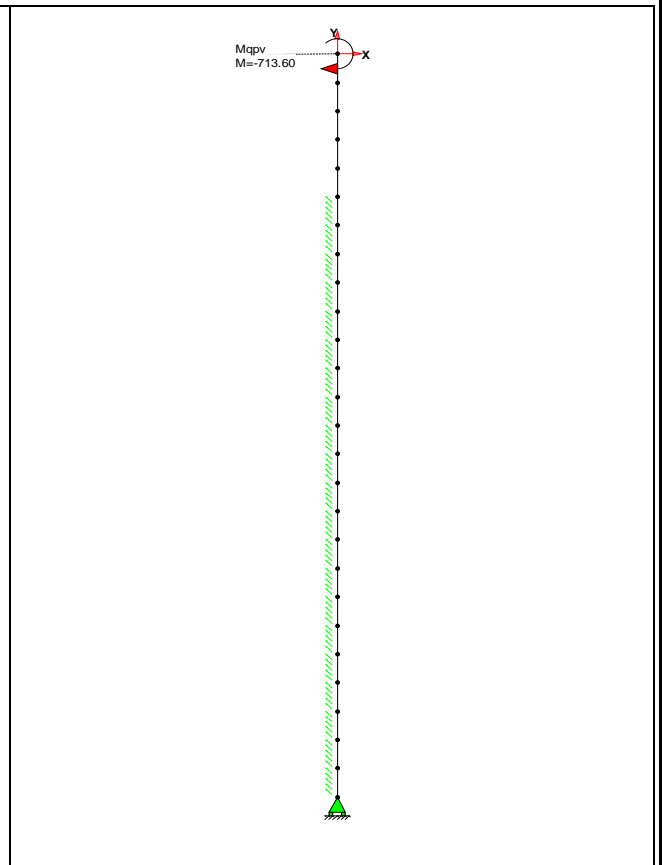
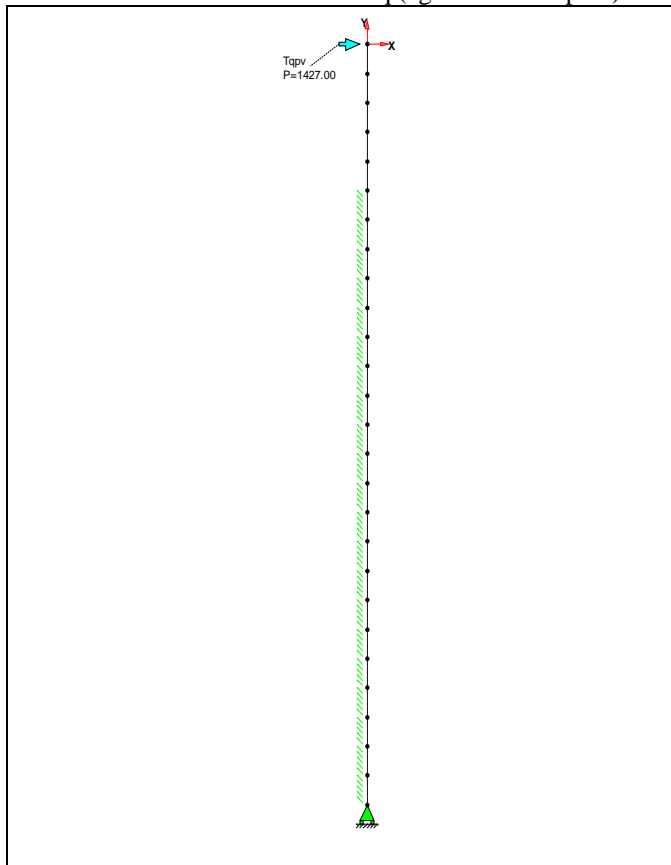
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c) Spinta attiva delle terre sulla trave (agente in testa palo)



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



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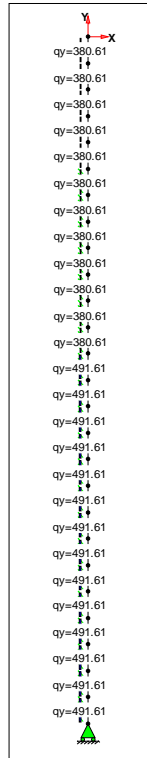
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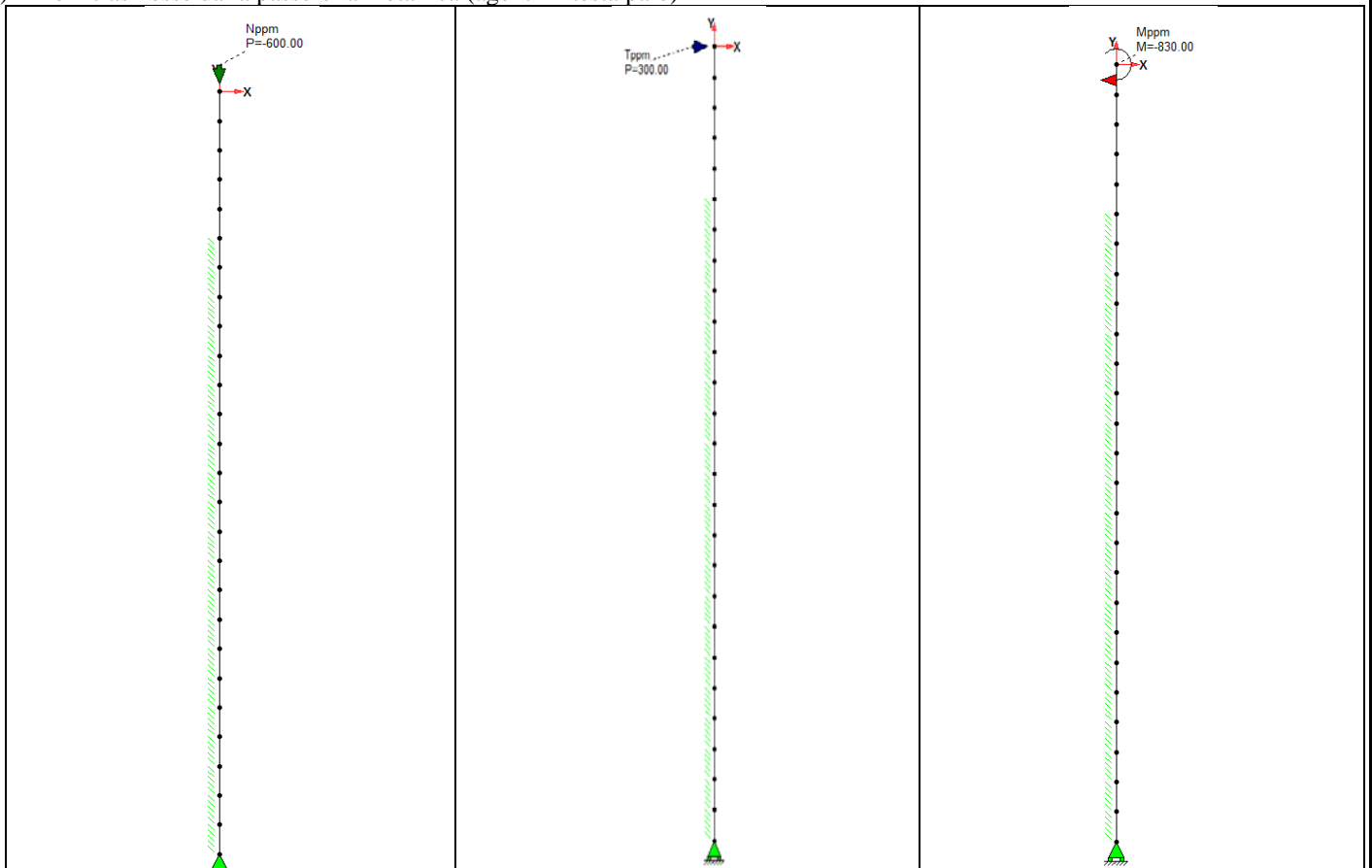
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e) Spinta sul palo dovuta al sovraccarico q_1 (agenti in testa palo)



f) Azioni trasmesse dalla passerella metallica (agenti in testa palo)



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g) Ritiro e variazione di temperatura (agenti in testa palo)

In questo caso la sommità palo viene vincolata mediante incastro scorrevole lungo l'asse del cordolo. Alla sommità palo viene imposto lo spostamento impresso dovuto al ritiro determinato in precedenza.

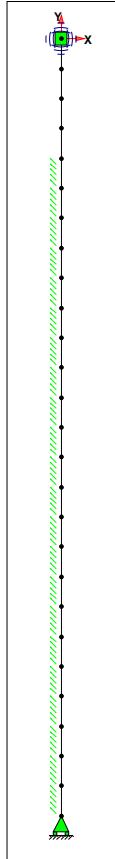


Diagramma del Momento $M_{1,1}$ (direzione perpendicolare cordolo) (condizione SLE altezza rilevato 7.0m)

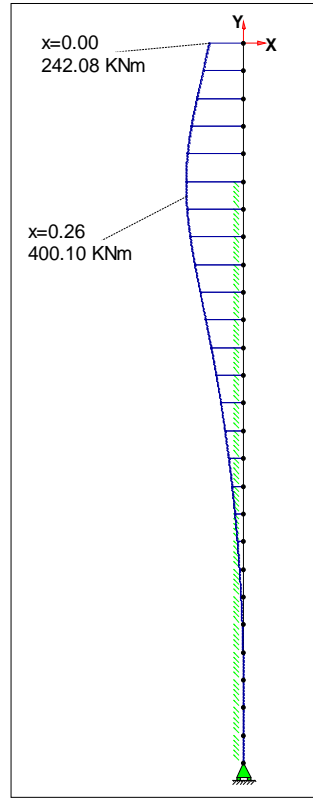


Diagramma del Momento $M_{1,1}$ (direzione perpendicolare cordolo) (condizione SLU altezza rilevato 7.0m)

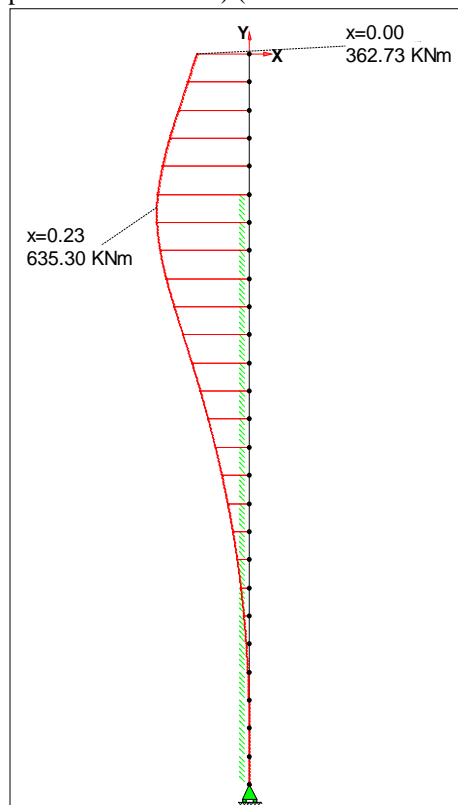


Diagramma del Taglio T_2 (direzione perpendicolare cordolo) (condizione SLE altezza rilevato 7.0m)

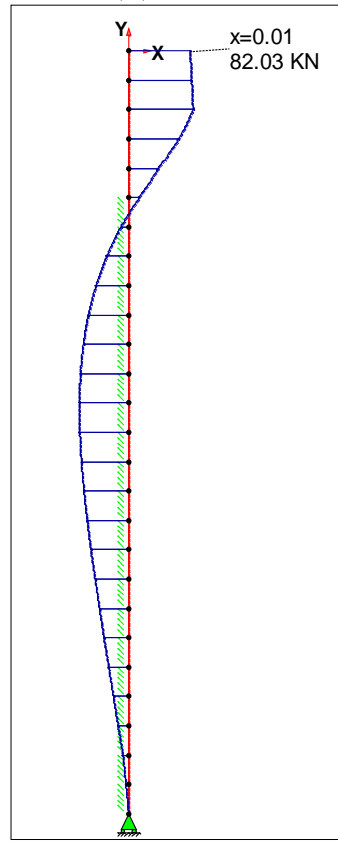


Diagramma del Taglio T_2 (direzione perpendicolare cordolo) (condizione SLU altezza rilevato 7.0m)

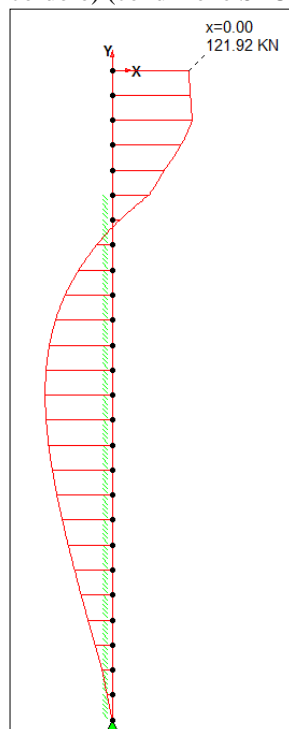


Diagramma del Momento M_{11} (direzione perpendicolare cordolo) (condizione SLE altezza rilevato 3.0m)

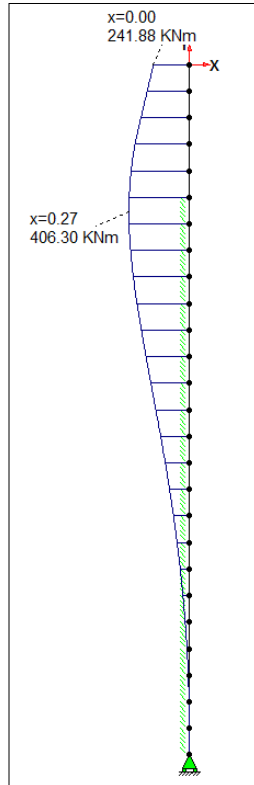


Diagramma del Momento M_{11} (direzione perpendicolare cordolo) (condizione SLU altezza rilevato 3.0m)

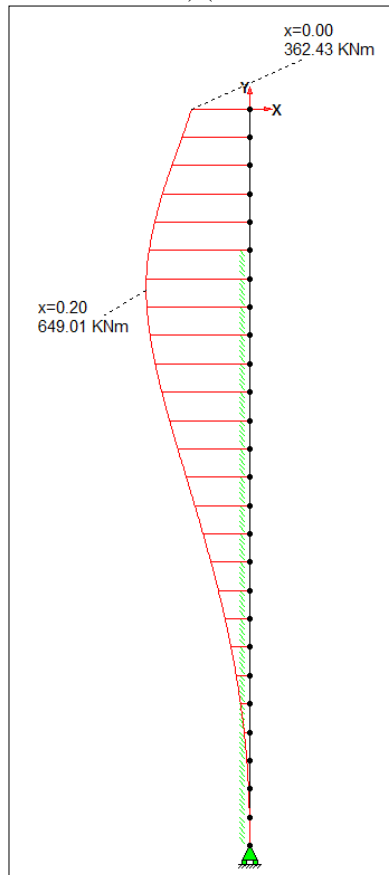


Diagramma del Taglio T_2 (direzione perpendicolare cordolo) (condizione SLE altezza rilevato 3.0m)

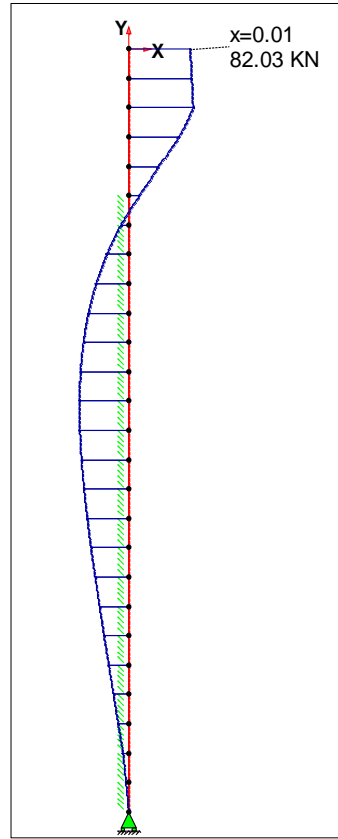


Diagramma del Taglio T_2 (direzione perpendicolare cordolo) (condizione SLU altezza rilevato 3.0m)

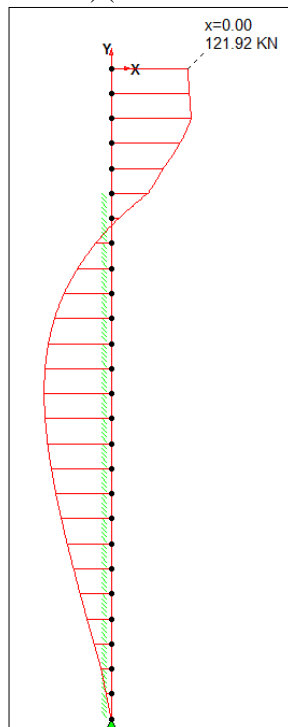


Diagramma del Momento M_{22} (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLE altezza rilevato 7.0m)

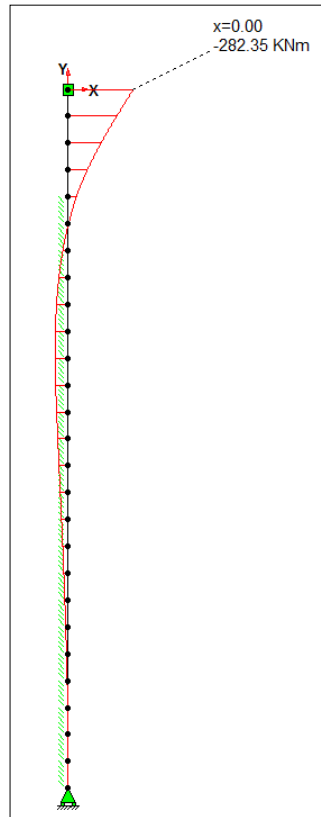


Diagramma del Momento M_{22} (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLU altezza rilevato 7.0m)

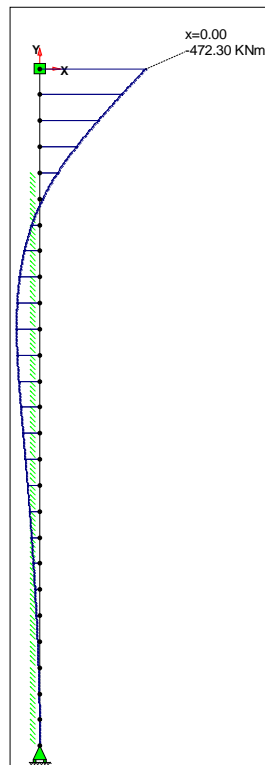


Diagramma del Taglio T_1 (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLE altezza rilevato 7.0m)

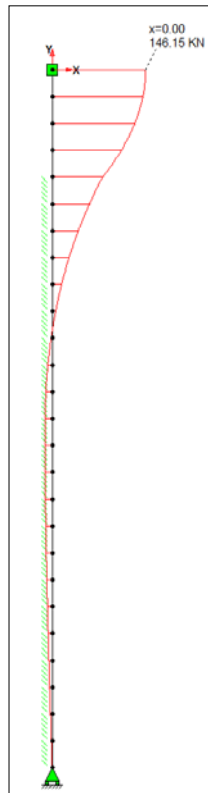


Diagramma del Taglio T_1 (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLU altezza rilevato 7.0m)

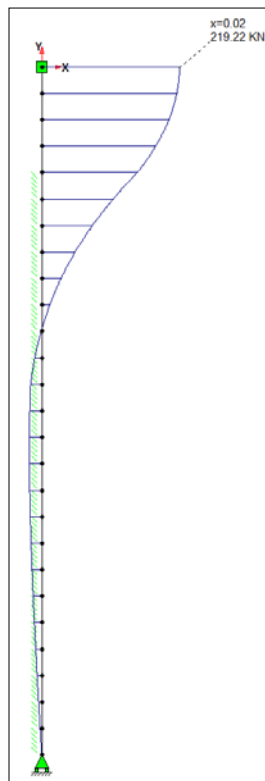


Diagramma del Momento M_{22} (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLE altezza rilevato 3.0m)

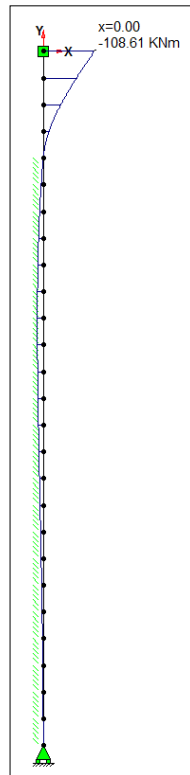
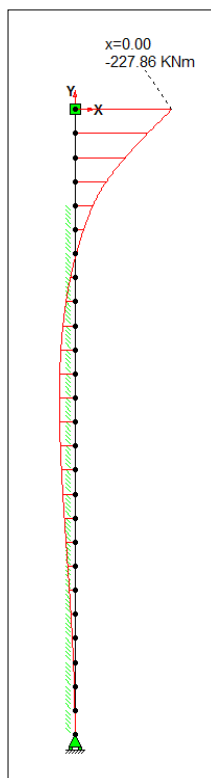


Diagramma del Momento M_{22} (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLU altezza rilevato 3.0m)



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Diagramma del Taglio T_1 (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLE altezza rilevato 3.0m)

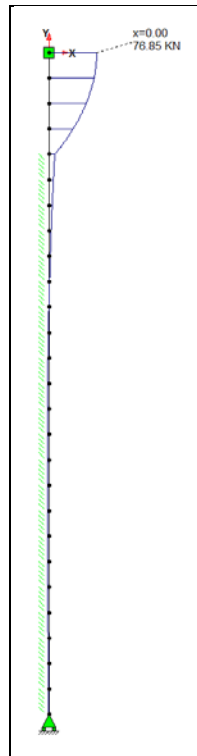
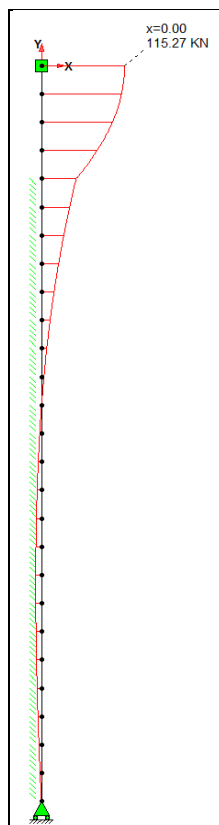


Diagramma del Taglio T_1 (dovuto al ritiro del cordolo e agente in direzione parallela al cordolo)
(condizione SLU altezza rilevato 3.0m)



8.1.3 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. Le azioni di progetto M_{Ed} e T_{Ed} risultano essere la quadratura delle corrispondenti azioni longitudinali e trasversali, in cui si è assunta la seguente convenzione:

M_{11} = Momento flettente prodotto da azioni ortogonali al cordolo,

M_{22} = Momento flettente prodotto da azioni parallele al cordolo,

T_1 = Taglio prodotto da azioni parallele al cordolo,

T_2 = Taglio prodotto da azioni ortogonali al cordolo.

8.1.3.1 Altezza rilevato = 3.0m

ALTEZZA RILEVATO: 3m			SOLLECITAZIONI SLU - STRU										
H BARRIERA	D. PALO (cm)	L. PALO (m)	M_{11max} (Testa palo) (kNm)	M_{22max} (Testa palo) (kNm)	M_{Ed} (Mtot Testa Palo) (KNm)	N_{max} (Testa palo) (kNm)	M_{11max} (Fusto Palo) (kNm)	M_{22max} (Fusto Palo) (kNm)	M_{Ed} (Mtot Fusto Palo) (KNm)	N_{max} (Fusto Palo) (kN)	T_{1max} (Testa Palo) (kN)	T_{2max} (Testa Palo) (kN)	T_{Ed} (Testa Palo) (kN)
BARRIERA H=6.75m	80	13.0	362.40	227.90	428.10	-95.36	649.00	42.50	650.39	-129.27	115.28	121.90	167.78
BARRIERA H=4.75m	80	11.0	209.39	204.90	292.96	-91.24	391.53	42.24	393.80	-125.15	104.20	88.98	137.02
BARRIERA H=3.75m	60	11.0	149.77	82.75	171.11	-82.43	318.77	5.03	318.81	-101.50	58.94	77.73	97.55

ALTEZZA RILEVATO: 3m		SOLLECITAZIONI SLE - COMBINAZIONE RARA PER VERIFICHE A FESSURAZIONE						
H BARRIERA	M_{11max} (Testa palo) (kNm)	M_{22max} (Testa palo) (kNm)	M_{TOT} (Testa palo) (kNm)	N_{max} (Testa palo) (kN)	M_{11max} (Fusto Palo) (kNm)	M_{22max} (Fusto Palo) (kNm)	M_{TOT} (Fusto Palo) (KNm)	N_{max} (Fusto Palo) (KNm)
BARRIERA H=6.75m	241.83	108.60	265.10	-63.58	406.30	5.00	406.33	-88.70
BARRIERA H=4.75m	139.83	87.86	165.14	-60.83	248.30	6.28	248.38	-85.95
BARRIERA H=3.75m	100.10	27.40	103.78	-54.95	198.30	17.66	199.08	-69.08

8.1.3.2 Altezza rilevato = 7.0m

ALTEZZA RILEVATO: 7m			SOLLECITAZIONI SLU - STRU										
H BARRIERA	D. PALO (cm)	L. PALO (m)	M_{11max} (Testa palo) (kNm)	M_{22max} (Testa palo) (kNm)	M_{Ed} (Mtot Testa Palo) (KNm)	N_{max} (Testa palo) (kNm)	M_{11max} (Fusto Palo) (kNm)	M_{22max} (Fusto Palo) (kNm)	M_{Ed} (Mtot Fusto Palo) (KNm)	N_{max} (Fusto Palo) (kN)	T_{1max} (Testa Palo) (kN)	T_{2max} (Testa Palo) (kN)	T_{Ed} (Testa Palo) (kN)
BARRIERA H=6.75m	80	13.0	362.40	472.30	595.32	-95.36	636.00	79.80	640.99	-129.27	219.23	121.90	250.84
BARRIERA H=4.75m	80	11.0	209.39	448.77	495.22	-91.24	387.10	87.50	396.87	-125.15	203.03	88.98	221.67
BARRIERA H=3.75m	60	11.0	149.77	198.95	249.02	-82.43	317.10	12.00	317.33	-101.50	110.35	77.73	134.98

ALTEZZA RILEVATO: 7m		SOLLECITAZIONI SLE - COMBINAZIONE RARA PER VERIFICHE A FESSURAZIONE						
H BARRIERA	M_{11max} (Testa palo) (kNm)	M_{22max} (Testa palo) (kNm)	M_{TOT} (Testa palo) (kNm)	N_{max} (Testa palo) (kN)	M_{11max} (Fusto Palo) (kNm)	M_{22max} (Fusto Palo) (kNm)	M_{TOT} (Fusto Palo) (KNm)	N_{max} (Fusto Palo) (KNm)
BARRIERA H=6.75m	241.83	282.35	371.76	-63.58	402.00	35.45	403.56	-88.70
BARRIERA H=4.75m	139.83	263.99	298.74	-60.83	247.30	38.12	250.22	-85.95
BARRIERA H=3.75m	100.10	111.97	150.19	-54.95	198.14	2.00	198.15	-69.08

8.2. VERIFICA A FLESSIONE, TAGLIO E FESSURAZIONE

Si riporta in forma estesa la verifica per i pali di fondazione per barriere antirumore di $H_b=6.75\text{m}$ su rilevato di H_r 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: $A_{\text{ferri } 1^{\circ}\text{strato}} = 26 \Phi 26 = 137.97 \text{ cm}^2$

Copriferro = $6.0 + 1.0 + 2.6/2 = 8.3 \text{ cm}$

Verifica a pressoflessione SLU in testa Palo

Le sollecitazioni massime in testa al palo sono pari a:

$M = 595.32 \text{ kNm}$, $N = -95.36 \text{ kN}$

Si effettua la verifica a pressoflessione con il programma Gelfi:

Verifica C.A. S.L.U. - File: Rilevato 7m-Testa Palo

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

Titolo : **h=6.75 Testa Palo**

Sezione circolare cava

Raggio esterno: 40 [cm]
Raggio interno: 0 [cm]
N° barre uguali: 26
Diametro barre: 2.6 [cm]
Copriferro (baric.): 8.3 [cm]

N° barre: 0 Zoom

Tipo Sezione

Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Sollecitazioni

S.L.U. Metodo n

N_{Ed}: 95.36 [kN]
M_{xEd}: 595.32 [kNm]
M_{yEd}: 0 [kNm]

P.to applicazione N

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

Tipo rottura

Lato calcestruzzo - Acciaio snervato

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 ‰ $\sigma_{c,adm}$: 9.75 ‰
 $\sigma_{s,adm}$: 255 N/mm² τ_{co} : 0.6
 τ_{c1} : 1.029

M_{xRd}: 1'365 [kNm]

σ_c : -14.17 N/mm²
 σ_s : 391.3 N/mm²
 ϵ_c : 3.5 ‰
 ϵ_s : 5.719 ‰
d: 71.7 [cm]
x: 27.22 x/d: 0.3797
 δ : 0.9146

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

Dominio M-N

h=6.75 Testa Palo

M [kNm] vs N [kN]

— M-NRd (red line)
● M-NEd (blue dot)

Sollecitazioni

N	N [kN]	M [kNm]
1	95.36	595.32

Aggiunge

Valori Infilisci punti

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Verifica a pressoflessione SLU nel fusto Palo

Le sollecitazioni massime nel fusto del palo sono pari a:

$M = 640.99 \text{ kNm}$, $N = -129.27 \text{ kN}$

Si effettua la verifica a pressoflessione con il programma Gelfi:

Verifica C.A. S.L.U. - File: Rilevato 7m-Fusto Palo

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

Titolo: Fusto Palo

Sezione circolare cava

Raggio esterno: 40 [cm]
 Raggio interno: 0 [cm]
 N° barre uguali: 26
 Diametro barre: 2.6 [cm]
 Copriferro (baric.): 8.3 [cm]

N° barre: 0 Zoom

Tipo Sezione

Rettan.re Trapezi
 a T Circolare
 Rettangoli Coord.

Sollecitazioni

S.L.U. Metodo n

N_{Ed}: 129.27 [kN]
 M_{xEd}: 640.99 [kNm]
 M_{yEd}: []

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: 52 N° rett. 100

Calcola MRd Dominio M-N

L_o: 0 [cm] Col. modello

Precompresso

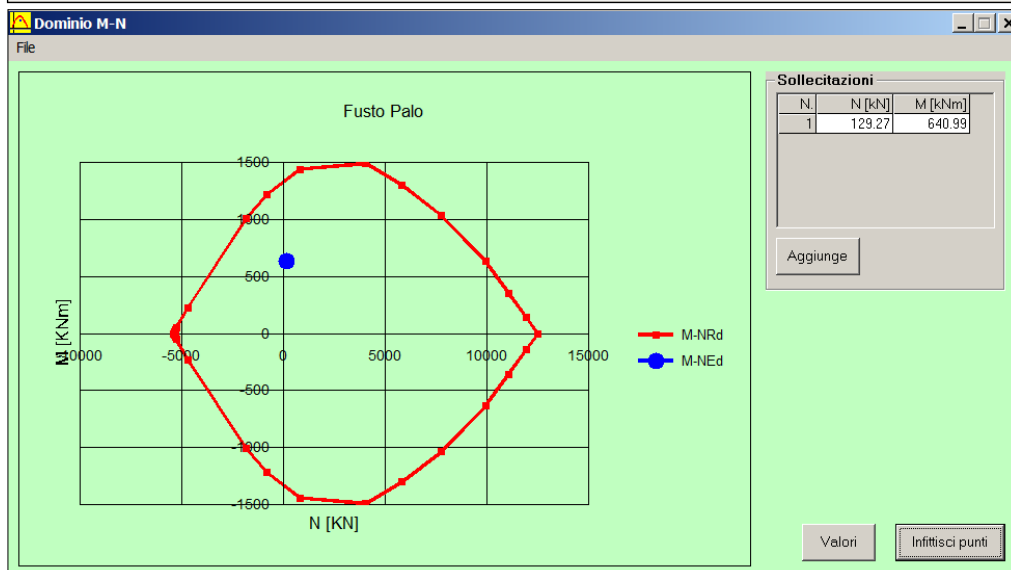
Materiali

B450C C25/30

ϵ_{su} : 67.5 % ϵ_{c2} : 2 %
 f_{yd} : 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 % $\sigma_{c,adm}$: 9.75
 $\sigma_{s,adm}$: 255 N/mm² τ_{co} : 0.6
 τ_{cl} : 1.829

M_{xRd}: 1'370 [kNm]

σ_c : -14.17 N/mm²
 σ_s : 391.3 N/mm²
 ϵ_c : 3.5 %
 ϵ_s : 5.657 %
 d: 71.7 [cm]
 x: 27.41 x/d: 0.3822
 δ : 0.9178



Verifica a taglio

Tmax = 250.84 kN

V_{rd}	=	300.84	kN	Resistenza a taglio di elementi strutturali dotati di specifica armatura a taglio
V_{ed}	=	250.84	kN	Valore di calcolo dello sforzo di taglio agente
V_{rsd}	=	300.84	kN	Resistenza di calcolo a "taglio trazione"
V_{rcd}	=	1174.62	kN	Resistenza di calcolo a "taglio compressione"
N_{ed}	=	0.00	kN	Valore di calcolo dello sforzo normale
sezione verificata a taglio				
θ	=	30.00	°	Inclinazione puntoni di cls rispetto all'asse della trave
b_w	=	68.00	cm	Larghezza utile della sezione
d	=	62.83	cm	Altezza utile della sezione
ϕ_{staf}	=	10	mm	Diametro staffe
	=	2	n°	n°braccia staffe
A_{sw}	=	157	mm ²	Area armatura trasversale
s	=	20	cm	Interasse tra due armature trasversali consecutive
α	=	90	°	angolo d'inclinazione dell'armatura trasversale rispetto all'asse della trave
f_{yk}	=	450	N/mm ²	Resistenza a trazione caratteristica dell'acciaio delle staffe

Verifica a fessurazione in testa palo

VERIFICHE A FESSURAZIONE				
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	4.79 N/mm ²	(> $f_{ctk} = 2.19$ N/mm ²)	si formano le fessure
Ampiezza fessura	$w_k =$	0.184mm		

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	$A_{se} =$	137.97	cm^2	
Copri ferro baricentro acciaio esterno	$c_s =$	8.3	cm	
Area armatura interna	$A_{si} =$	0	cm^2	
Copri ferro baricentro acciaio interno	$c's =$	8.3	cm	
Ricoprimento barre più esterne	$c =$	7.0	cm	
Ricoprimento barre più interne	$c+S =$	7.0	cm	
Diametro massimo barre	$\Phi =$	2.6	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	$M_{es} =$	371.76	kNm	
Sforzo assiale in condizioni di esercizio	$N_{es} =$	-63.58	kN	
Rapporto sforzo normale/momento	$r_{es} =$	-0.00171	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	
Area ideale	$A_{cid} =$	7094	cm^2	
Momento d'inerzia area ideale	$J_{cid} =$	3049435	cm^4	
Modulo di resistenza non fessurato	$W_{sr} =$	76236	cm^3	
Momento di formazione delle fessure	$M_{ff} =$	162.52	kNm	
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	4.79	N/mm^2	> σ_{mat}
Sezione fessurata: apertura fessure				
Momento flettente in condizioni di fessurazione	$M =$	371.76	kNm	
Sforzo assiale in condizioni di fessurazione	$N =$	-63.58	kN	
Rapporto sforzo normale/momento	$r =$	-0.00171		
Distanza asse neutro da lembo compresso	$x_p =$	30.56	cm	
Tensione cls	$\sigma_c =$	-6.79	N/mm^2	
Tensione barra esterna tesa	$\sigma_s =$	139.00	N/mm^2	
Momento di fessurazione	$M_{sr} =$	195.4	kNm	
Tensione nell'acciaio prodotta da M_{sr}	$\sigma_{sr} =$	73.05	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	$\sigma_1 =$	4.79	N/mm^2	
	$\sigma_2 =$	-4.97	N/mm^2	
Coefficiente k_3	$k_3 =$	0.125		
Larghezza efficace	$b_{eff} =$	7.7	cm	
Altezza efficace	$d_{eff} =$	24.7	cm^2	
Area efficace	$A_{ceff} =$	190.3	cm^2	
Area armature poste in A_{ceff}	$A_s =$	5.3	cm^2	
Distanza media fra due fessure attigue	$s_{rm} =$	20.21	cm	
Deformazione unitaria media				
Coefficiente β_1	$\beta_1 =$	1.0		
Coefficiente β_2	$\beta_2 =$	0.5		
Deformazione unitaria media	$\epsilon_{sm} =$	5.36E-04		
Ampiezza fessura				
	$w_k =$	0.184	mm	< w_{amm}

Verifica a fessurazione nel fusto del palo

VERIFICHE A FESSURAZIONE

Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	5.16 N/mm ²	(> $f_{ctk} = 2.19$ N/mm ²)	si formano le fessure
Ampiezza fessura	$w_k =$	0.194mm		

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	$A_{se} =$	137.97	cm ²	
Copriferro baricentro acciaio esterno	cs =	8.2	cm	
Area armatura interna	$A_{si} =$	0	cm ²	
Copriferro baricentro acciaio interno	c's =	8.3	cm	
Ricoprimento barre più esterne	c =	7.0	cm	
Ricoprimento barre più interne	c+S =	7.0	cm	
Diametro massimo barre	$\phi =$	2.6	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	$M_{es} =$	403.56	kNm	
Sforzo assiale in condizioni di esercizio	$N_{es} =$	-88.70	kN	
Rapporto sforzo normale/momento	$r_{es} =$	-0.00220	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	
Area ideale	$A_{cid} =$	7094	cm ²	
Momento d'inerzia area ideale	$J_{cid} =$	3056006	cm ⁴	
Modulo di resistenza non fessurato	$W_{sr} =$	76400	cm ³	
Momento di formazione delle fessure	$M_{ff} =$	162.87	kNm	
Trazione nel cls prodotta da M_{es} ed N_{es}	$\sigma_{ct} =$	5.16	N/mm ²	> σ_{ct}
Sezione fessurata: apertura fessure				
Momento flettente in condizioni di fessurazione	M =	403.56	kNm	
Sforzo assiale in condizioni di fessurazione	N =	-88.70	kN	
Rapporto sforzo normale/momento	r =	-0.00220		
Distanza asse neutro da lembo compresso	$x_p =$	30.77	cm	
Tensione cls	$\sigma_c =$	-7.49	N/mm ²	
Tensione barra esterna tesa	$\sigma_s =$	149.40	N/mm ²	
Momento di fessurazione	$M_{sr} =$	195.9	kNm	
Tensione nell'acciaio prodotta da M_{sr}	$\sigma_{sr} =$	72.52	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	$\sigma_1 =$	5.16	N/mm ²	
	$\sigma_2 =$	-5.41	N/mm ²	
Coefficiente k_3	$k_3 =$	0.125		
Larghezza efficace	$b_{eff} =$	7.7	cm	
Altezza efficace	$d_{eff} =$	24.6	cm ²	
Area efficace	$A_{ceff} =$	189.5	cm ²	
Area armature poste in A_{ceff}	$A_s =$	5.3	cm ²	
Distanza media fra due fessure attigue	$s_{rm} =$	20.19	cm	
Deformazione unitaria media				
Coefficiente β_1	$\beta_1 =$	1.0		
Coefficiente β_2	$\beta_2 =$	0.5		
Deformazione unitaria media	$\varepsilon_{sm} =$	5.65E-04		
Ampiezza fessura	$w_k =$	0.194	mm	< w_{arm}

Di seguito si riportano, raccolte in tabelle, le verifiche a pressoflessione (agli stati limite, in condizioni di esercizio e di fessurazione) nonché le verifiche a taglio, per tutte le tipologie dei pali presenti (sia nella sezione di testa palo che lungo il fusto).

NB: nelle verifiche a Fessurazione il valore w_k rappresenta l'ampiezza delle fessure in mm; nelle verifiche a Pressoflessione ed a Taglio agli SLU il coefficiente u rappresenta il coefficiente di utilizzo della sezione, che deve risultare sempre ≤ 1 .

8.2.1 Altezza rilevato = 3.0m

ALTEZZA RILEVATO: 3m			CARATTERISTICHE GEOMETRICHE			
H BARRIERA	D. PALO (cm)	L. PALO (m)	n°	D. FERRI (1° strato)	A _{ferrri}	% armatura
BARRIERA H=6.75m	80	13.0	26	26	137.97	0.027
BARRIERA H=4.75m	80	11.0	26	22	98.78	0.020
BARRIERA H=3.75m	60	11.0	18	26	95.52	0.034

M _{Ed} (Mtot Testa Palo) (KNm)	N _{max} (Testa palo) (kN)	M _{RD} (kNm)	u=M _{Ed} /M _{RD}	M _{Ed} (Mtot Fusto Palo) (KNm)	N _{max} (Fusto Palo) (kN)	M _{RD} (kNm)	u=M _{Ed} /M _{RD}	T _{1max} (Testa Palo) (kN)	T _{2max} (Testa Palo) (kN)	T _{Ed} (Testa Palo) (kN)	T _{RD} (kN)	u=T _{Ed} /T _{RD}
428.10	-95.36	1353.00	0.32	650.39	-129.27	1370.00	0.47	115.28	121.90	167.78	300.84	0.56
292.96	-91.24	1034.00	0.28	393.80	-125.15	1040.00	0.38	104.20	88.98	137.02	300.99	0.46
171.11	-82.43	638.10	0.27	318.81	-101.50	639.30	0.50	58.94	77.73	97.55	222.47	0.44

SOLLECITAZIONI PER VERIFICHE A FESSURAZIONE				VERIFICHE A FESSURAZIONE							
TESTA PALO		FUSTO PALO		TESTA PALO				FUSTO PALO			
M _{TOT} (Testa palo) (kNm)	N _{max} (Testa palo) (kN)	M _{TOT} (Fusto Palo) (KNm)	N _{max} (Fusto Palo) (KNm)	σ _c (N/mm ²)	σ _s (N/mm ²)	x (cm)	Fess. Wk	σ _c (N/mm ²)	σ _s (N/mm ²)	x (cm)	Fess. Wk
265.10	-63.58	406.33	-88.70	-4.93	97.77	30.76	0.12	-7.54	150.40	30.76	0.19
165.14	-60.83	248.38	-85.95	-3.68	79.52	29.46	0.06	-5.53	120.20	29.36	0.45
103.78	-54.95	199.08	-69.08	-4.24	73.60	24.44	0.08	-8.71	151.00	23.98	0.19

8.2.2 Altezza rilevato = 7.0m

ALTEZZA RILEVATO: 3m			CARATTERISTICHE GEOMETRICHE			
H BARRIERA	D. PALO (cm)	L. PALO (m)	n°	D. FERRI (1° strato)	A _{ferrri}	% armatura
BARRIERA H=6.75m	80	13.0	26	26	137.97	0.027
BARRIERA H=4.75m	80	11.0	26	22	98.78	0.020
BARRIERA H=3.75m	60	11.0	18	26	95.52	0.034

VERIFICA A PRESSOFLESSIONE IN TESTA PALO				VERIFICA A PRESSOFLESSIONE NEL FUSTO PALO				VERIFICA A TAGLIO				
M _{Ed} (Mtot Testa Palo) (KNm)	N _{max} (Testa palo) (kN)	M _{RD} (kNm)	u=M _{Ed} /M _{RD}	M _{Ed} (Mtot Fusto Palo) (KNm)	N _{max} (Fusto Palo) (kN)	M _{RD} (kNm)	u=M _{Ed} /M _{RD}	T _{1max} (Testa Palo) (kN)	T _{2max} (Testa Palo) (kN)	T _{Ed} (Testa Palo) (kN)	T _{RD} (kN)	u=T _{Ed} /T _{RD}
595.32	-95.36	1365.00	0.44	640.99	-129.27	1370.00	0.47	219.23	121.90	250.84	300.84	0.83
495.22	-91.24	1034.00	0.48	396.87	-125.15	1040.00	0.38	203.03	88.98	221.67	300.99	0.74
249.02	-82.43	638.10	0.39	317.33	-101.50	639.30	0.50	110.35	77.73	134.98	222.47	0.61

SOLLECITAZIONI SLE - COMBINAZIONE RARA PER VERIFICHE A FESSURAZIONE				TESTA PALO				FUSTO PALO			
M _{TOT} (Testa palo) (kNm)	N _{max} (Testa palo) (kN)	M _{TOT} (Fusto Palo) (KNm)	N _{max} (Fusto Palo) (KNm)	σ _c (N/mm ²)	σ _s (N/mm ²)	x (cm)	Fess. Wk (mm)	σ _c (N/mm ²)	σ _s (N/mm ²)	x (cm)	Fess. Wk
371.76	-63.58	403.56	-88.70	-6.88	139.00	30.56	0.18	-7.49	149.40	30.77	0.19
298.74	-60.83	250.22	-85.95	-6.63	149.30	28.75	0.19	-5.57	121.20	29.35	0.15
150.19	-54.95	198.15	-69.08	-6.57	113.60	24.02	0.14	-8.67	150.20	23.99	0.19

8.3. 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 2m del terreno in situ (nel caso di $H_{ri}=7m$) o nei primi 5m (nel caso di $H_{ri}=3m$). 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 $H_{ri}=7m$ che di $H_{ri}=3m$.

I calcoli sono svolti con gli usuali criteri indicati in letteratura ed in Normativa propri del metodo agli Stati Limite (Approccio 1), prendendo in considerazione il carico massimo sui pali nelle condizioni di carico STRU (A1-M1-R1), GEO (A2-M1-R2) e SIMICHE (1-M1-R3). Le verifiche risultano sempre soddisfatte.

La casistica presente è la seguente:

- Barriere $H=6.75m$ (interasse pali $i=3.0m$, diametro palo = $0.80m$, $L_{palo}=13.0m-19.0m$, cordolo: $1.00*1.00m$),
- Barriere $H=4.75m$ (interasse pali $i=3.0m$, diametro palo = $0.80m$, $L_{palo}=11.0m$, cordolo: $1.00*1.00m$),
- Barriere $H=3.75m$ (interasse pali $i=3.0m$, diametro palo = $0.60m$, $L_{palo}=11.00m$, cordolo: $0.90*1.00m$)

Calcolo del carico massimo sui pali:

- Barriere $H=6.75m$
 Peso medio pannelli: $p_{pann} = (3.00*0.75+3.50*3.00+1.00*3.00+1.00*6.95/3.00)/6.75=2.68kN/m^2$ (assunto $2.70kN/m^2$)
 Cordolo: $1.00*1.00*25.0*3.0 = 75.0 kN$
 Passerella di servizio = $2.00kN/m*3.0 = 6.0 kN$
 Pannelli e peso proprio montante: $2.70*6.75*3.0 = 54.7 kN$
 Peso totale = $135.7 kN$ (carico assunto $P_{max}=135.0kN$)
- Barriere $H=4.75m$
 Cordolo: $1.00*1.00*25.0*3.0 = 75.0 kN$
 Passerella di servizio = $2.00kN/m*3.0 = 6.0 kN$
 Pannelli e peso proprio montante: $3.50*4.75*3.0 = 49.9 kN$
 Peso totale = $130.9 kN$ (carico assunto $P_{max}=130.0kN$)
- Barriere $H=3.75m$
 Cordolo: $0.90*1.00*25.0*3.0 = 67.5 kN$
 Passerella di servizio = $2.00kN/m*3.0 = 6.0 kN$
 Pannelli e peso proprio montante: $4.00*3.75*3.0 = 45.0 kN$
 Peso totale = $118.5 kN$ (carico assunto $P_{max}=120.0kN$)

Tabella dei coefficienti moltiplicativi "A" per la determinazione dei carichi nelle Combinazioni agli Stati Limite (Approccio 1)

		STRU	GEO	SIS
Strutturali	γ_{G1}	1.35	1.00	1.00
Permanenti	γ_{G2}	1.50	1.30	1.00
Accidentali	γ_Q	1.50	1.30	1.00

Pertanto i carichi di Progetto risultano essere i seguenti (tra parentesi è indicato il valore arrotondato assunto)

	STRU (kN)	GEO (kN)	SIS (kN)
$H=6.75m$	192.3 →(195)	154.2 →(155)	135.7 →(135)
$H=4.75m$	185.1 →(185)	147.6 →(150)	130.9 →(130)
$H=3.75m$	167.6 →(170)	133.8 →(135)	118.5 →(120)

Caratterizzazione geotecnica dei terreni

a) Rilevato ferroviari, Tipo 1

Le caratteristiche del rilevato ferroviario sono di seguito riassunte:

- $\gamma = 20 kN/m^3$ (peso di volume secco)
- $\phi = 38^\circ$ (utilizzabile nelle verifiche in oggetto)
- $\delta = 0^\circ$
- $c = 0 kPa$

b) Terreno sottostante al rilevato, Tipo 2

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

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 32^\circ$
- $c = 0 \text{ kPa}$

c) Terreno sottostante al rilevato, Tipo 3 (nel Comune di Desenzano del Garda, da pk 122km a pk 126.575km)

Nel comune di Desenzano del Garda per il terreno sottostante al rilevato le caratteristiche sono le seguenti:

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 28^\circ$
- $c = 0$
- $C_u = 30 \text{ kPa}$ (coesione non drenata)

Pertanto per tale tipo di terreno verranno esaminate sia le condizioni non drenate, sia quelle drenate.

d) Terreno sottostante al rilevato, Tipo 4 (nel Comune di Peschiera del Garda, da pk 126.575km a pk 135km)

Nel comune di Peschiera del Garda per il terreno sottostante al rilevato le caratteristiche sono le seguenti:

- $\gamma = 19 \text{ kN/m}^3$ (peso di volume secco)
- $\gamma' = 10 \text{ kN/m}^3$ (peso di volume efficace)
- $\phi = 28^\circ$
- $c = 0$
- $C_u = 70 \text{ kPa}$ (coesione non drenata)

Pertanto per tale tipo di terreno verranno esaminate sia le condizioni non drenate, sia quelle drenate.

Tabella dei coefficienti parziali "M" sulle caratteristiche dei materiali nelle Combinazioni agli Stati Limite (Approccio 1)

	(M1)	(M2)
$\text{tang}\Phi$	1.00	1.25
c'_k	1.00	1.25
C_{Uk}	1.00	1.40
γ_t	1.00	1.00

Tabella dei coefficienti parziali "R" da applicare alle resistenze caratteristiche nelle Combinazioni agli Stati Limite (Approccio 1)
(nel caso in oggetto siamo in presenza di **Pali trivellati**)

RESISTENZA		Pali infissi			Pali trivellati			Pali ad elica continua		
		(R1)	(R2)	(R3)	(R1)	(R2)	(R3)	(R1)	(R2)	(R3)
Base	γ_b	1.00	1.45	1.15	1.00	1.70	1.35	1.00	1.60	1.30
Laterale in compressione	γ_s	1.00	1.45	1.15	1.00	1.45	1.15	1.00	1.45	1.15
Totale	γ_t	1.00	1.45	1.15	1.00	1.60	1.30	1.00	1.55	1.25
Laterale in trazione	γ_{st}	1.00	1.60	1.25	1.00	1.60	1.25	1.00	1.60	1.25

Doc. N.

Progetto
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8.3.1 Barriere Hb=6.75m

1.) Barriere Hb=6.75m, Hril=7.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m. Hbar=6.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:
 $Rcd = Rbd + Rad + Wp$
 Centro limite e Trazione:
 $Rcd_t = Rbd_t + Wp_t$
 in cui:
 $Rbd = Rbk / \gamma_b$: Resistenza alla punta di progetto
 $Rbd_t = Rbk_t / \gamma_b$: Resistenza laterale di progetto
 $Rbk = Rbk / \gamma_c$: Resistenza alla punta caratteristica
 $Rbk_t = Rbk_t / \gamma_c$: Resistenza laterale caratteristica
 $Rbm = Q_b$: Resistenza media alla punta
 $Rbm_t = Q_b$: Resistenza media laterale
 $Rsd_t =$: Resistenza laterale di progetto a trazione
 Wp : Peso proprio del palo (alloggiato se in compressione)
 Wp_t : Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, $\phi > 0$)

In accordo alla Eq. di Berzaglia, per pali di grande diametro:

$q_b = Nq' \times \alpha \times \psi$
 con: Nq' : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (vedi = 0,05, 0,10 D)
 α : coefficiente di capacità portante

Per i pali di grosso diametro ($d > 70cm$) Nq' è dato dal grafico a destra sottostante:

Mentre per pali di piccolo diametro ($d = 6-30cm$) e medio diametro ($d = 31-70cm$): $q_b = Nq \times \alpha \times \psi$

In cui: $Nq = 2 \times c' \times (\tan \phi' / \tan \phi) \times (1 + \psi / Z)$ (equivalente al valore di Nq del grafico di Berzaglia)

In ogni caso viene assunto per ψ il valore limite di q_b, lim .

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni ai totali

La resistenza alla punta viene espressa come:

$q_b = \sigma_v + 9 \times c_u$ (in condizioni non drenate)
 $q_b = \sigma_v + Nq' + c' \times \psi$ (in condizioni drenate) essendo: $Nq' = (Nq' - 1) \times \psi \times \psi$

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, $\phi > 0$)

$qs = K' \times \tan^2 \phi \times \sigma_v$ con: K : assunto pari a 0,65 (pali di grande/medio diametro) 0,50 (pali di piccolo diametro), $\tan^2 \phi = \tan^2 \phi'$

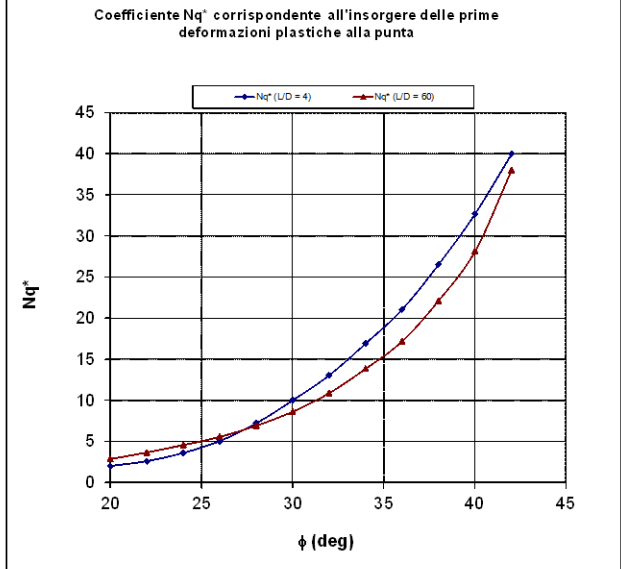
In ogni caso non viene superato il valore limite di q_{lim} .

Terreni coesivi (c > 0)

$qs = \alpha \times c_u$ (in cond. non dr.) con: α : variabile in funzione di σ_v secondo la seguente tabella (AGI - 1984)

$qs = \alpha' \times c_u \times K' \times \tan^2 \phi \times \sigma_v$ (in cond. dren.)

σ_v (kPa)	α
≤ 25	0,50
da 26 a 50	0,80
da 51 a 75	0,60
> 75	0,40



CARATTERISTICHE GEOMETRICHE

	unità		
Diametro palo	m	0,80	palo di grande/medio diam.?
Superficie circolare alla punta	m ²	0,50	
Superficie laterale per lunghezza unitaria	m ²	2,51	
peso specifico del palo	kN/m ³	25,00	

FALDA

Quota livello falda da Q.T.P.	m	6,00
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SOMRACCARICO A Q.T.P.

Tensione totale in testa palo	kN/m ²	20,0
Tensione e filtrare in testa palo		20,0

COEFFICIENTI DI SICUREZZA

Tipo di Palo	γ	Tirante/lo
coefficiente γ_b	1,00	
coefficiente γ_c	1,00	
coefficiente γ_s	1,00	
coefficiente γ_t	1,70	

CARICO DI PROGETTO Ed

Ed (Com Ed.) / azione

	LN	LN
APP.1-COMB1 SLU-STR1	195	
APP.1-COMB2 SLU-GE.0	155	
APP.1-COMB2 SLV-SIS	135	

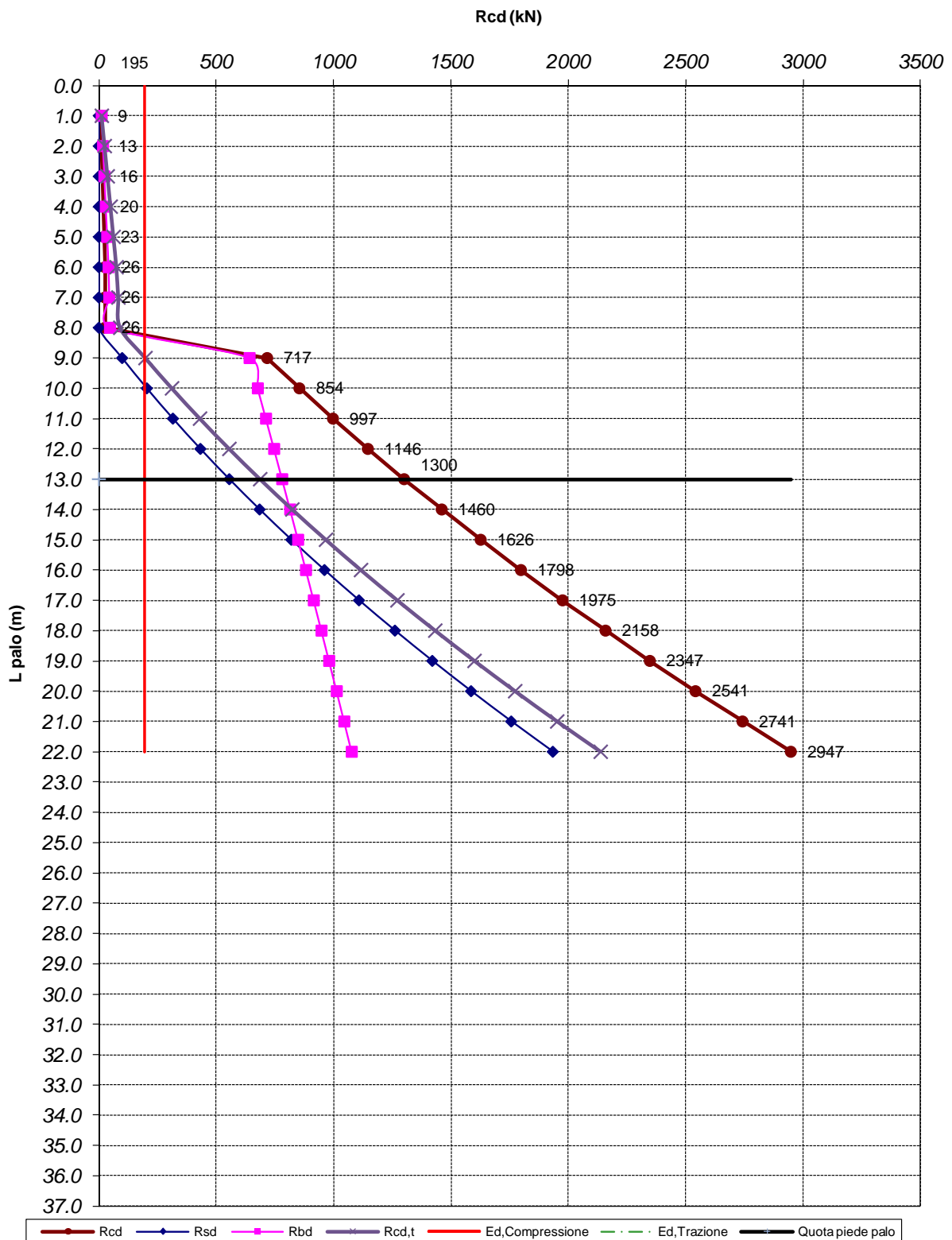
	m
Lunghezza palo di progetto	13,00
Proiezione totale palo	0,00
Quota palo palo	13,00

PROFONDITA' INDAGATA	Red
quota minima	0,00
quota massima	22,00
	2947

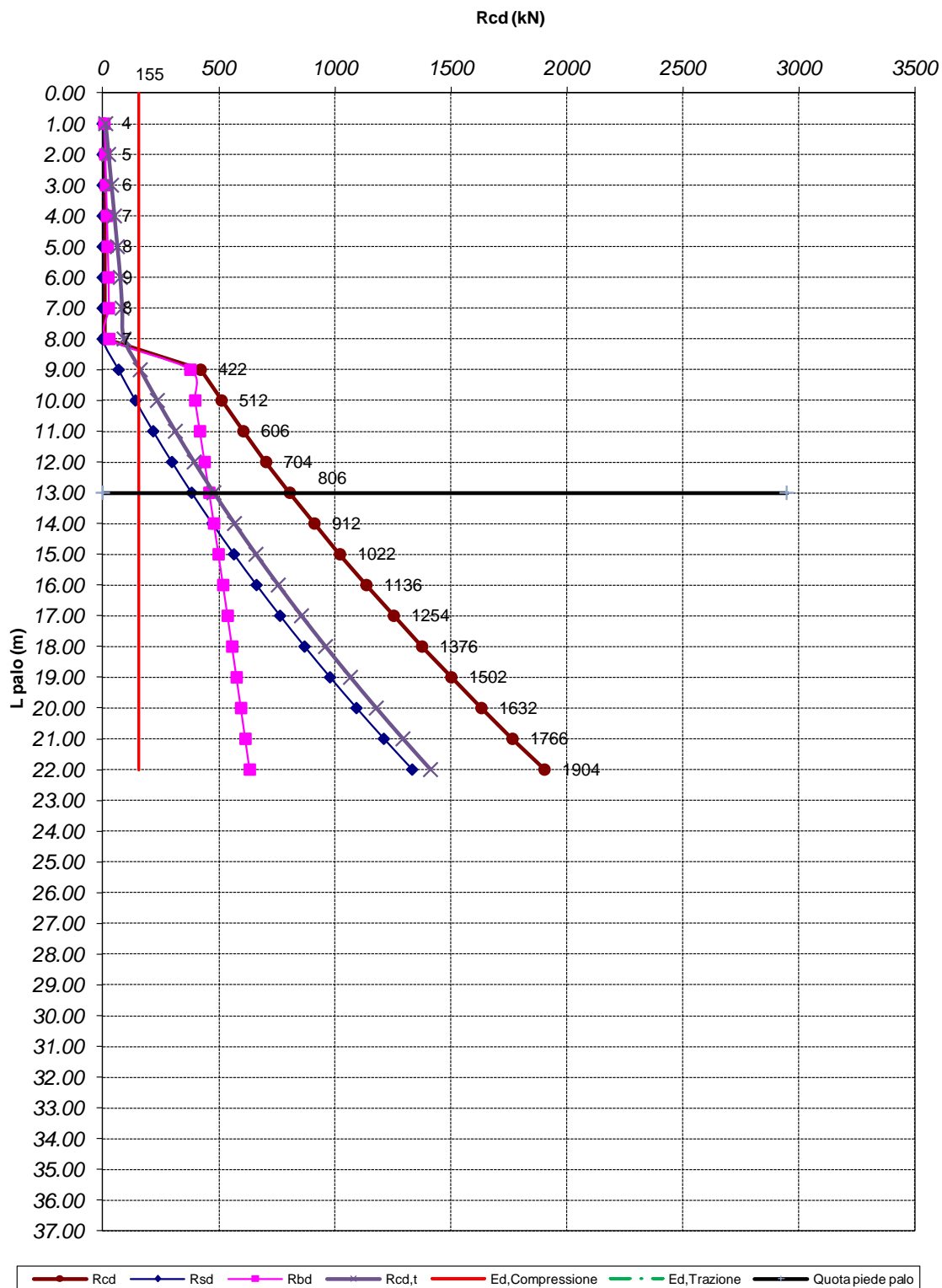
STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	BA	A	cu	ϕ'	γ	γ'	qs	K	qv	qv'	tamb	qs,lim	qs	Qs	Nq'	c' * ψ (kPa)	qb,lim	qb	Qb	Rcd	Rcd_t	Rbd	Wp	Rcd	Rcd_t	Wp'
1	Rilevato mare	0,0	-8,0	0,0	0,0	20,0	0,0	0,650	20,0	20,0	0,000	150	0,0	0	1,0	0,0	0	40,0	20	0	0	12	3	9	13	13	
1	1,0	0,0	0,0	0,0	0,0	20,0	0,0	0,650	40,0	40,0	0,000	150	0,0	0	1,0	0,0	0	60,0	30	0	0	18	5	13	25	25	
1	2,0	0,0	0,0	0,0	0,0	20,0	0,0	0,650	80,0	80,0	0,000	150	0,0	0	1,0	0,0	0	80,0	40	0	0	24	8	16	38	38	
1	3,0	0,0	0,0	0,0	0,0	20,0	0,0	0,650	120,0	120,0	0,000	150	0,0	0	1,0	0,0	0	100,0	50	0	0	30	10	20	50	50	
1	4,0	0,0	0,0	0,0	0,0	20,0	0,0	0,650	160,0	160,0	0,000	150	0,0	0	1,0	0,0	0	120,0	60	0	0	35	13	23	63	63	
1	5,0	0,0	0,0	0,0	0,0	20,0	0,0	0,650	190,0	190,0	0,000	150	0,0	0	1,0	0,0	0	140,0	70	0	0	41	15	26	75	75	
1	6,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	150,0	150,0	0,000	150	0,0	0	1,0	0,0	0	150,0	75	0	0	44	16	26	83	83	
2	7,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	178,0	178,0	0,000	150	0,0	0	1,0	0,0	0	160,0	80	0	0	47	21	26	91	91	
2	8,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	273,0	273,0	0,000	150	0,0	0	1,0	0,0	0	217,0	109	99	99	642	24	717	199	100	
3	9,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	197,0	197,0	0,625	150	67,0	168	12,8	0,0	0	229,0	115	115	204	677	27	854	312	108	
3	10,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	236,0	236,0	0,625	150	71,0	347	12,7	0,0	0	240,0	121	315	315	712	30	997	431	116	
3	11,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	274,0	274,0	0,625	150	79,0	735	12,6	0,0	0	252,0	129	432	432	747	33	1146	556	124	
3	12,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	273,0	273,0	0,625	150	83,0	944	12,6	0,0	0	264,0	132	555	555	781	36	1300	687	132	
3	13,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	292,0	292,0	0,625	150	87,0	1164	12,5	0,0	0	275,0	136	685	685	815	39	1460	824	140	
3	14,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	311,0	311,0	0,625	150	91,0	1393	12,5	0,0	0	287,0	143	828	828	849	42	1626	967	148	
3	15,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	330,0	330,0	0,625	150	95,0	1633	12,4	0,0	0	298,0	150	961	961	882	45	1798	1117	156	
3	16,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	349,0	349,0	0,625	150	99,0	1883	12,4	0,0	0	309,0	156	1108	1108	915	48	1978	1272	164	
3	17,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	368,0	368,0	0,625	150	103,0	2144	12,3	0,0	0	320,0	162	1291	1291	948	51	2158	1433	172	
3	18,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	387,0	387,0	0,625	150	107,0	2414	12,3	0,0	0	331,0	168	1428	1428	981	54	2347	1600	180	
3	20,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	405,0	405,0	0,625	150	111,0	2695	12,2	0,0	0	342,0	173	1585	1585	1013	57	2541	1773	188	
3	21,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	425,0	425,0	0,625	150	115,0	2986	12,2	0,0	0	353,0	177	1756	1756	1045	60	2741	1952	196	
3	22,0	0,0	0,0	0,0	0,0	19,0	0,0	0,650	444,0	444,0	0,625	150	119,0	3287	12,1	0,0	0	364,0	181	1934	1934	1077	63	2947	2138	204	

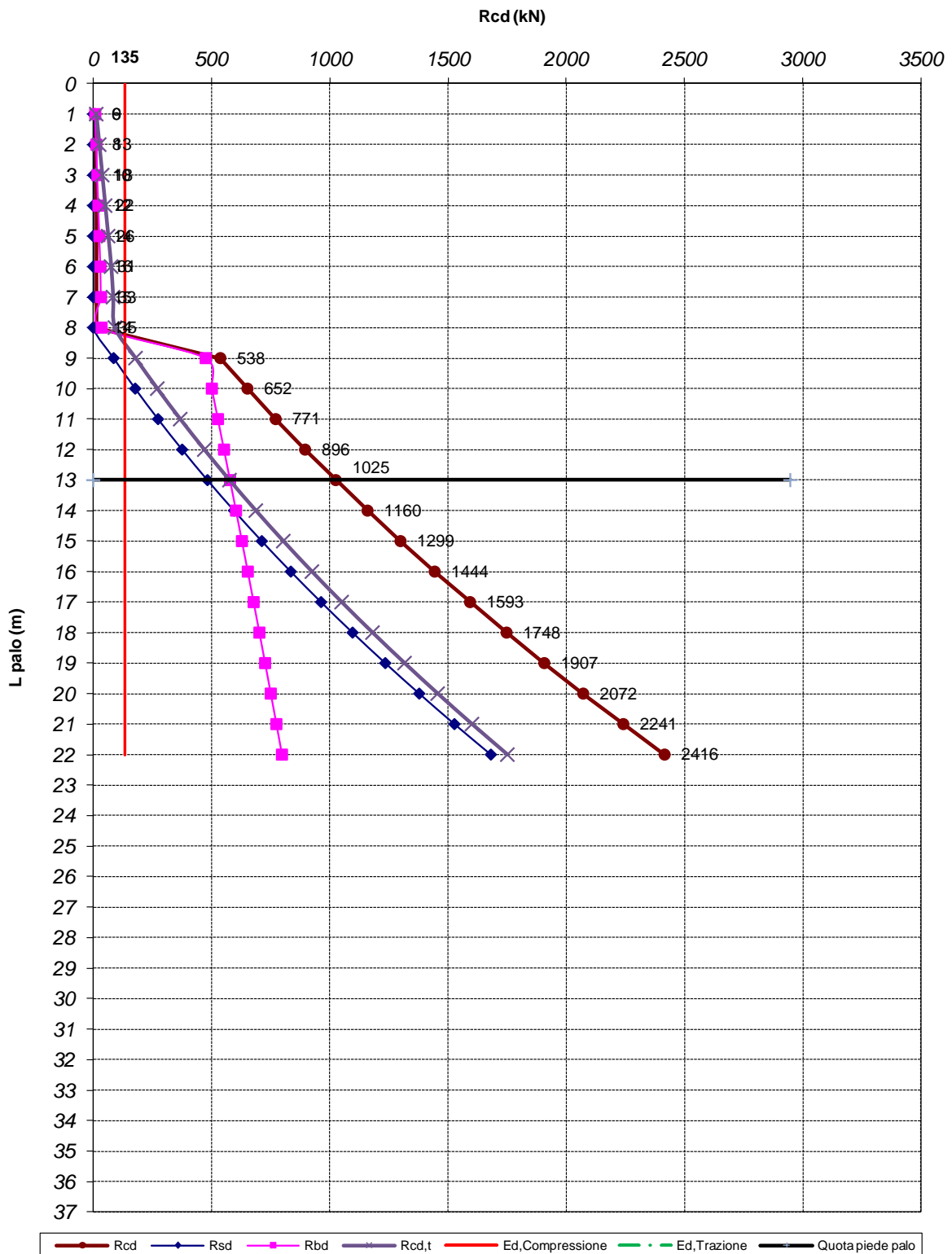
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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2.) Barriere Hb=6.75m, Hril=3.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU, STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=3.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:
 $Rcd = Rbd + Rad + Wp$
 in cui:
 $Rbd = Rbk / \gamma_b$ Resistenza alla punta di progetto
 $Rbd = Rbk / \gamma_c$ Resistenza laterale di progetto
 $Rbk = Rbm / \gamma_c$ Resistenza alla punta caratteristica
 $Rbk = Rbm / \gamma_c$ Resistenza laterale caratteristica
 $Rbm = Qb$ Resistenza media alla punta
 $Rbm = Qc$ Resistenza media laterale
 $RcdT =$ Resistenza laterale di progetto a trazione
 $Wp =$ Peso proprio del palo (sottratto se in compressione)
 $Wp =$ Peso proprio del palo

Carico limite c Trazione
 $RcdT = RcdT + WpT$

PORTANZA UNITARIA ALLA PUNTA

Terreno granuli (c = 0, $\phi > 0$)
 In accordo alla teoria di Betschle, per pali di grande diametro:
 $q_b = Nq' \cdot \alpha \cdot \psi$ con: Nq' coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (vedi = 0,06 - 0,10 D)
 Per i pali di piccolo diametro ($\phi < 700$ mm) Nq' è dato dal grafico a destra sottostante.

Modello per pali di piccolo diametro ($\phi < 8-30$ cm) e medio diametro ($\phi < 31-70$ cm): $q_b = Nq' \cdot \alpha \cdot \psi$
 in cui: $Nq' = 2 \cdot c' \cdot (K' \cdot \tan \phi) \cdot \tan^2(45 + \phi/2)$ (equivalente ai valori del grafico di Betschle)
 In ogni caso viene assunto per q_b il valore limite di q_{lim} .

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali
 La resistenza alla punta viene espressa come:
 $q_b = \sigma_v + S \cdot c$ (in condizioni non drenate)
 $q_b = \sigma_v + K' \cdot c' + c' \cdot \psi$ (in condizioni drenate) essendo $M = (M' / 1) \cdot \tan \phi$

RESISTENZA LATERALE UNITARIA

Terreni granuli (c = 0, $\phi > 0$)
 $q_s = K' \cdot \sigma_v' \cdot \psi$ con: K secondo passi a 0,55 (pali di quadrilatero diametro) 0,50 (pali di piccolo diametro), $\tan \phi = \tan \phi$

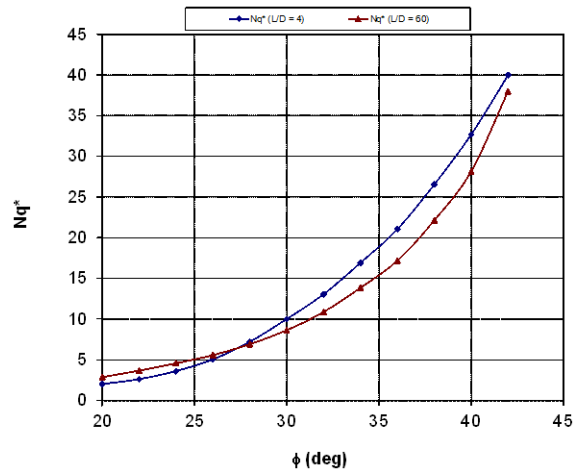
In ogni caso non viene superato il valore limite di q_{lim} .

Terreni coesivi (c > 0)

$q_s = \sigma_v' \cdot c$ (in cond. non dr.) con: c variabile in funzione di c secondo la seguente tabella (A33 - 1984)

c (kPa)	α
< 25	0,90
da 26 a 50	0,80
da 51 a 75	0,60
> 75	0,40

Coefficiente Nq' corrispondente all'insorgere delle prime deformazioni plastiche alla punta



CARATTERISTICHE GEOMETRICHE

Descrizione	unità	Valore	paolo di quadrilatero diam?	si
Diametro palo	m	0,30		
Superficie residuale alla punta	m ²	0,28		
Superficie laterale per lunghezza unitaria	m ² /m	2,51		
Peso specifico del palo	kN/m ³	25,00		

FALDA

Qualità livello base da c.a.p.

Descrizione	unità	Valore
Tensione totale in testa palo	kN/m ²	20,0
Tensione efficace in testa palo	kN/m ²	20,0

CARICO DI PROGETTO Ed

Descrizione	Ed, Com Ed, Tracce
APP 1 COMB1 SLU STR	135
APP 1 COMB2 SLU-GE0	155
APP 1 COMB2 SLU-SIS	135

COEFFICIENTI DI SICUREZZA

Descrizione	γ	Tavola
Tipo di Palo	1,00	1,00
coefficiente γ _c	1,00	1,00
coefficiente γ _s	1,00	1,00
coefficiente γ _c	1,00	1,70

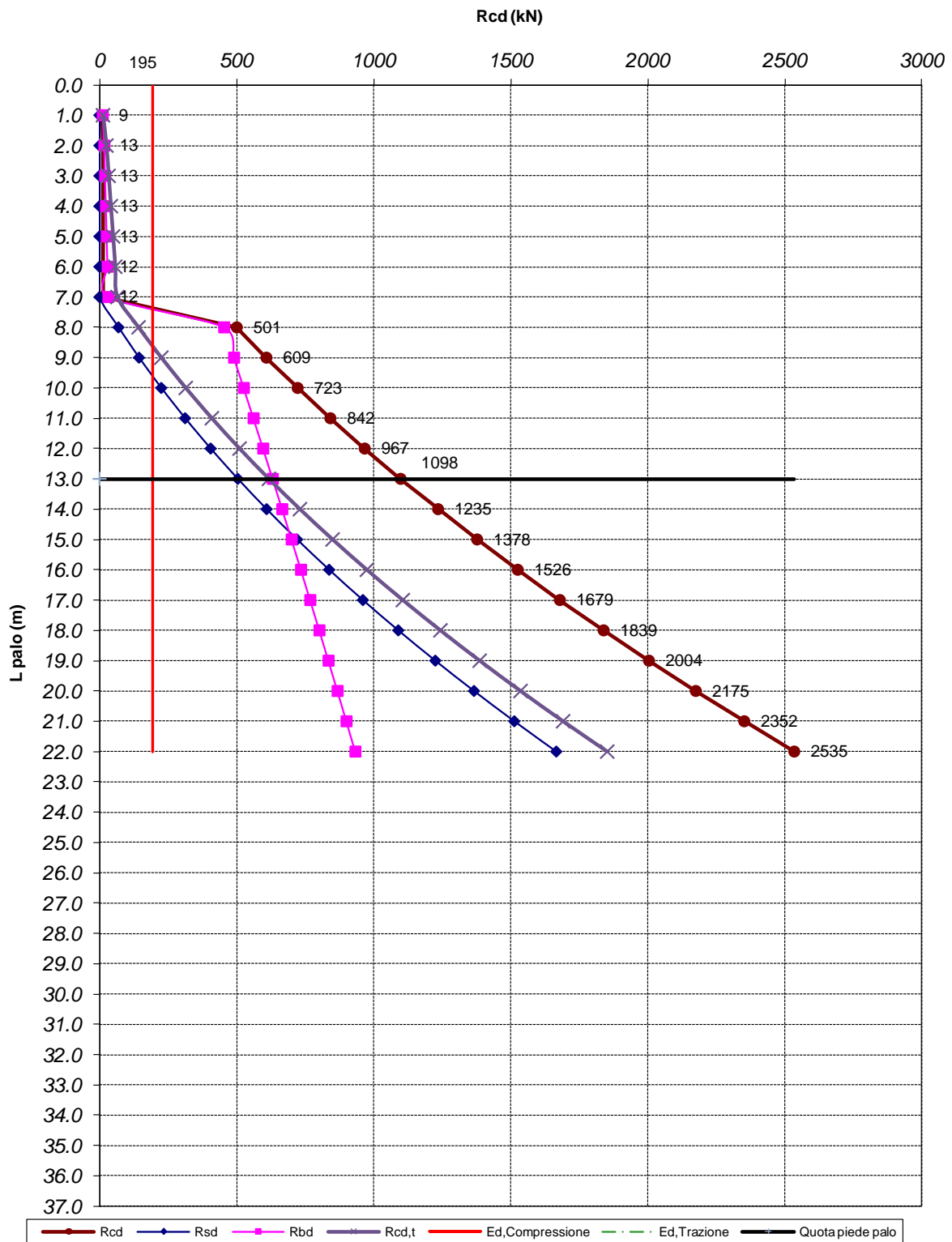
Descrizione	Ed, Com Ed, Tracce
Immersione palo di progetto	13,00
Profondità testa palo	0,00
Quota palo palo	13,00

STRATEGIA DI PROGETTO (IA Q.L.P.)

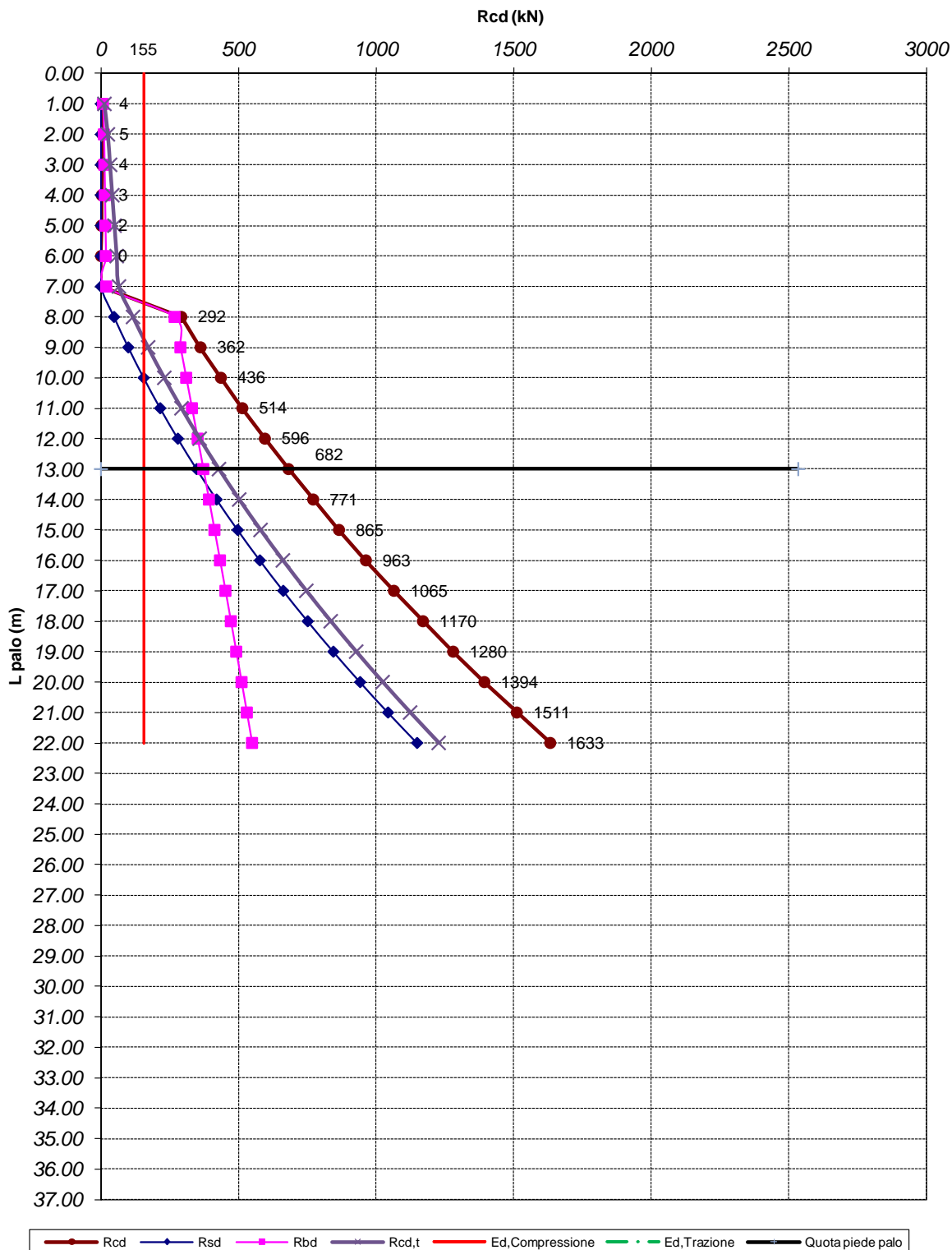
n.	DESCRIZIONE	DA	A	cu	φ'	γ	c'
1	Rilevato (inerta)	0,0	-2,0	0,0	0,0	20,0	0,0
2	Terreno Tipo 2 inerta	-2,0	-7,0	0,0	0,0	19,0	0,0
3	Terreno Tipo 2	-8,0	-25,0	0,0	32,0	19,0	0,0
4							
5							
6							
7							
8							
9							
10							

Unità	z	cu	c'	φ'	γ	γ'	qs	K	σv	σv'	tanδ	qs,lim	qs	Qs	Nq'	c' Mc (BCu)	qb,lim	qb	Qb	Rbd	RcdT	Rbd	Wp	Rcd	RcdT	WpT
1	0,0	0,0	0,0	0,0	20,0	20,0	0,0	0,550	20,0	20,0	0,000	150	0,0	0	1,0	0,0	0	40,0	20	0	0	12	3	9	13	13
1	1,0	0,0	0,0	0,0	20,0	20,0	0,0	0,550	40,0	40,0	0,000	150	0,0	0	1,0	0,0	0	60,0	30	0	0	18	5	13	25	25
2	3,0	0,0	0,0	0,0	19,0	10,0	0,0	0,550	79,0	79,0	0,000	150	0,0	0	1,0	0,0	0	70,0	35	0	0	21	8	13	32	33
2	4,0	0,0	0,0	0,0	19,0	10,0	0,0	0,550	98,0	98,0	0,000	150	0,0	0	1,0	0,0	0	80,0	40	0	0	24	11	13	41	41
2	5,0	0,0	0,0	0,0	19,0	10,0	0,0	0,550	117,0	117,0	0,000	150	0,0	0	1,0	0,0	0	90,0	45	0	0	27	14	13	49	49
2	6,0	0,0	0,0	0,0	19,0	10,0	0,0	0,550	136,0	136,0	0,000	150	0,0	0	1,0	0,0	0	100,0	50	0	0	30	17	12	57	57
2	7,0	0,0	0,0	0,0	19,0	10,0	0,0	0,550	155,0	155,0	0,000	150	0,0	0	1,0	0,0	0	110,0	55	0	0	33	20	12	65	65
3	8,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	174,0	174,0	0,625	150	46,7	117	12,8	0,0	0	1538,2	773	69	69	465	23	501	142	73
3	9,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	193,0	193,0	0,625	150	59,8	245	12,8	0,0	0	1650,1	834	144	144	491	26	609	226	81
3	10,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	212,0	212,0	0,625	150	71,9	383	12,7	0,0	0	1781,1	895	225	225	527	29	723	315	89
3	11,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	231,0	231,0	0,625	150	84,9	531	12,6	0,0	0	1901,1	956	312	312	562	32	842	410	98
3	12,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	250,0	250,0	0,625	150	97,9	689	12,6	0,0	0	2020,1	1015	405	405	617	35	967	511	106
3	13,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	269,0	269,0	0,625	150	110,9	857	12,6	0,0	0	2138,2	1075	504	504	632	38	1098	618	114
3	14,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	288,0	288,0	0,625	150	123,9	1036	12,5	0,0	0	2255,3	1134	609	609	667	41	1235	731	122
3	15,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	307,0	307,0	0,625	150	136,9	1225	12,5	0,0	0	2371,4	1192	721	721	781	44	1378	850	130
3	16,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	326,0	326,0	0,625	150	149,9	1424	12,4	0,0	0	2486,6	1250	838	838	735	47	1526	975	138
3	17,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	345,0	345,0	0,625	150	162,9	1633	12,4	0,0	0	2600,8	1307	961	961	789	50	1679	1107	146
3	18,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	364,0	364,0	0,625	150	175,9	1853	12,3	0,0	0	2714,0	1364	1089	1089	842	53	1839	1244	154
3	19,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	383,0	383,0	0,625	150	188,9	2092	12,3	0,0	0	2826,3	1421	1225	1225	904	56	2004	1387	162
3	20,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	402,0	402,0	0,625	150	201,9	2322	12,2	0,0	0	2937,6	1477	1366	1366	969	59	2175	1536	170
3	21,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	421,0	421,0	0,625	150	214,9	2572	12,2	0,0	0	3047,9	1532	1513	1513	1031	62	2352	1691	178
3	22,0	0,0	0,0	32,0	19,0	10,0	0,0	0,550	440,0	440,0	0,625	150	227,9	2833	12,1	0,0	0	3157,3	1587	1666	1666	1094	65	2535	1852	186

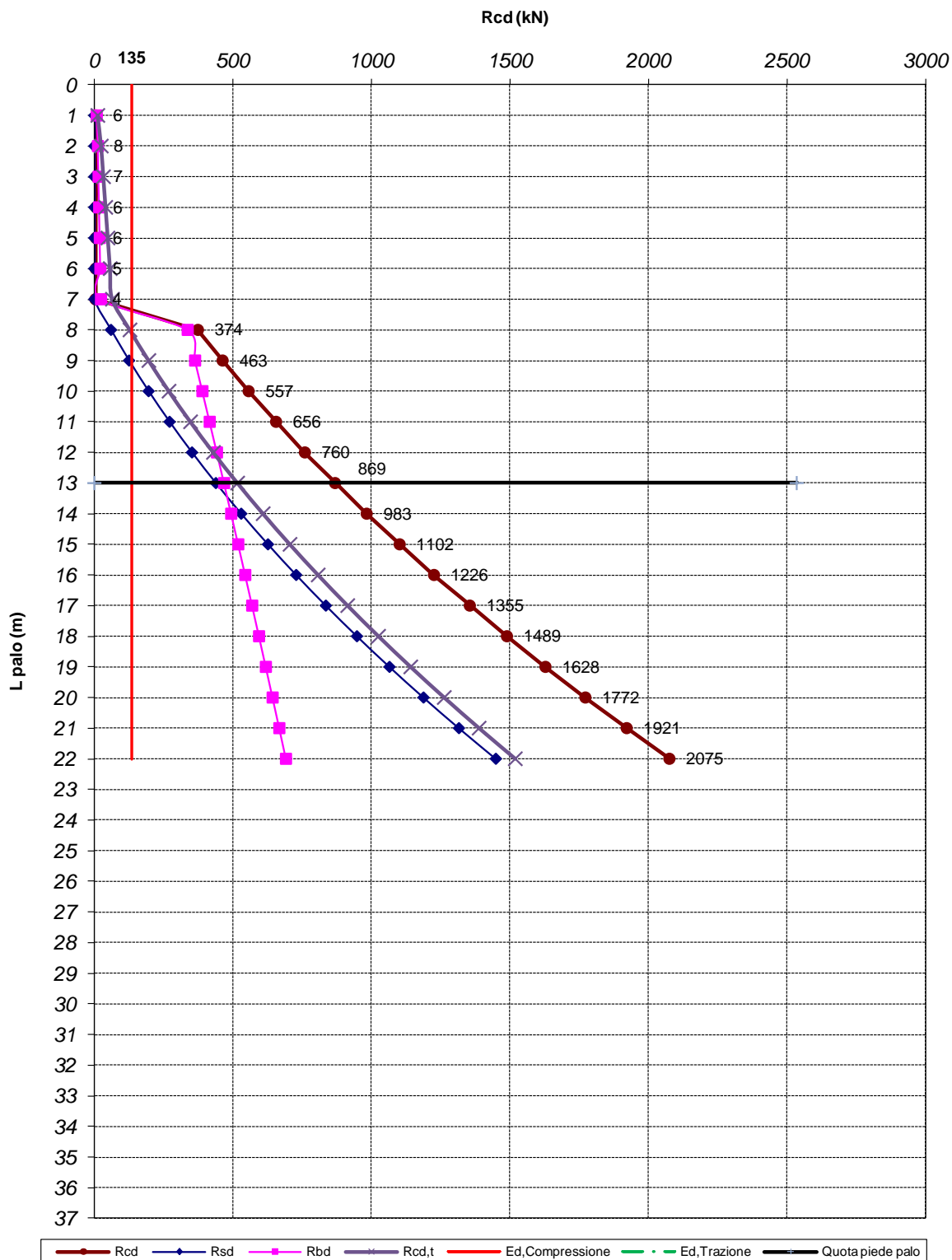
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
 APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**



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3.) Barriere Hb=6.75m, Hril=7.0m, terreno Tipo 3 (non drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m, Hbar=6.75m, Varco 0.0m. Terreno di fondazione Tipo 3. Condizioni Non Drenate

Il carico limite di progetto viene determinato come:
 $Rcd = Rbd + Rsd - Wp$
 in cui:
 $Rbd = Rbk / \gamma_k$: Resistenza alla punta di progetto
 $Rsd = Rsk / \gamma_k$: Resistenza laterale di progetto
 $Rbk = Rbm / \gamma_c$: Resistenza alla punta caratteristica
 $Rsk = Rsm / \gamma_c$: Resistenza laterale caratteristica
 $Rbm = Qb$: Resistenza media alla punta
 $Rsm = Qs$: Resistenza media laterale
 $Rsd1 =$: Resistenza laterale di progetto a lacerazione
 Wp : Peso proprio del palo (degiunto se in compressione)
 Wp' : Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari ($e = 0, \phi < 0$)
 In accordo alle teorie di Bereznev, per pali di grande diametro:
 $q_b = Nq' \cdot \alpha \cdot \psi$ con: Nq' : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (cd. = 0,06 - 0,10 D)
 Per i pali di grosso diametro ($d > 70$ cm) Nq' è dato dal galileo a destra apposta:

Mentre per pali di piccolo diametro ($d = 8-30$ cm) e medio diametro ($d = 31-70$ cm): $q_b = Nq \cdot \alpha \cdot \psi$

in cui: $Nq = 7 \cdot c' \cdot (1 + \tan^2 \phi) \cdot \gamma_{soil} \cdot (45 + \phi/2)$ (correlazione ai valori del galileo di Bereznev)

In ogni caso viene assunto per q_b il valore limite di q_{lim} .

Terreni coesivi ($e > 0$)

Il calcolo viene svolto in termini di lacerazioni laterali
 La resistenza alla punta viene espressa come:
 $q_b = 9 \cdot c_u$ (in condizioni non drenate)
 $q_b = 9 \cdot c' + c' \cdot \gamma_c$ (in condizioni drenate) essendo: $Nc = 9 \cdot (1 + \tan^2 \phi)$

RESISTENZA LATERALE UNITARIA

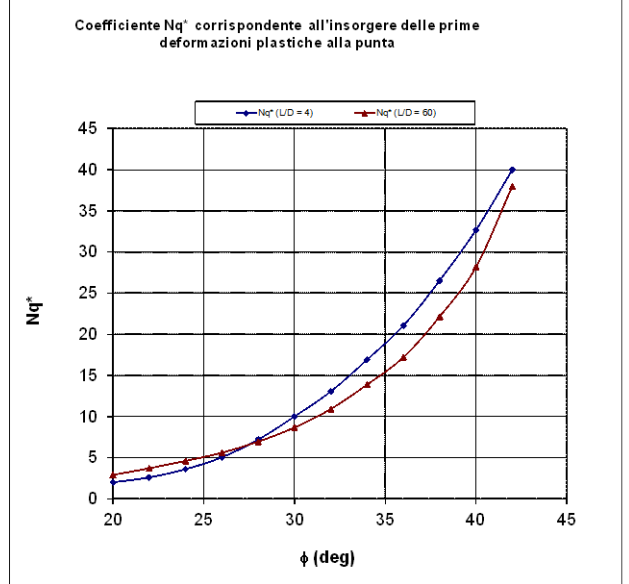
Terreni granulari ($e = 0, \phi < 0$)
 con: $Qs = K' \cdot \tan^2 \phi \cdot \sigma_v$ con: K assunto pari a 0,65 (pali di grande/medio diametro) 0,50 (pali di piccolo diametro), $\tan^2 \phi = \tan^2 \phi'$

In ogni caso non viene superato il valore limite di q_{lim} .

Terreni coesivi ($e > 0$)

$Qs = \alpha \cdot c_u$ (in cond. non dr.) con: α variabile in funzione di c_u secondo la seguente tabella (AGI - 1984)

c_u (kPa)	α
< 25	0,50
da 25 a 50	0,80
da 51 a 75	0,50
> 75	0,40



CARATTERISTICHE GEOMETRICHE

	unità		
Diametro palo	m	0,80	palo di grande/medio dima? si
Superficie resistente alla punta	m ²	0,50	
Superficie laterale per lunghezza unitaria	m ²	2,51	
peso specifico del palo	kN/m ³	25,00	

FALDA

Ono in livello. Botta da q.t.p.

SOPRACCARICO A Q.T.P.

	unità	
Tensione totale in testa palo	kN/m ²	20,0
Tensione efficace in testa palo		20,0

COEFFICIENTI DI SICUREZZA

	unità	
Tipo di Palo		1 Trincello
coefficiente γ_c		1,00
coefficiente γ_k		1,00
coefficiente γ_{sk}		1,00
coefficiente γ_c		1,70

CARICO DI PROGETTO Ed

Ed, Com E, Trincione

	Ed	Com E
APP.1-COMB1 SLU-STR	195	
APP.1-COMB2 SLU-GEO	155	
APP.1-COMB2 SLV-SIS	135	

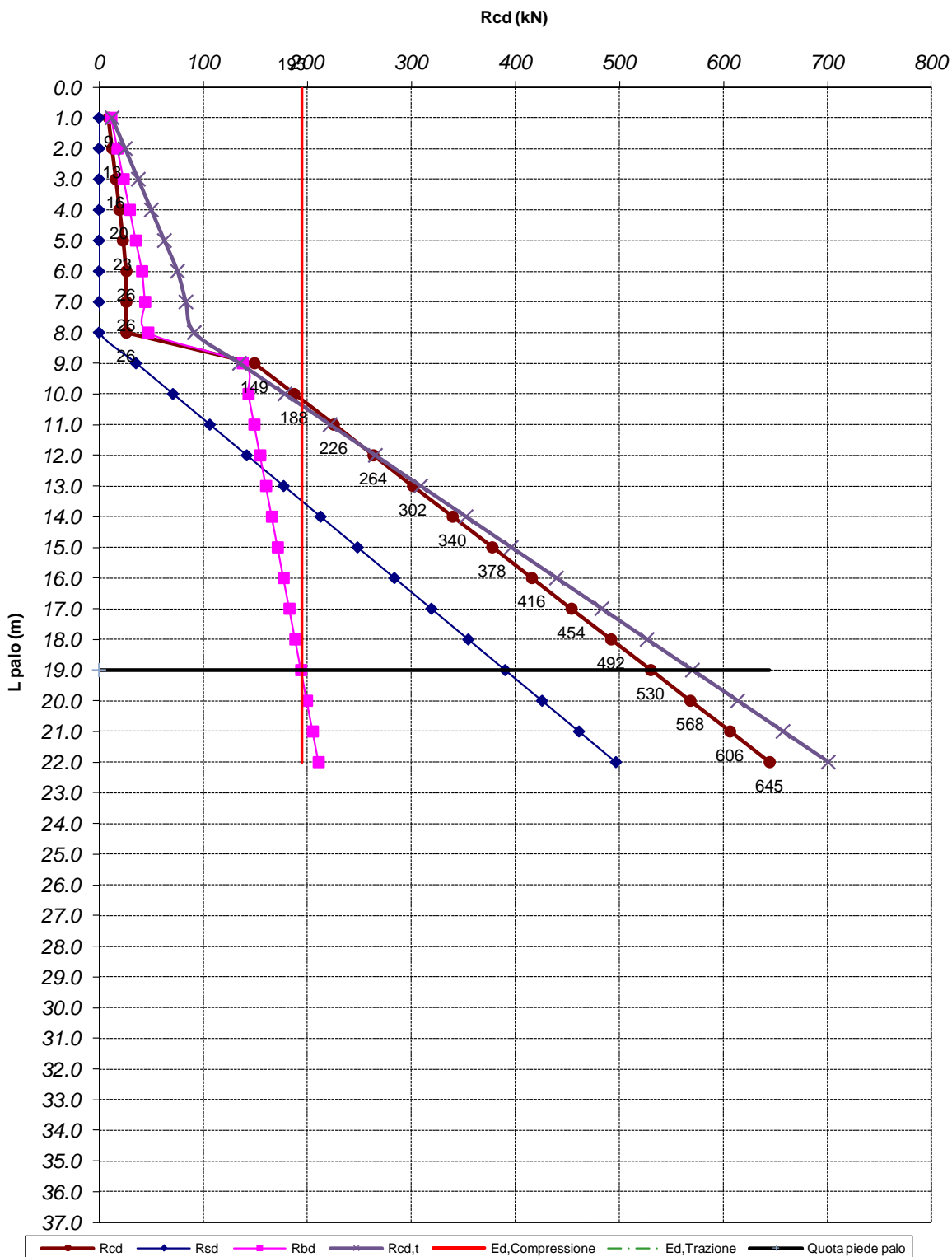
	Ed
Lunghezza palo di progetto	19,00
Profondità testa palo	0,00
Quota piede palo	19,00

	Rcd
PROFONDITA' INDAGATA	
quota minima	0,00
quota massima	22,00

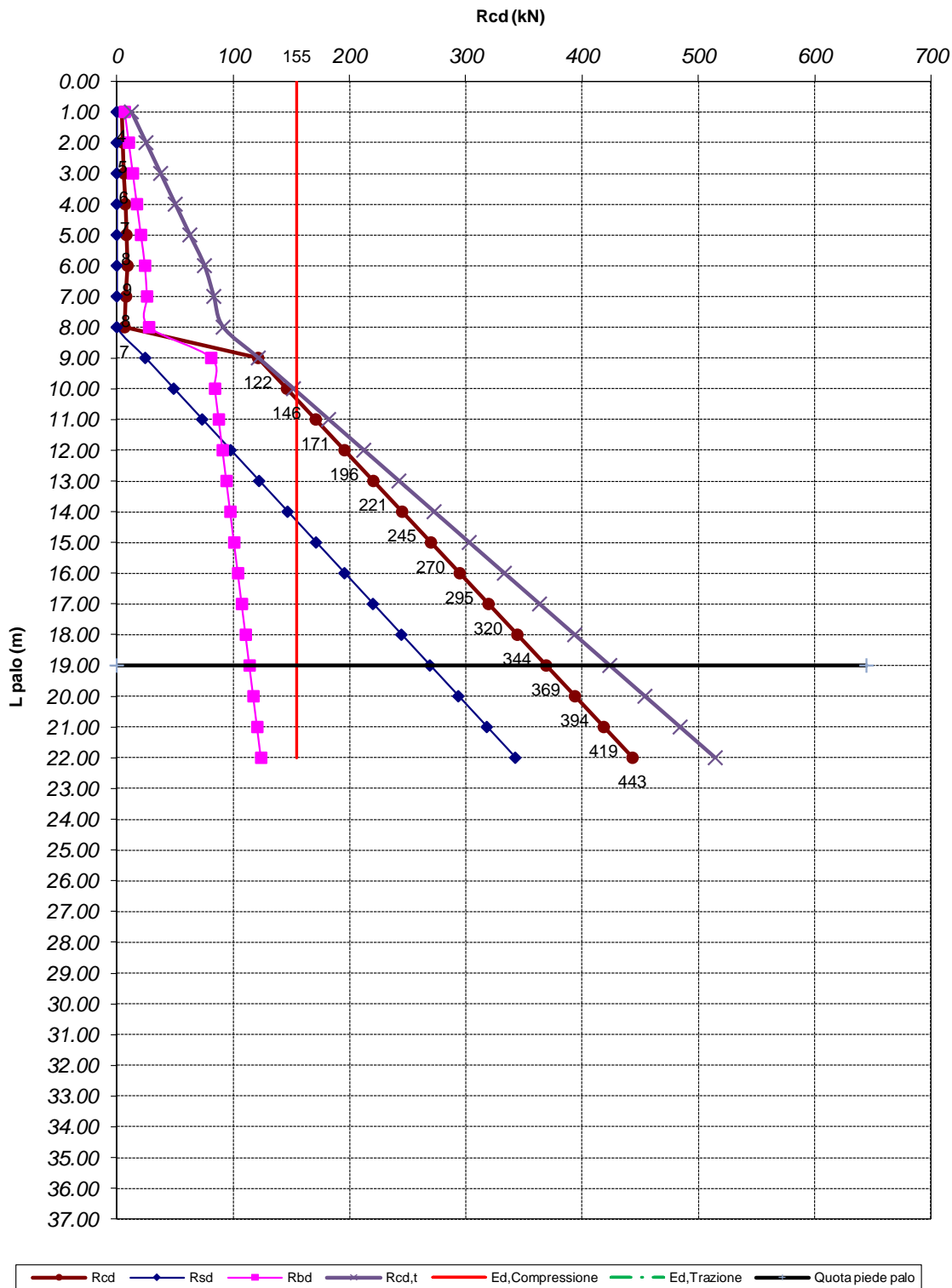
STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	c_u	ϕ'	γ	γ'	α	K	σ_v	σ_v'	terzo	q_{lim}	Qs	Qs	Nq'	$c' \cdot \gamma_c$ (BCu)	q_{lim}	q_b	Qb	Rsd	$Rsd1$	Rbd	Wp	Rcd	$Rcd1$	Wp'
1	Rilevato (inerte)	0,0	-5,0	0,0	0,0	20,0	20,0	0,0	0,650	20,0	20,0		150	0,0	0	1,0	0,0	0	40,0	20	0	0	12	3	9	13	13
1	Terreno Tipo 1 inerte	-5,0	-8,0	0,0	0,0	20,0	20,0	0,0	0,650	60,0	60,0	0,000	150	0,0	0	1,0	0,0	0	60,0	30	0	0	18	5	13	25	25
1	Terreno Tipo 1 inerte	-8,0	-10,0	0,0	0,0	20,0	20,0	0,0	0,650	80,0	80,0	0,000	150	0,0	0	1,0	0,0	0	80,0	40	0	0	24	8	16	38	38
1	Terreno Tipo 3	-10,0	-25,0	30,0	0,0	19,0	10,0	0,0	0,650	100,0	100,0	0,000	150	0,0	0	1,0	0,0	0	100,0	50	0	0	30	10	20	50	50
1	Terreno Tipo 3	-25,0	-30,0	30,0	0,0	19,0	10,0	0,0	0,650	120,0	120,0	0,000	150	0,0	0	1,0	0,0	0	120,0	60	0	0	35	13	23	63	63
1	Terreno Tipo 3	-30,0	-40,0	30,0	0,0	19,0	10,0	0,0	0,650	140,0	140,0	0,000	150	0,0	0	1,0	0,0	0	140,0	70	0	0	41	15	26	75	75
2	Terreno Tipo 3	-40,0	-50,0	30,0	0,0	19,0	10,0	0,0	0,650	150,0	150,0	0,000	150	0,0	0	1,0	0,0	0	150,0	75	0	0	46	18	26	83	83
2	Terreno Tipo 3	-50,0	-60,0	30,0	0,0	19,0	10,0	0,0	0,650	178,0	178,0	0,000	150	0,0	0	1,0	0,0	0	178,0	89	0	0	47	21	26	97	97
3	Terreno Tipo 3	-60,0	-70,0	30,0	0,0	19,0	10,0	24,0	0,650	197,0	170,0	0,000	150	24,0	60	1,0	270,0	0	467,0	235	35	35	138	24	149	175	100
3	Terreno Tipo 3	-70,0	-80,0	30,0	0,0	19,0	10,0	24,0	0,650	216,0	180,0	0,000	150	24,0	121	1,0	270,0	0	486,0	244	71	71	144	27	188	179	108
3	Terreno Tipo 3	-80,0	-90,0	30,0	0,0	19,0	10,0	24,0	0,650	235,0	190,0	0,000	150	24,0	181	1,0	270,0	0	505,0	254	96	96	149	30	226	222	116
3	Terreno Tipo 3	-90,0	-100,0	30,0	0,0	19,0	10,0	24,0	0,650	254,0	200,0	0,000	150	24,0	241	1,0	270,0	0	524,0	263	142	142	155	33	264	266	124
3	Terreno Tipo 3	-100,0	-110,0	30,0	0,0	19,0	10,0	24,0	0,650	273,0	210,0	0,000	150	24,0	302	1,0	270,0	0	543,0	273	177	177	161	36	302	309	132
3	Terreno Tipo 3	-110,0	-120,0	30,0	0,0	19,0	10,0	24,0	0,650	292,0	220,0	0,000	150	24,0	362	1,0	270,0	0	562,0	282	213	213	166	39	340	353	140
3	Terreno Tipo 3	-120,0	-130,0	30,0	0,0	19,0	10,0	24,0	0,650	311,0	230,0	0,000	150	24,0	422	1,0	270,0	0	581,0	292	249	249	172	42	378	396	148
3	Terreno Tipo 3	-130,0	-140,0	30,0	0,0	19,0	10,0	24,0	0,650	330,0	240,0	0,000	150	24,0	483	1,0	270,0	0	600,0	302	284	284	177	45	416	440	156
3	Terreno Tipo 3	-140,0	-150,0	30,0	0,0	19,0	10,0	24,0	0,650	349,0	250,0	0,000	150	24,0	543	1,0	270,0	0	619,0	311	319	319	183	48	454	483	164
3	Terreno Tipo 3	-150,0	-160,0	30,0	0,0	19,0	10,0	24,0	0,650	368,0	260,0	0,000	150	24,0	603	1,0	270,0	0	638,0	321	355	355	189	51	492	527	172

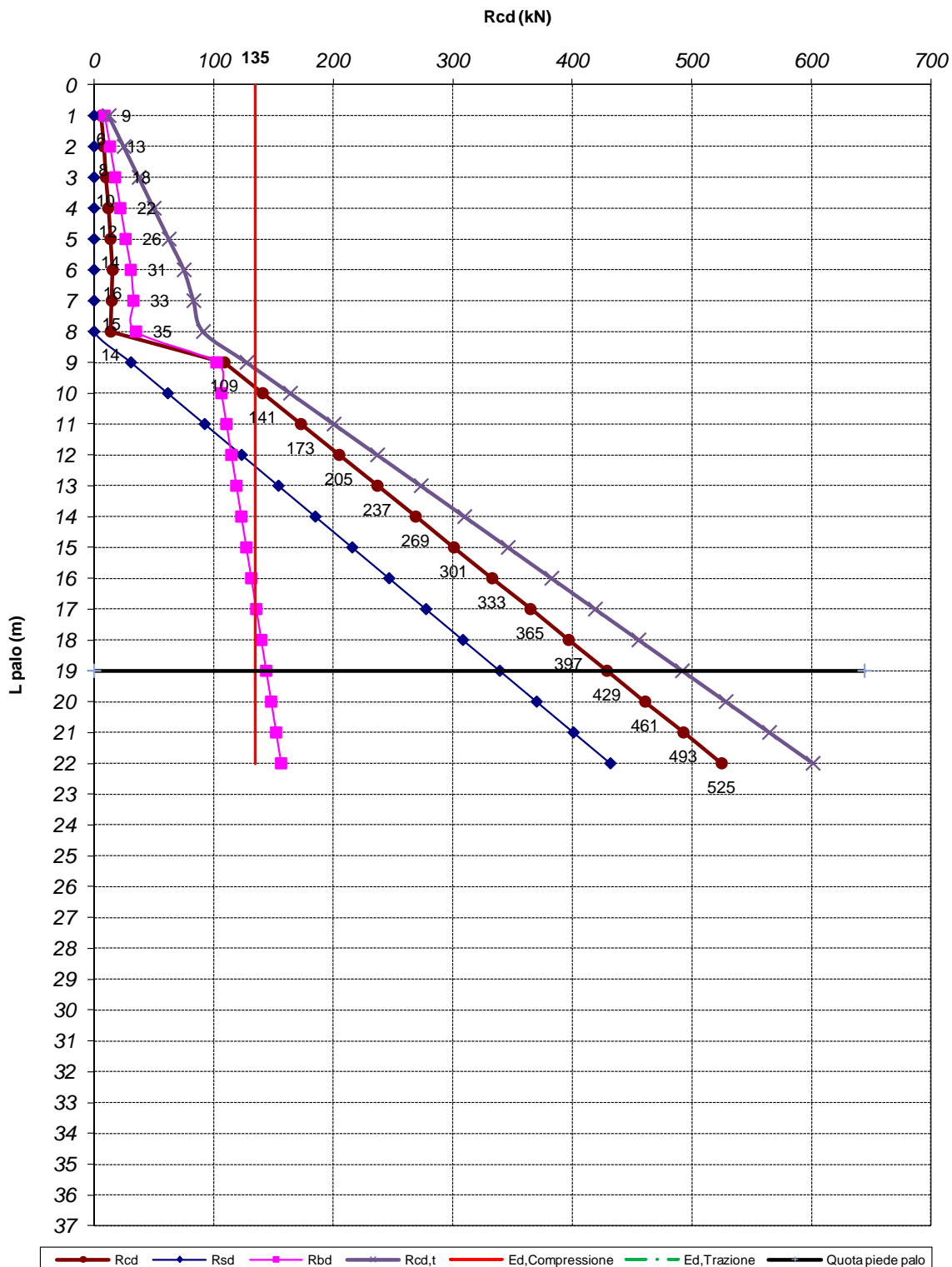
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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4.) Barriere Hb=6.75m, Hrril=3.0m, terreno Tipo 3 (non drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU(A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hrril=3.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 3. Condizioni Non Drenate

Il carico limite di progetto viene determinato come:

$R_{cal} = R_{lat} + R_{cal} + W_p$

in cui:

$R_{lat} = R_{sk} / \gamma_c$

$R_{cal} = R_{sk} / \gamma_c$

$R_{sk} = R_{bm} / \gamma_c$

$R_{sk} = R_{um} / \gamma_c$

$R_{bm} = Q_{br}$

$R_{um} = Q_{br}$

$R_{sk} =$

$W_p =$

$W_p =$

Carico limite e Trazione

$R_{cal,T} = R_{cal,U} + W_p$

PORTANZA UNITARIA ALLA PUNTA

Terreni granulosi ($\phi = 0, \psi < 0$)

In accordo alla teoria di Berzantini et al. per pali di grande diametro?

$q_b = N_q^* \cdot s_v$

con: N_q^* coefficiente di capacità portante corrispondente all'origine delle prime deformazioni plastiche (cod. = 0,06 - 0,10 D)

Per pali di grosso diametro ($\phi > 70cm$) N_q^* è dato dal grafico a destra riportato:

Mentre per pali di piccolo diametro (ϕ da 8-30cm) o medio diametro (ϕ da 31-70cm): $\phi = N_q^* \cdot s_v$

In cui: $N_q^* = 2 \cdot c^2 \cdot \tan^2(45 + \phi/2)$ (equivalente ai valori del grafico di Berzantini et al.)

In ogni caso viene assunto per q_b il valore limite di q_{lim} .

Terreni coesivi ($\phi < 0$)

Il calcolo viene svolto in termini di tensioni laterali

La resistenza alla punta viene espressa come:

$q_b = s_v + 9 \cdot c$

(in condizioni non drenate)

$q_b = s_v + N_q^* \cdot c \cdot N_c$

(in condizioni drenate) essendo: $N_c = (N_q^* / \gamma) \cdot \tan^2 \phi$

RESISTENZA LATERALE UNITARIA

Terreni granulosi ($\phi = 0, \psi < 0$)

$q_p = K \cdot c^2 \cdot \tan^2 \phi$

con: K assunto pari a 0,05 (pali di grande/medio diametro) 0,50 (pali di piccolo diametro), $\tan^2 \phi = \tan^2 \phi$

In ogni caso non viene superato il valore limite di q_{lim} .

Terreni coesivi ($\phi < 0$)

$q_p = 4 \cdot c$

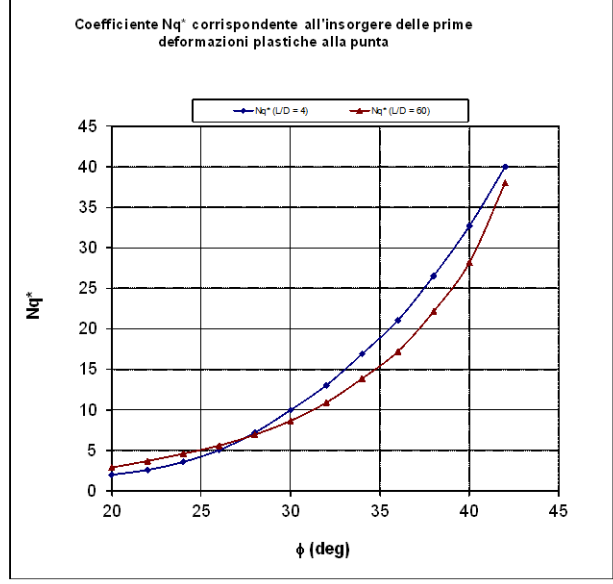
(in cond. non dr.)

$q_p = 4 \cdot c^2 \cdot \tan^2 \phi$

(in cond. dren.)

Le variabili in funzione di ϕ secondo la seguente tabella (AGI - 1984)

ϕ (deg)	K
$\phi < 25$	0,00
da 25 a 50	0,50
da 50 a 75	0,00
> 75	0,40



CARATTERISTICHE GEOMETRICHE

Descrizione	Unità	Valore	Note
Diametro palo	m	0,80	pali di grande/medio diam.?
Superficie resistente alla punta	m ²	0,50	
Superficie laterale per lunghezza unitaria	m ²	2,51	
peso specifico del palo	kN/m ³	25,00	

FAIDA

Descrizione	Unità	Valore
Quota livello falda da q.t.p.	m	2,00

SOVRACCARICO A Q.T.P.

Descrizione	Unità	Valore
Tensione totale in testa palo	kN/m ²	20,0
Tensione efficace in testa palo	kN/m ²	20,0

CARICO DI PROGETTO Ed

Descrizione	Unità	Valore
Ed.Com Ed. Trazione	kN	1,95
APP.1.COMB2 SLU-STR	kN	1,95
APP.1.COMB2 SLU-GEO	kN	1,95
APP.1.COMB2 SLV-SIS	kN	1,95

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

h	DESCRIZIONE	DA	A	cm	ψ	γ	c'
1	Rilevato (metr.)	-0,0	-2,0	0,0	0,0	20,0	0,0
2	Terreno Tipo 1 (metr.)	-2,0	-7,0	0,0	0,0	19,0	0,0
3	Terreno Tipo 3	-8,0	-7,0	30,0	0,0	19,0	0,0
4							
5							
6							
7							
8							
9							
10							

COEFFICIENTI DI SICUREZZA

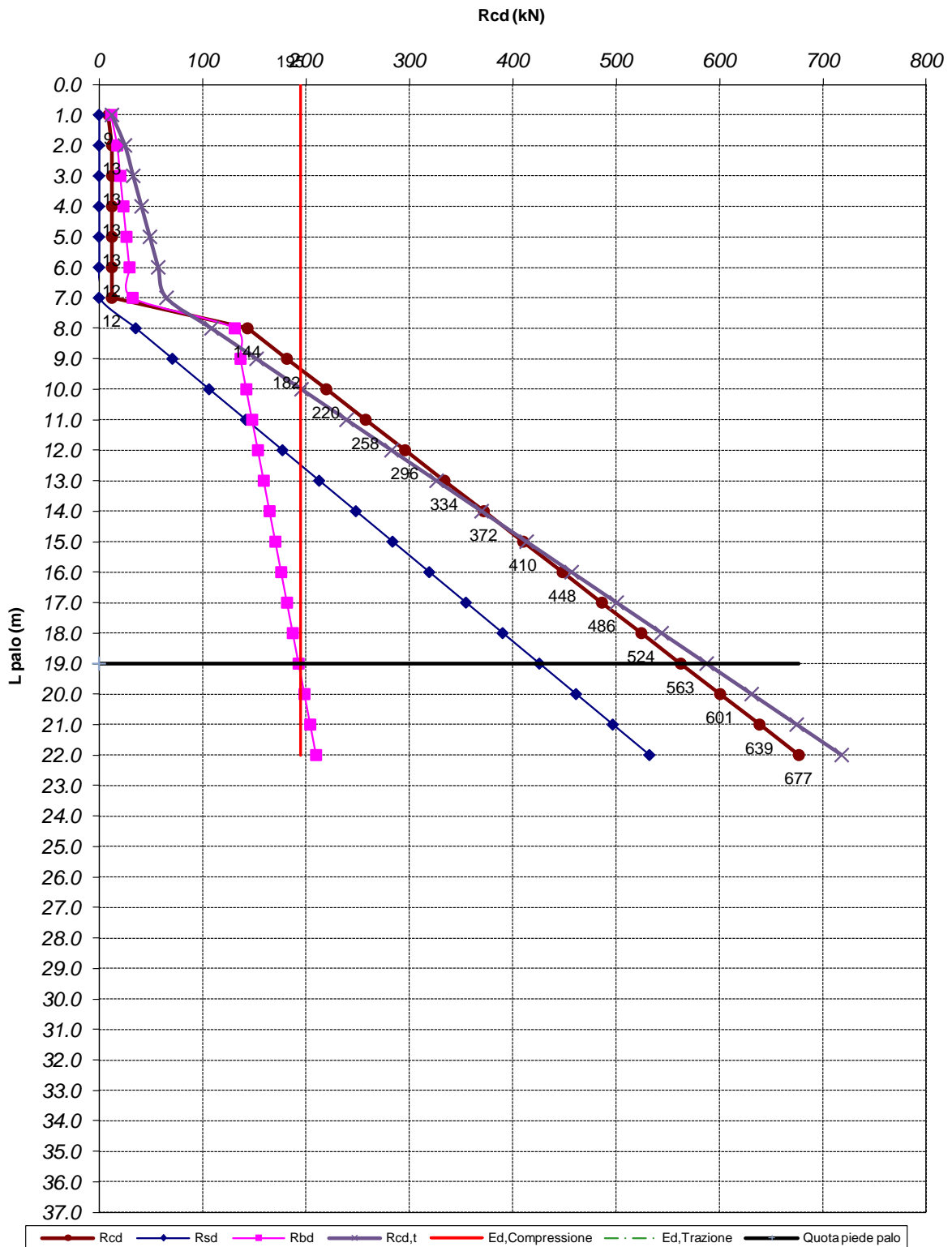
Descrizione	Valore
Tipo di Palo	1,00
coefficiente γ_s	1,00
coefficiente γ_c	1,00
coefficiente γ_m	1,70

PROFONDITA' INDAGATA

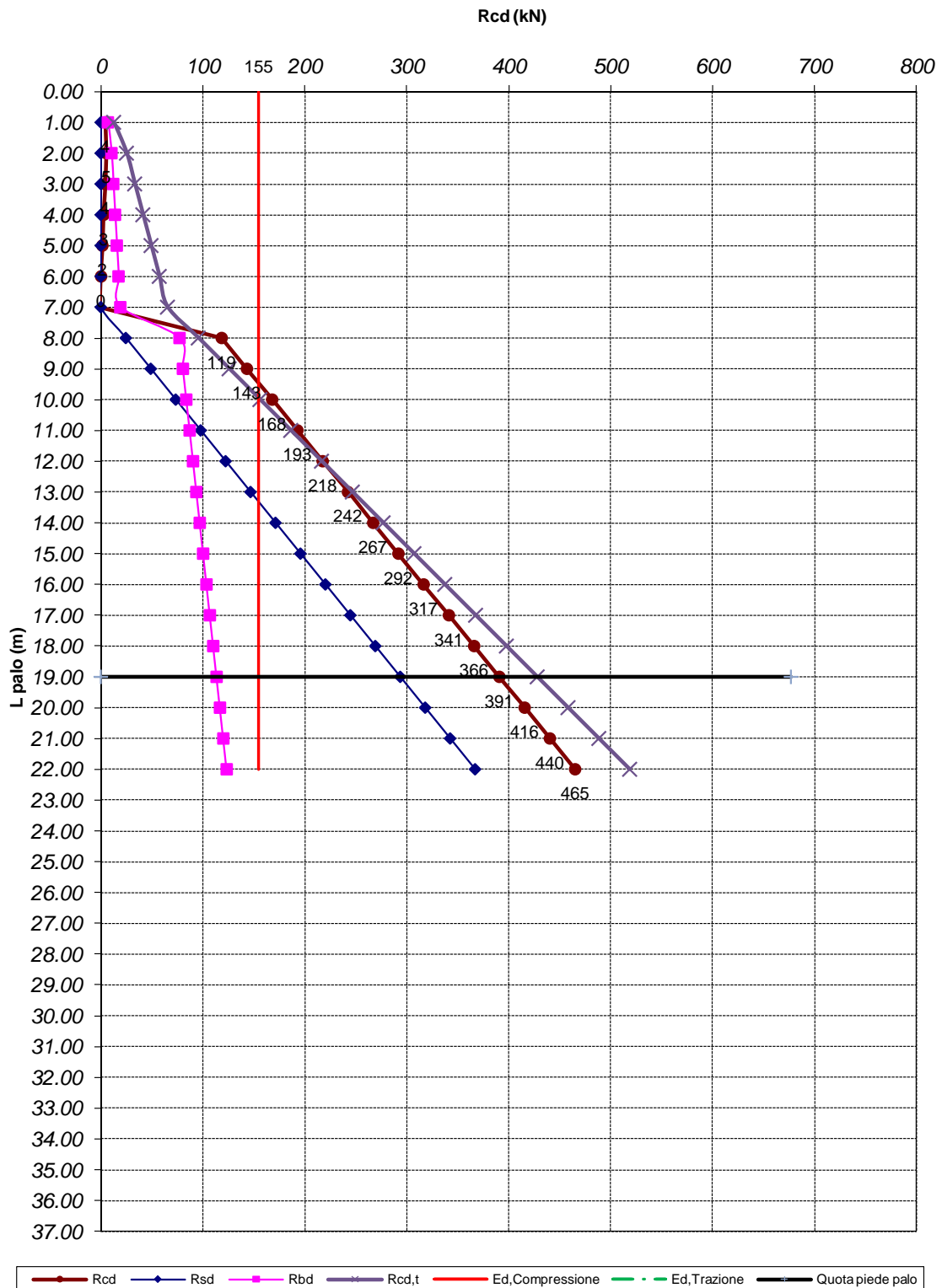
Descrizione	Unità	Valore
Lunghezza palo di progetto	m	19,00
Profondità testa palo	m	0,00
Quota pilea palo	m	19,00
PROFONDITA' INDAGATA		
quota minima	m	0,00
quota massima	m	22,00

Unità	z	c_m	c'	ϕ	γ	γ'	q_{sk}	K	s_v	s_v'	k_{sat}	$q_{s,lim}$	$q_{s,lim}'$	Q_s	N_q^*	$c^2 \cdot \tan^2 \phi$	$q_{b,lim}$	q_b	Q_b	R_{cal}	$R_{cal,U}$	R_{cal}	W_p	R_{cal}	$R_{cal,U}$	W_p'	
1	0,0						0,059	20,0	20,0																		
1	1,0	0,0	0,0	0,0	20,0	20,0	0,0	0,059	40,0	40,0	0,000	150	0,0	0	1,0	0,0	0	40,0	20	0	0	12	3	9	17	13	
1	2,0	0,0	0,0	0,0	20,0	20,0	0,0	0,059	60,0	60,0	0,000	150	0,0	0	1,0	0,0	0	60,0	30	0	0	18	5	13	25	25	
2	3,0	0,0	0,0	0,0	19,0	10,0	0,0	0,059	70,0	70,0	0,000	150	0,0	0	1,0	0,0	0	70,0	35	0	0	21	8	13	37	33	
2	4,0	0,0	0,0	0,0	19,0	10,0	0,0	0,059	80,0	80,0	0,000	150	0,0	0	1,0	0,0	0	80,0	40	0	0	24	11	13	47	41	
2	5,0	0,0	0,0	0,0	19,0	10,0	0,0	0,059	117,0	50,0	0,000	150	0,0	0	1,0	0,0	0	50,0	45	0	0	27	14	13	49	49	
2	6,0	0,0	0,0	0,0	19,0	10,0	0,0	0,059	130,0	100,0	0,000	150	0,0	0	1,0	0,0	0	100,0	50	0	0	30	17	12	57	57	
2	7,0	0,0	0,0	0,0	19,0	10,0	0,0	0,059	150,0	110,0	0,000	150	0,0	0	1,0	0,0	0	110,0	55	0	0	33	20	12	65	65	
3	8,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	174,0	120,0	0,000	150	24,0	60	1,0	270,0	0	444,0	223	35	25	131	23	144	109	73	
3	9,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	193,0	130,0	0,000	150	24,0	121	1,0	270,0	0	463,0	233	71	71	137	26	152	152	81	
3	10,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	212,0	140,0	0,000	150	24,0	181	1,0	270,0	0	482,0	242	106	106	143	29	170	156	88	
3	11,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	231,0	150,0	0,000	150	24,0	241	1,0	270,0	0	501,0	252	142	142	148	32	190	229	96	
3	12,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	250,0	160,0	0,000	150	24,0	302	1,0	270,0	0	520,0	261	177	177	154	35	206	263	106	
3	13,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	269,0	170,0	0,000	150	24,0	362	1,0	270,0	0	539,0	271	212	212	158	38	224	326	114	
3	14,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	288,0	180,0	0,000	150	24,0	422	1,0	270,0	0	558,0	280	248	248	165	41	242	403	122	
3	15,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	307,0	190,0	0,000	150	24,0	483	1,0	270,0	0	577,0	290	284	284	171	44	260	474	130	
3	16,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	326,0	200,0	0,000	150	24,0	543	1,0	270,0	0	596,0	300	319	319	176	47	278	547	138	
3	17,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	345,0	210,0	0,000	150	24,0	603	1,0	270,0	0	615,0	309	355	355	182	50	296	620	146	
3	18,0	30,0	0,0	0,0	19,0	10,0	24,0	0,059	364,0	220,0	0,000	150	24,0	664	1,0	270,0	0	634,0	319	390	390	187	53	314	706	154	

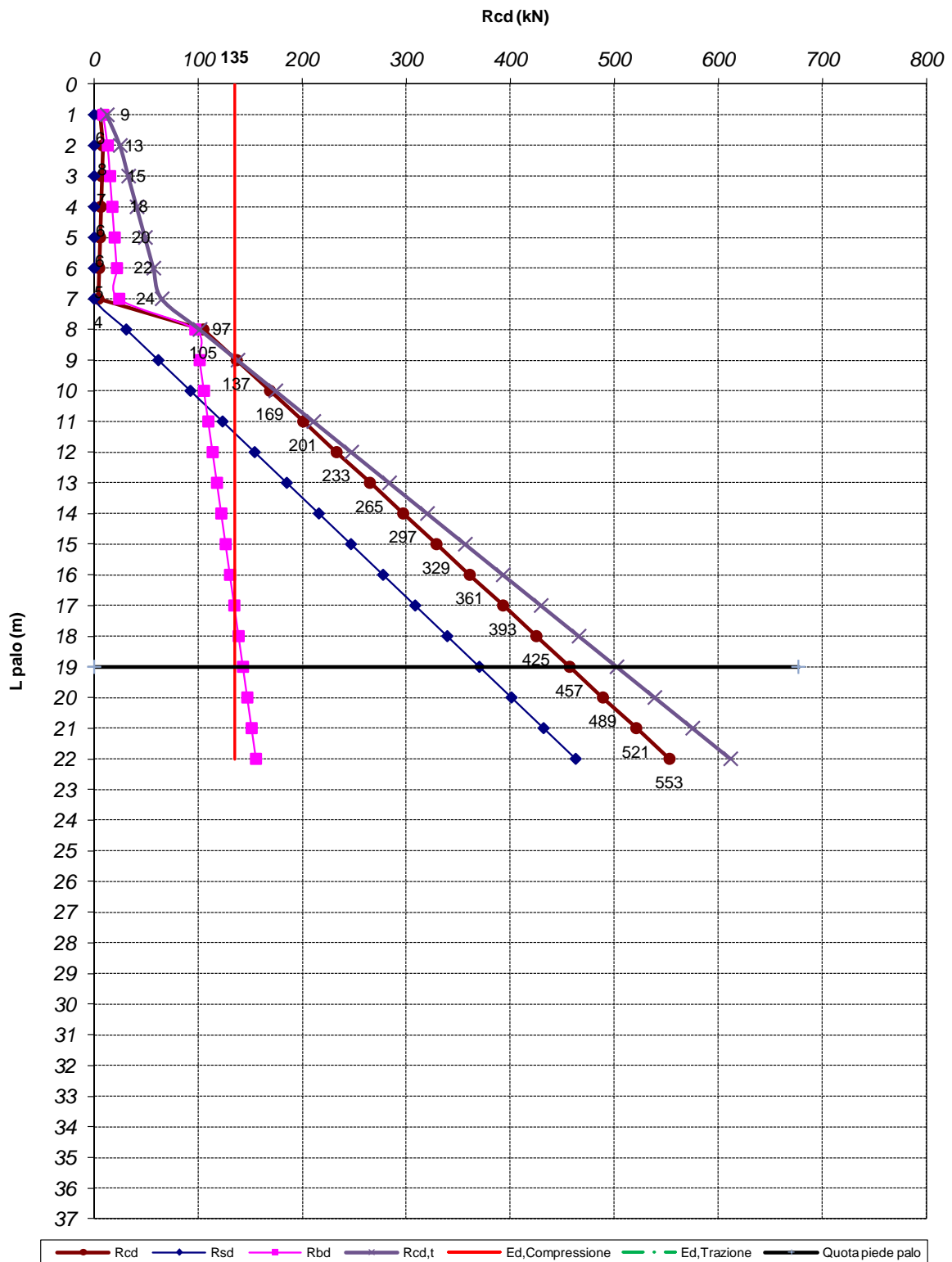
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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5.) Barriere Hb=6.75m, Hril=7.0m, terreno Tipo 3 (drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 3. Condizioni Drenate

Il centro limite di progetto viene determinato come:
 $Rcd = Rbd + Rad + Wp$ Centro limite e Tensione
 $RcdT = RadT + Wp'$

in cui:
 Rbd = Rbk / γ_c Resistenza alla punta di progetto
 Rad = Rsk / γ_c Resistenza laterale di progetto
 Rbk = Rbm / γ_c Resistenza alla punta caratteristica
 Rsk = Rsm / γ_c Resistenza laterale caratteristica
 Rbm = Qb Resistenza media alla punta
 Rsm = Qs Resistenza media laterale
 RadT = Resistenza laterale di progetto a trazione
 Wp = Peso proprio del palo (alloggiato se in compressione)
 Wp' = Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, $\phi > 0$)

In accordo alla formula di Berzantsev, per pali di grande diametro:

$q_b = Nq' \times \alpha$ con: Nq' = coefficiente di capacità portante compendiate all'incrocio delle prime deformazioni plastiche (rad. = 0.05 - 0.10 D)

Per i pali di grosso diametro (d > 70cm) Nq' è dato dal grafico a destra sottostante:

Mentre per pali di piccolo diametro (d < 6-30cm) e medio diametro (d < 31-70cm): $q_b = Nq' \times \alpha'$

In cui: $Nq' = 2^{\alpha} \times (1 + \frac{2}{\alpha}) \times \gamma \times \tan^2(45 + \frac{\phi}{2})$ (completate ai valori del grafico di Berzantsev)

In ogni caso viene assunto per α il valore limite di α (in).

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

$q_b = \alpha \times c$ (in condizioni di non drenate)

$q_b = \alpha \times \gamma \times z + c'$ (in condizioni drenate) essendo: $c' = (Nq' - 1) \times \tan \phi'$

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, $\phi > 0$)

$q_s = K \times \tan^2 \phi' \times \gamma \times z$ con: K, assunto pari a 0.65 (pali di grande/medio diametro) 0.50 (pali di piccolo diametro), $\tan^2 \phi' = \tan^2 \phi$

In ogni caso non viene superato il valore limite di $q_{s,lim}$.

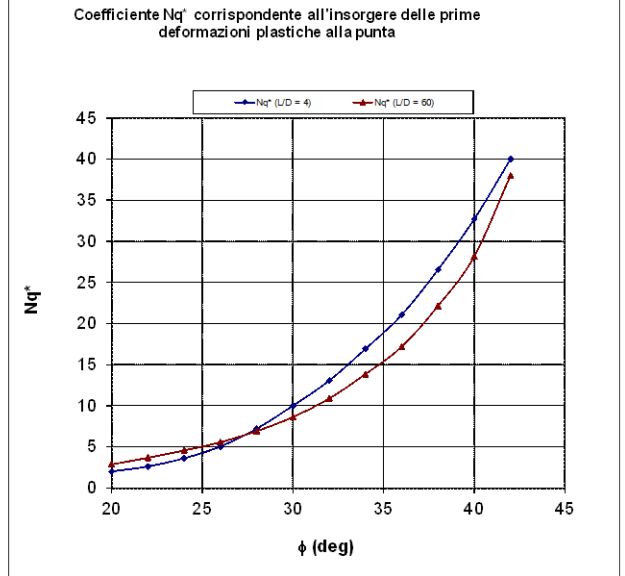
Terreni coesivi (c > 0)

$q_s = \alpha \times c$ (in cond. non dr.)

$q_s = \alpha' \times \gamma \times z + c'$ (in cond. dren.)

α variabile in funzione di α secondo la seguente tabella (AGI - 1984)

α (in ϕ')	α'
< 25	0.30
da 26 a 50	0.80
da 51 a 75	0.60
> 75	0.40



CARATTERISTICHE GEOMETRICHE

	unità		
Diametro palo	m	0.80	palo di grande/medio diam.?
Superficie resistente alla punta	m ²	0.50	
Superficie laterale per lunghezza unitaria	m ²	2.51	
peso specifico del palo	kN/m ³	25.00	

FALDA

	unità	
Quota della falda da q.t.p.	m	6.00

SOVRACCARICO A Q.T.P.

	kN/m ²	
Tensione totale in testa palo	20.0	
Tensione efficace in testa palo	20.0	

COEFFICIENTI DI SICUREZZA

	γ	Tensione
Tipo di Palo	1	Tensione
Coefficiente γ_s	1.00	
Coefficiente γ_c	1.00	
Coefficiente γ_t	1.00	

CARICO DI PROGETTO E d

	Ed, Com Ed, Tracoe	M	kN
APP-1-COMB1 SLU-STR	195		
APP-1-COMB2 SLU-GEO	155		
APP-1-COMB2 SLU-SVS	135		

	M
Lunghezza palo di progetto	19.00
Profondità testa palo	0.00
Quota piede palo	19.00

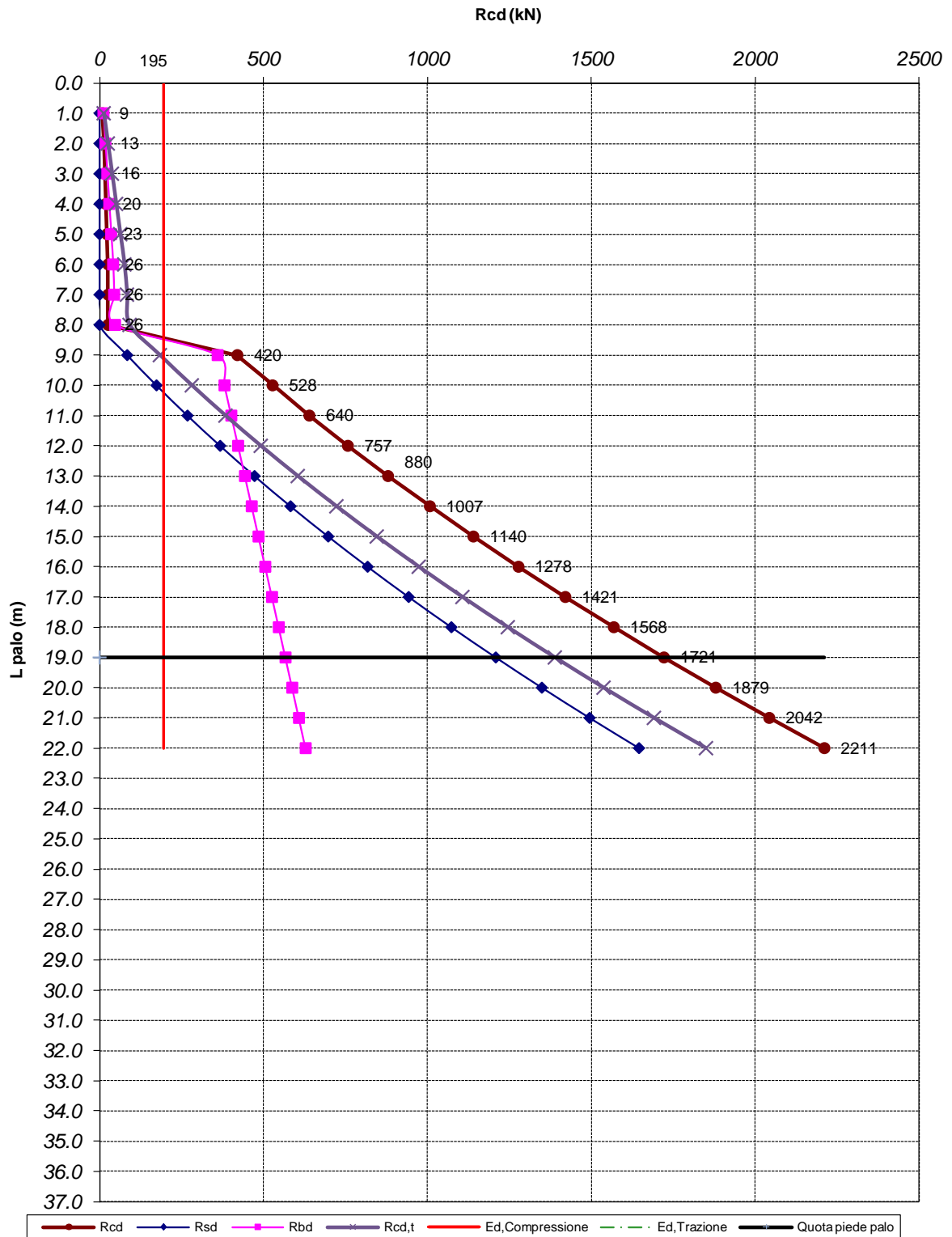
	Red
PROFONDITA' INDAGATA	
quota minima	0.00
quota massima	22.00
	2211

STRATEGIA DI PROGETTO (DA Q.T.P.)

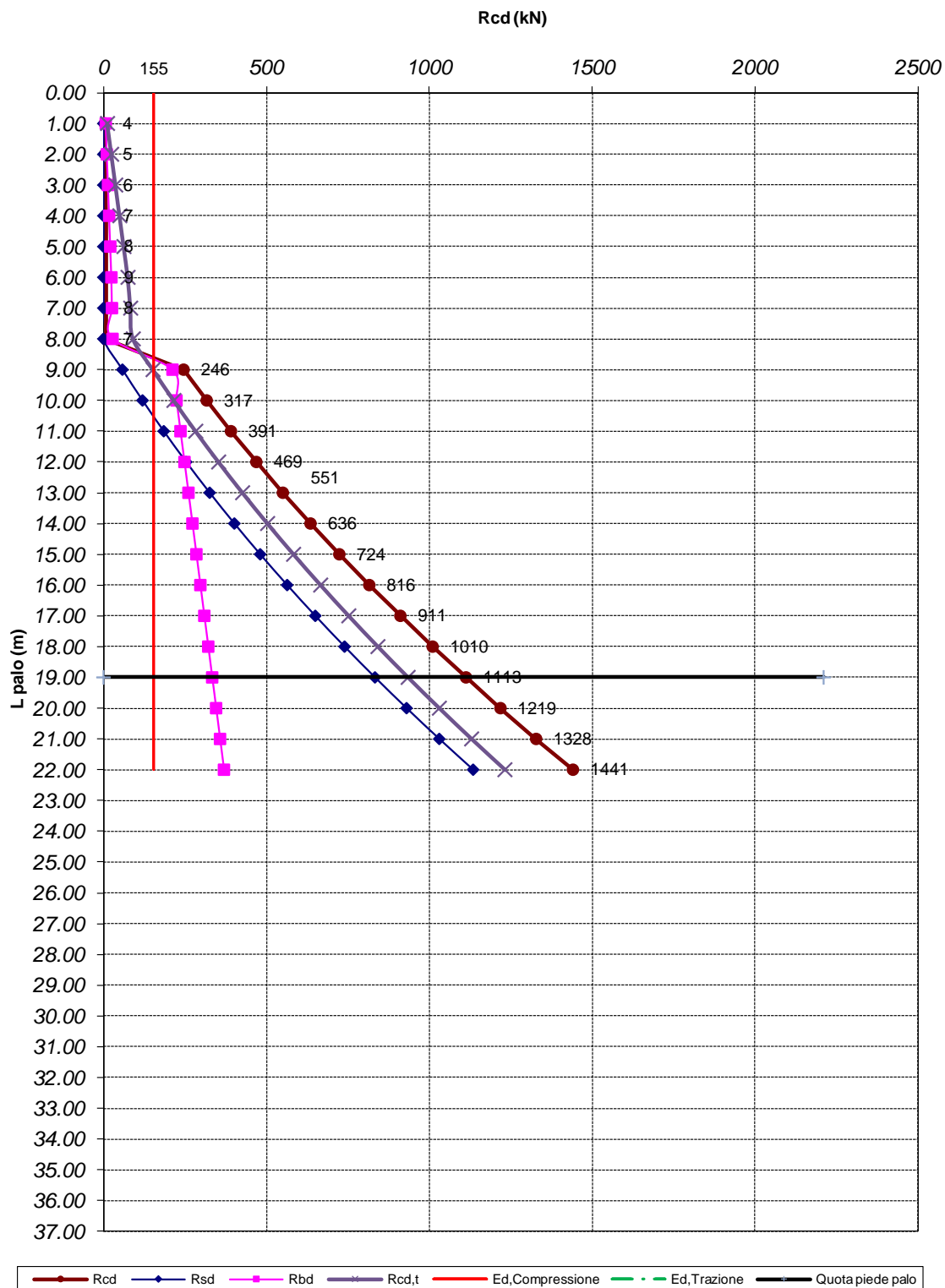
n.	DE SCRIZIONE	DA	A	cu	ϕ'	γ	c'
1	Rilevato (norm)	0.0	-6.0	0.0	0.0	20.0	0.0
2	Terreno Tipo 1 (norm)	-6.0	-8.0	0.0	0.0	19.0	0.0
3	Terreno Tipo 3	-8.0	-25.0	0.0	28.0	19.0	0.0
4							
5							
6							
7							
8							
9							
10							

Unità	z	cu	c'	ϕ'	γ	γ'	qs	K	$\alpha \times \gamma$	$\alpha' \times \gamma$	tan ϕ	q _{lim}	qs	Qs	Nq'	c' Mc (B/Cu)	q _{lim}	qb	Qb	Rcd	RadT	Rbd	Wp	Rcd	RadT	Wp'
1	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	20.0	20.0		150	0.0	0	1.0	0.0	0	40.0	20	0	0	12	3	9	13	13
1	1.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	40.0	40.0	0.000	150	0.0	0	1.0	0.0	0	60.0	30	0	0	18	5	13	25	25
1	2.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	60.0	60.0	0.000	150	0.0	0	1.0	0.0	0	80.0	40	0	0	24	8	16	38	38
1	3.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	80.0	80.0	0.000	150	0.0	0	1.0	0.0	0	100.0	50	0	0	30	10	20	50	50
1	4.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	100.0	100.0	0.000	150	0.0	0	1.0	0.0	0	120.0	60	0	0	35	13	23	63	63
1	5.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	120.0	120.0	0.000	150	0.0	0	1.0	0.0	0	140.0	70	0	0	41	15	26	75	75
1	6.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	140.0	140.0	0.000	150	0.0	0	1.0	0.0	0	160.0	80	0	0	44	18	26	83	83
2	7.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	159.0	150.0	0.000	150	0.0	0	1.0	0.0	0	160.0	80	0	0	47	21	26	91	91
2	8.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	178.0	160.0	0.000	150	0.0	0	1.0	0.0	0	160.0	80	0	0	47	21	26	91	91
3	9.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	197.0	170.0	0.532	150	57.0	143	7.2	0.0	0	1218.1	612	34	34	360	24	420	384	100
3	10.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	216.0	180.0	0.532	150	60.5	295	7.2	0.0	0	1288.6	648	174	174	381	27	528	261	118
3	11.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	235.0	190.0	0.532	150	63.9	456	7.2	0.0	0	1359.1	683	268	268	482	30	640	384	116
3	12.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	254.0	200.0	0.532	150	67.4	625	7.1	0.0	0	1429.4	718	368	368	423	33	757	492	124
3	13.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	273.0	210.0	0.532	150	70.9	803	7.1	0.0	0	1499.6	754	473	473	443	36	880	604	132
3	14.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	292.0	220.0	0.532	150	74.3	990	7.1	0.0	0	1569.7	789	582	582	464	39	1007	722	140
3	15.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	311.0	230.0	0.532	150	77.8	1186	7.1	0.0	0	1639.6	824	697	697	485	42	1140	845	148
3	16.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	330.0	240.0	0.532	150	81.2	1390	7.1	0.0	0	1709.5	859	818	818	505	45	1278	973	156
3	17.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	349.0	250.0	0.532	150	84.7	1603	7.1	0.0	0	1779.2	894	943	943	526	48	1421	1107	164
3	18.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	368.0	260.0	0.532	150	88.1	1824	7.1	0.0	0	1848.8	929	1073	1073	547	51	1568	1245	172
3	19.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	387.0	270.0	0.532	150	91.6	2054	7.1	0.0	0	1918.3	964	1208	1208	567	54	1721	1388	180
3	20.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	406.0	280.0	0.532	150	95.0	2293	7.1	0.0	0	1987.7	999	1349	1349	588	57	1879	1537	188
3	21.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	425.0	290.0	0.532	150	98.5	2541	7.1	0.0	0	2056.9	1034	1495	1495	608	60	2042	1691	196
3	22.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	444.0	300.0	0.532	150	102.0	2797	7.1	0.0	0	2125.0	1069	1646	1646	629	63	2211	1849	204

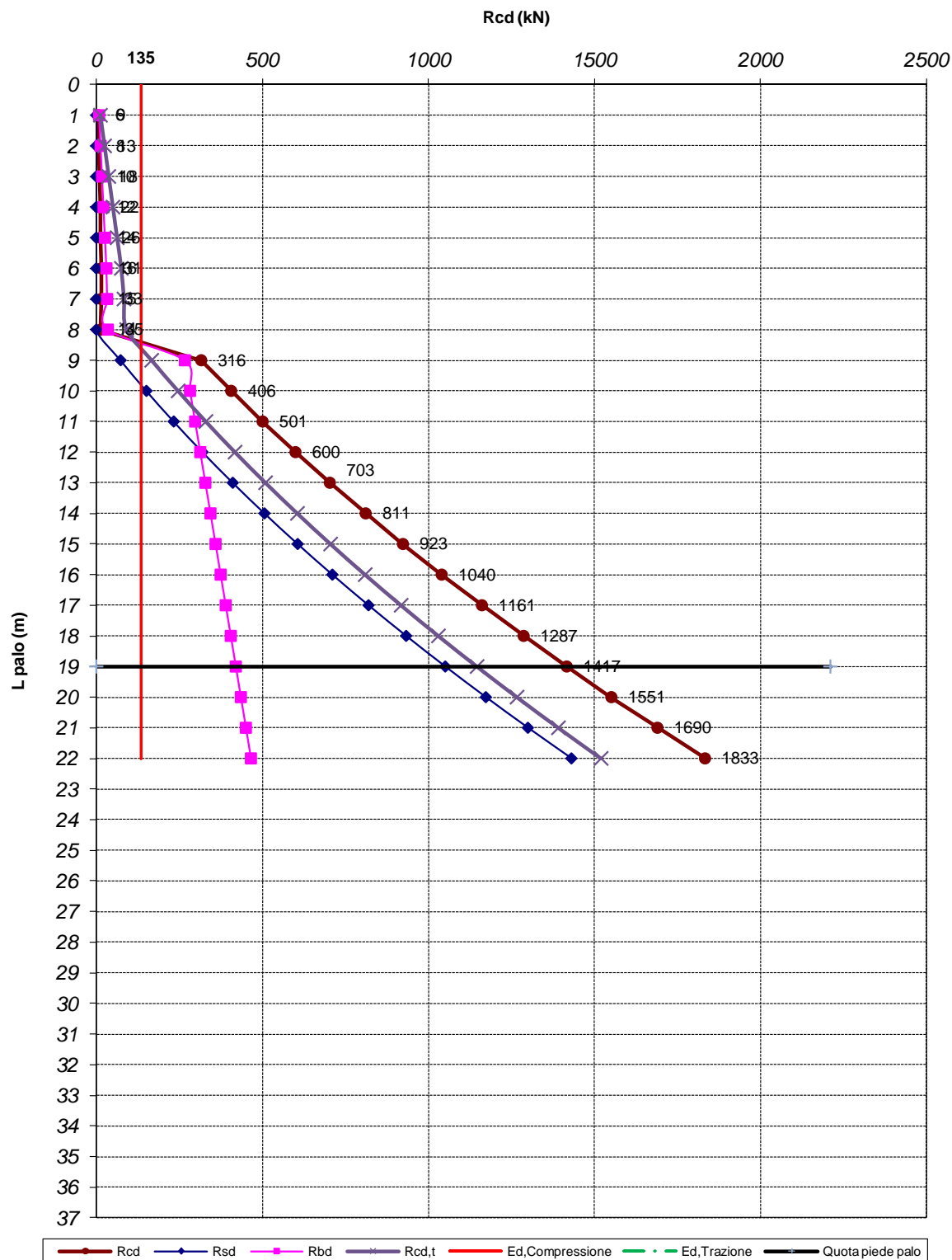
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**



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6.) Barriere Hb=6.75m, Hril=3.0m, terreno Tipo 3 (drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=3.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 3. Condizioni Drenate

Il carico limite di progetto viene determinato come:
 $Rcd = Rbd + Rad + Wp$
 in cui:
 $Rbd = Rbd / \gamma_b$: Resistenza alla punta di progetto
 $Rsd = Rsd / \gamma_s$: Resistenza laterale di progetto
 $Rbk = Rbk / C$: Resistenza alla punta caratterizzata
 $Rsk = Rsk / C$: Resistenza laterale caratterizzata
 $Rbm = Qb$: Resistenza media alla punta
 $Rsm = Qs$: Resistenza media laterale
 $RsdT =$: Resistenza laterale di progetto a frizione
 Wp : Peso proprio del palo (sottratto se in compressione)
 Wp' : Peso proprio del palo

Carico limite c Tensione
 $RcdT = RsdT + Wp'$

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, $\phi > 0$)

La resistenza alla flessione di Bezzani, per pali di grande diametro ϕ .

$q_b = Nq' \times \alpha_v$ con: Nq' : coefficiente di capacità portante corrispondente all'angolo delle punte di formazioni plastiche (cod. = 0,06 - 0,10 D)

Per i pali di grande diametro ($\phi > 70$ cm) Nq' è dato dal grafico a destra riportato.

Medie per pali di piccolo diametro ($\phi < 8-30$ cm) e medio diametro ($\phi < 31-70$ cm) $q_b = Nq' \times \alpha_v$

in cui: $Nq' = 2^c \times (1000^c / \gamma_b^c) \times (45 + 4/7)$ (consigliato ai valori del grafico di Bezzani)

In ogni caso viene assunto per q_b il valore limite di q_{lim} .

Terreni coesivi (c > 0)

La resistenza alla punta viene espressa come:

$q_b = \sigma_v + 9 c_u$ (in condizioni di non drenato)
 $q_b = \sigma_v + 1.5 c_u$ (in condizioni drenate) con: Nq' : $(Nq' \times 1) \text{ kPa}$

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, $\phi > 0$)

$qs = K' \times \sigma_v' \times \alpha_v$ con: K : assunto pari a 0,65 (pali di grande diametro) 0,50 (pali di piccolo diametro), $\sigma_{v0}' = \sigma_{v0}$

In ogni caso non viene superato il valore limite di q_{lim} .

Terreni coesivi (c > 0)

$qs = c$ (in condizioni di non drenato)

α_v variabile in funzione di σ_v secondo la seguente tabella (AGI - 1984)

ca (kPa)	α
< 26	0,90
da 26 a 50	0,80
da 51 a 75	0,60
> 75	0,40

CARATTERISTICHE GEOMETRICHE

Parametro	unità	Valore	Unità	Valore
Diametro palo	m	0,80	pali di grande diametro diam?	si
Superficie resistente alla punta	m ²	0,50		
Superficie laterale per lunghezza unitaria	m ²	2,51		
peso specifico del palo	kN/m ³	25,00		

FALDA

Quota livello falda da q.t.p.	m	2,00
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SOMMARRIO A Q.T.P.

Tensione totale in testa palo	kN/m ²	20,0
Tensione efficace in testa palo	kN/m ²	20,0

COEFFICIENTI DI SICUREZZA

Tipo di Palo	1	Tavolato
coefficiente γ_b	1,00	
coefficiente γ_s	1,00	
coefficiente γ_c	1,00	
coefficiente $\gamma_{c'}$	1,70	

CARICO DI PROGETTO E d

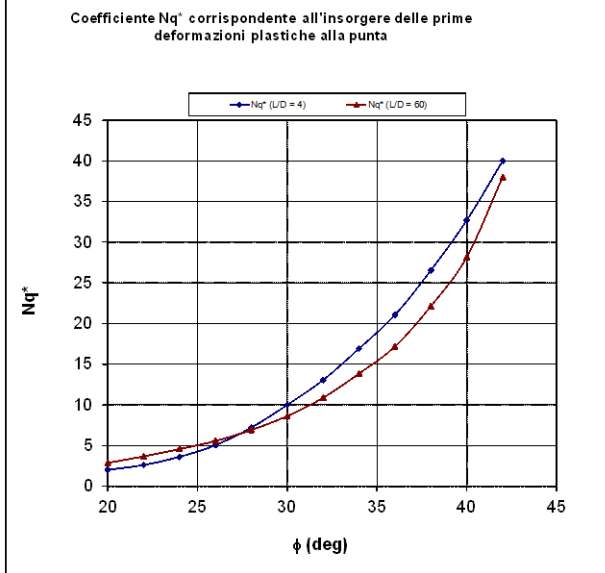
APP.1-COMB1 SLU-STR	195
APP.1-COMB2 SLU-GEO	155
APP.1-COMB2 SLU-SIS	135

Il medesimo palo di progetto	19,00
Probabilità testa palo	0,00
Quota piede palo	19,00

PROFONDITA' INDAGATA	Rcd
quota minima	0,00
quota massima	22,00

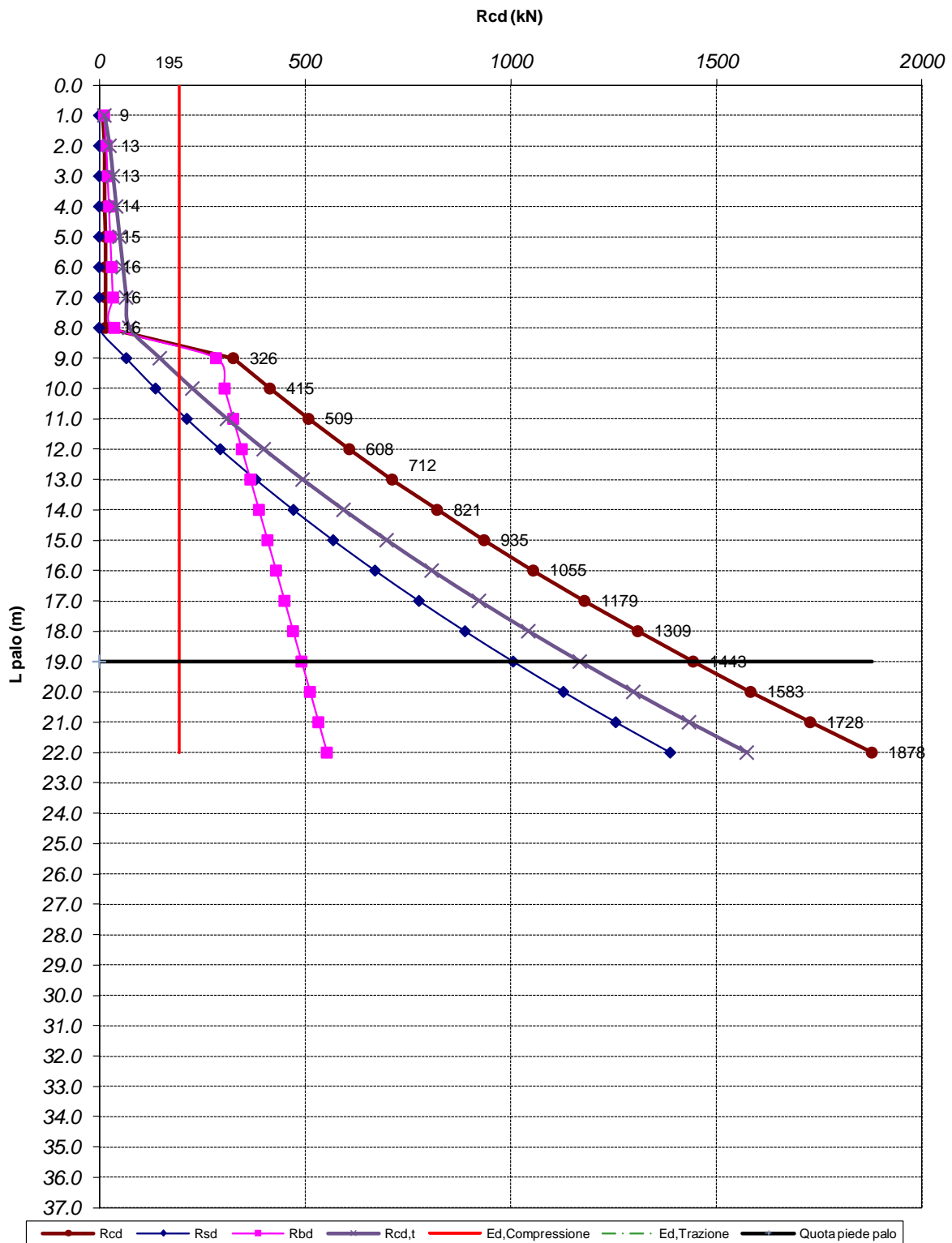
STRUTTURAZIONE DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	cu	ϕ	γ	γ'	c'
1	Rilevato (inerte)	0,0	-2,0	0,0	0,0	20,0	0,0	0,0
2	Terreno Tipo 1 inerte	-2,0	-7,0	0,0	0,0	19,0	0,0	0,0
3	Terreno Tipo 3	-7,0	-25,0	0,0	28,0	19,0	0,0	0,0
4								
5								
6								
7								
8								
9								
10								

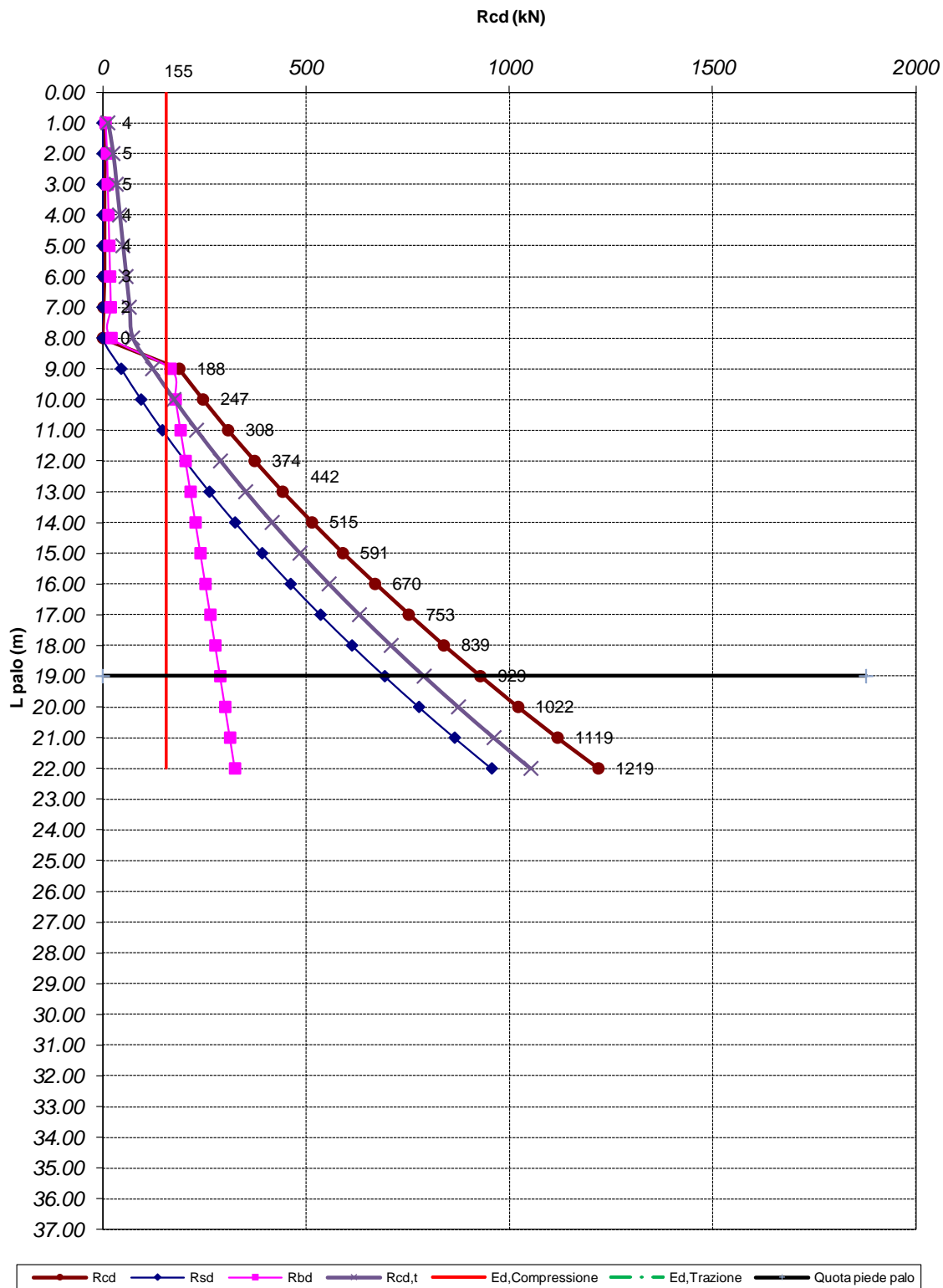


Unità	z	cu	c'	ϕ	γ	γ'	qs	K	σ_v	σ_v'	σ_{v0}	qs_{lim}	qs	qs	qs	Nq'	$c'Nq' (BCu)$	qs_{lim}	qb	Qb	Rsd	$RsdT$	Rbd	Wp	Rcd	$RcdT$	Wp'
1	0,0						0,650	20,0	20,0										40,0	20	0	0	12	3	9	13	13
1	1,0	0,0	0,0	0,0	20,0	20,0	0,650	40,0	40,0	0,000	150	0,0	0	0	1,0	0,0	0	0	60,0	30	0	0	18	5	13	25	25
1	2,0	0,0	0,0	0,0	20,0	20,0	0,650	60,0	60,0	0,000	150	0,0	0	0	1,0	0,0	0	0	71,0	36	0	0	21	8	13	33	33
1	3,0	0,0	0,0	0,0	20,0	11,0	0,650	80,0	71,0	0,000	150	0,0	0	1,0	0,0	0	0	82,0	41	0	0	26	10	14	41	41	
1	4,0	0,0	0,0	0,0	20,0	11,0	0,650	100,0	82,0	0,000	150	0,0	0	1,0	0,0	0	0	93,0	47	0	0	27	13	15	49	49	
1	5,0	0,0	0,0	0,0	20,0	11,0	0,650	120,0	93,0	0,000	150	0,0	0	1,0	0,0	0	0	104,0	52	0	0	21	15	16	57	57	
1	6,0	0,0	0,0	0,0	20,0	11,0	0,650	140,0	104,0	0,000	150	0,0	0	1,0	0,0	0	0	114,0	57	0	0	34	18	16	65	65	
2	7,0	0,0	0,0	0,0	19,0	10,0	0,650	158,0	114,0	0,000	150	0,0	0	1,0	0,0	0	0	124,0	62	0	0	37	21	16	73	73	
2	8,0	0,0	0,0	0,0	19,0	10,0	0,650	178,0	124,0	0,000	150	0,0	0	1,0	0,0	0	0	134,0	67	0	0	37	21	16	81	81	
2	9,0	0,0	0,0	28,0	19,0	10,0	0,650	197,0	134,0	0,532	150	44,6	112	7,2	0,0	0	0	144,0	72	0,000	0,000	37	21	16	89	89	
2	10,0	0,0	0,0	28,0	19,0	10,0	0,650	216,0	144,0	0,532	150	48,0	122	7,2	0,0	0	0	154,0	77	0,000	0,000	37	21	16	97	97	
2	11,0	0,0	0,0	28,0	19,0	10,0	0,650	235,0	154,0	0,532	150	50,0	130	7,2	0,0	0	0	164,0	82	0,000	0,000	37	21	16	105	105	
2	12,0	0,0	0,0	28,0	19,0	10,0	0,650	254,0	164,0	0,532	150	52,0	138	7,2	0,0	0	0	174,0	87	0,000	0,000	37	21	16	113	113	
2	13,0	0,0	0,0	28,0	19,0	10,0	0,650	273,0	174,0	0,532	150	54,0	146	7,1	0,0	0	0	184,0	92	0,000	0,000	37	21	16	121	121	
2	14,0	0,0	0,0	28,0	19,0	10,0	0,650	292,0	184,0	0,532	150	56,0	154	7,1	0,0	0	0	194,0	97	0,000	0,000	37	21	16	129	129	
2	15,0	0,0	0,0	28,0	19,0	10,0	0,650	311,0	194,0	0,532	150	58,0	162	7,1	0,0	0	0	204,0	102	0,000	0,000	37	21	16	137	137	
2	16,0	0,0	0,0	28,0	19,0	10,0	0,650	330,0	204,0	0,532	150	60,0	170	7,1	0,0	0	0	214,0	107	0,000	0,000	37	21	16	145	145	
2	17,0	0,0	0,0	28,0	19,0	10,0	0,650	349,0	214,0	0,532	150	62,0	178	7,1	0,0	0	0	224,0	112	0,000	0,000	37	21	16	153	153	
2	18,0	0,0	0,0	28,0	19,0	10,0	0,650	368,0	224,0	0,532	150	64,0	186	7,1	0,0	0	0	234,0	117	0,000	0,000	37	21	16	161	161	
2	19,0	0,0	0,0	28,0	19,0	10,0	0,650	387,0	234,0	0,532	150	66,0	194	7,1	0,0	0	0	244,0	122	0,000	0,000	37	21	16	169	169	
2	20,0	0,0	0,0	28,0	19,0	10,0	0,650	406,0	244,0	0,532	150	68,0	202	7,1	0,0	0	0	254,0	127	0,000	0,000	37	21	16	177	177	
2	21,0	0,0	0,0	28,0	19,0	10,0	0,650	425,0	254,0	0,532	150	70,0	210	7,1	0,0	0	0	264,0	132	0,000	0,000	37	21	16	185	185	
2	22,0	0,0	0,0	28,0	19,0	10,0	0,650	444,0	264,0	0,532	150	72,0	218	7,1	0,0	0	0	274,0	137	0,000	0,000	37	21	16	193	193	

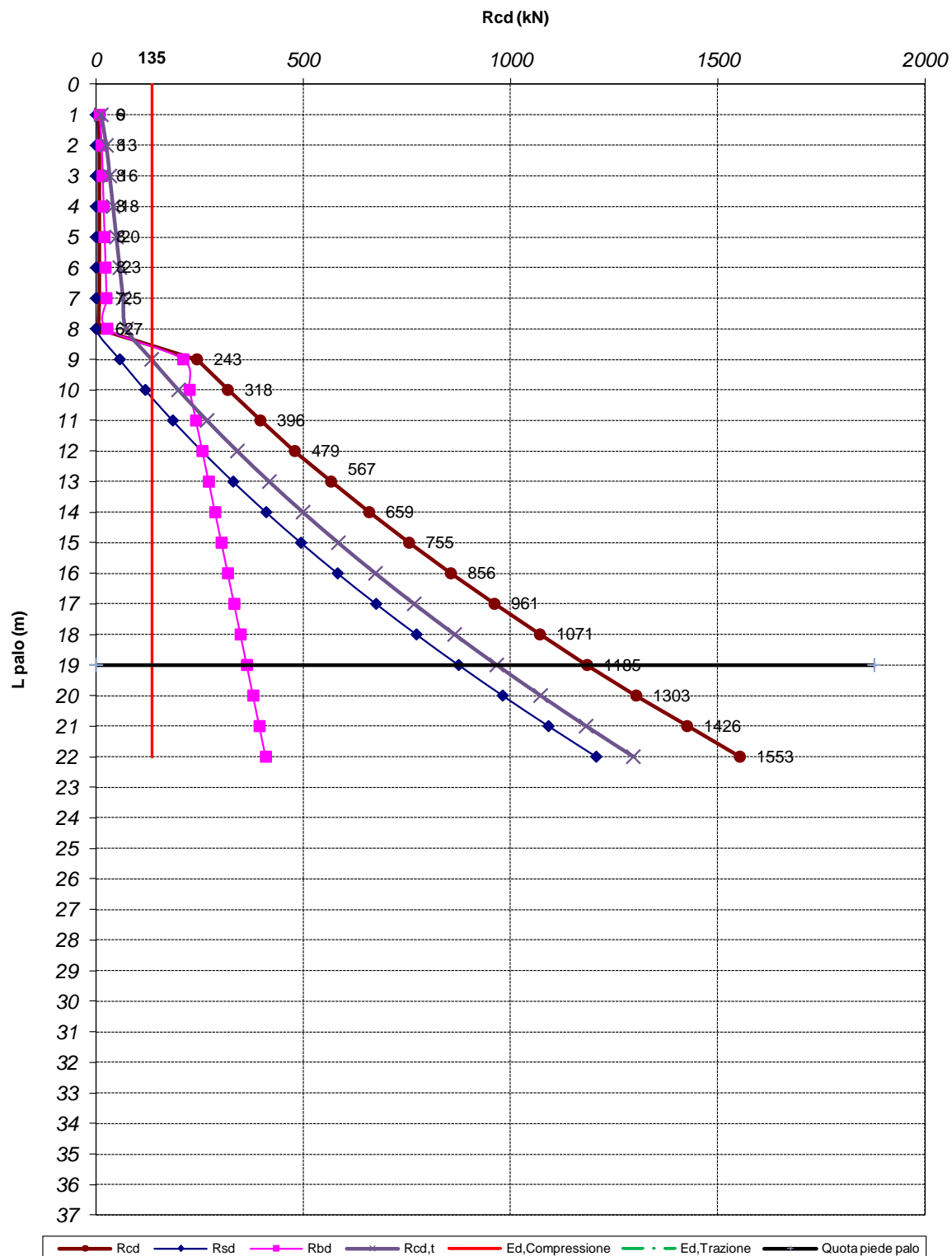
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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7.) Barriere Hb=6.75m, Hril=7.0m, terreno Tipo 4 (non drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 4. Condizioni Non Drenate

Il carico limite di progetto viene determinato come:
 $Rcd = Rbd + Rsd + Wp$
 Carico limite e Trazione
 $Rcd.t = Rsd.t + Wp'$
 in cui:
 Rbd = Rbk / γ_b : Resistenza alla punta di progetto
 Rsd = Rsk / γ_s : Resistenza laterale di progetto
 Rbk = Rbm / c_1 : Resistenza alla punta caratteristica
 Rsk = Rsm / c_1 : Resistenza laterale caratteristica
 Rbm = Qb: Resistenza media alla punta
 Rsm = Qs: Resistenza media laterale
 Rsd,t = : Resistenza laterale di progetto a trazione
 Wp: Peso proprio del palo (alleggerito se in compressione)
 Wp': Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari ($c = 0, \phi > 0$)
 In accordo alla teoria di Berenzantsev, per pali di grande diametro¹:
 $q_b = N_q^* \times \alpha^v$ con: N_q^* : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (ced. = 0,06 - 0,10 D)
 Per i pali di grosso diametro (>70cm) N_q^* è dato dal grafico a destra riportato:

Mentre per pali di piccolo diametro (d=8-30cm) e medio diametro (d=31-70cm): $q_b = N_q \times \alpha^v$
 In cui: $N_q = 2^* \times (\pi \times \tan^2(45 + \phi/2))$ (equivalente ai valori del grafico di Berenzantsev)
 In ogni caso viene assunto per q_b il valore limite di $q_{b,lim}$.

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali
 La resistenza alla punta viene espressa come:
 $q_b = \sigma_v' + 9 c_1$ (in condizioni non drenate)
 $q_b = \sigma_v' + N_q^* + c^* N_c$ (in condizioni drenate) essendo: $N_c = (N_q^* - 1) / \tan \phi'$

RESISTENZA LATERALE UNITARIA

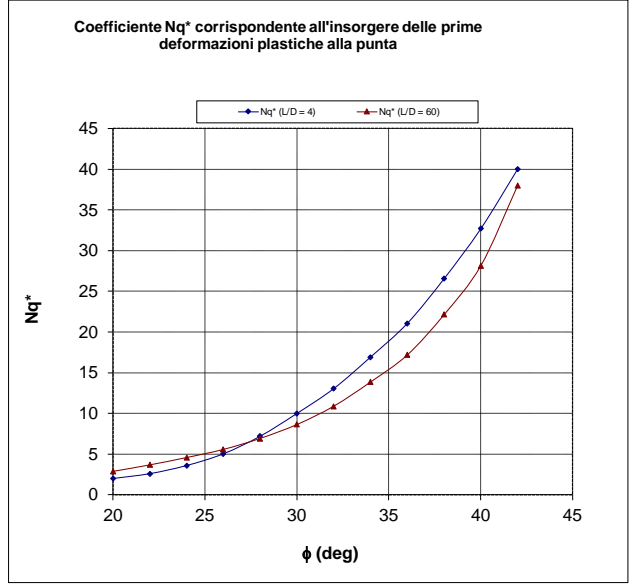
Terreni granulari ($c = 0, \phi > 0$)
 $q_s = K' \tan^2 \alpha^v$ con: K assunto pari a 0.65 (pali di grande/medio diametro)-0.50 (pali di piccolo diametro).
 $\tan^2 \alpha = \tan^2 \phi'$

In ogni caso non viene superato il valore limite di $q_{s,lim}$.

Terreni coesivi (c > 0)

$q_s = \alpha \times c_u$ (in cond. non dr.) con: α variabile in funzione di c_u secondo la seguente tabella (AGI - 1984)
 $q_s = \alpha' \times c' + \sigma_v' \times K' \tan^2 \alpha^v$ (in cond. dren.)

c_u (kPa)	α
<= 25	0.90
da 26 a 50	0.80
da 51 a 75	0.60
> 75	0.40



CARATTERISTICHE GEOMETRICHE

	unità	
Diametro palo	m	0.80
Superficie resistente alla punta	m ²	0.50
Superficie laterale per lunghezza unitaria	m ²	2.51
peso specifico del palo	kN/m ³	25.00

FALDA

	unità	
Quota livello falda da q.t.p.	m	6.00

SOVRACCARICO A G.T.P.

	unità	
Tensione totale in testa palo	kN/m ²	20.0
Tensione efficace in testa palo	kN/m ²	20.0

CARICO DI PROGETTO Ed

	Ed, Com, Ed, Trazione	Ed, Com, Ed, Trazione
APP.1-COMB1 SLU-STRU	195	13.00
APP.1-COMB2 SLU-GEO	155	13.00
APP.1-COMB2 SLV-SIS	135	13.00

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	cu	ϕ'	γ	c'
1	Rilevato (inerte)	0.0	-6.0	0.0	0.0	20.0	0.0
2	Terreno Tipo 1 inerte	-6.0	-8.0	0.0	0.0	19.0	0.0
3	Terreno Tipo 4	-8.0	-25.0	70.0	0.0	19.0	0.0
4							
5							
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COEFFICIENTI DI SICUREZZA

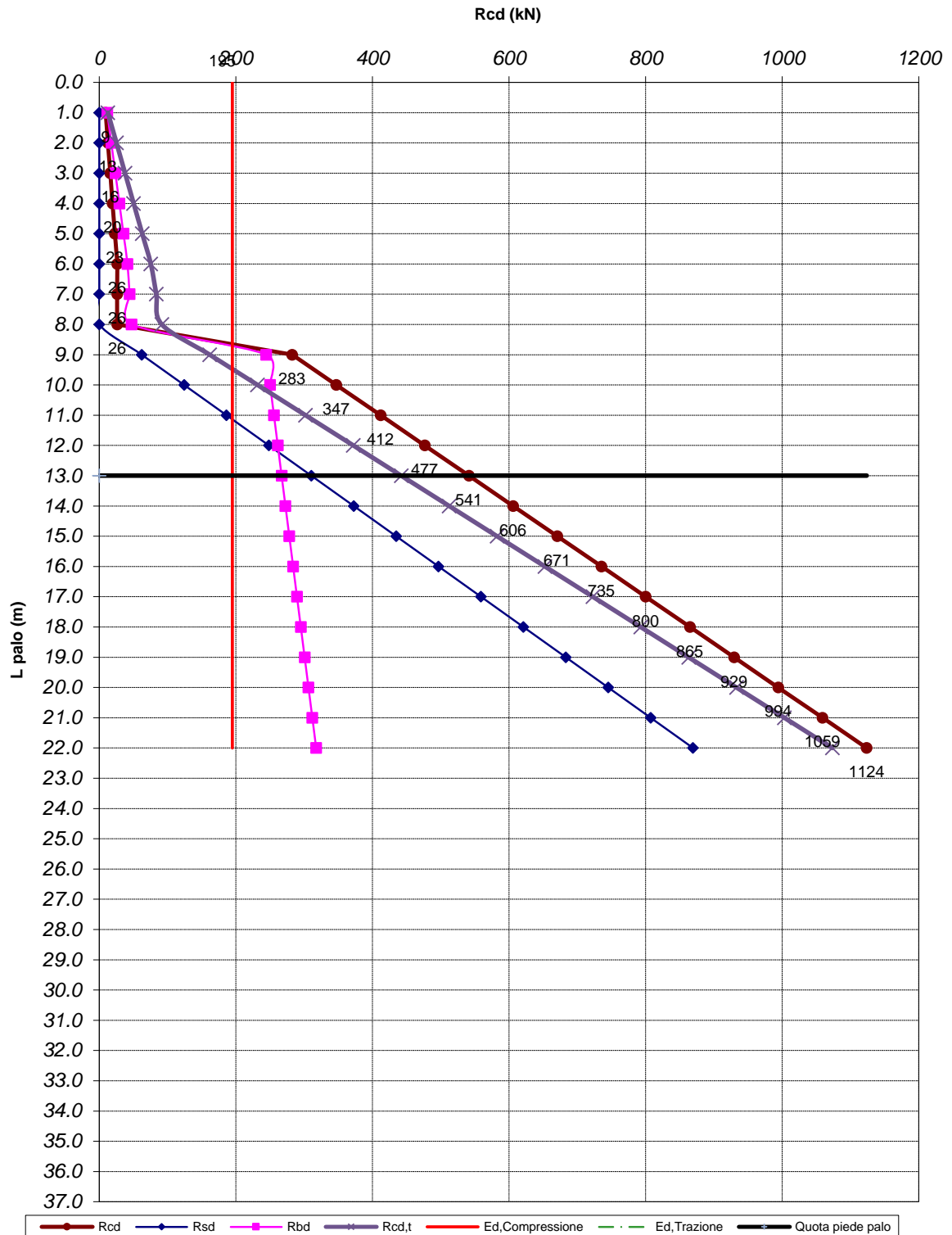
Tipo di Palo	γ	Trivellato
coefficiente γ_b	1.00	
coefficiente γ_s	1.00	
coefficiente γ_a	1.00	
coefficiente c_1	1.70	

	m
Lunghezza palo di progetto	13.00
Profondità testa palo	0.00
Quota piede palo	13.00

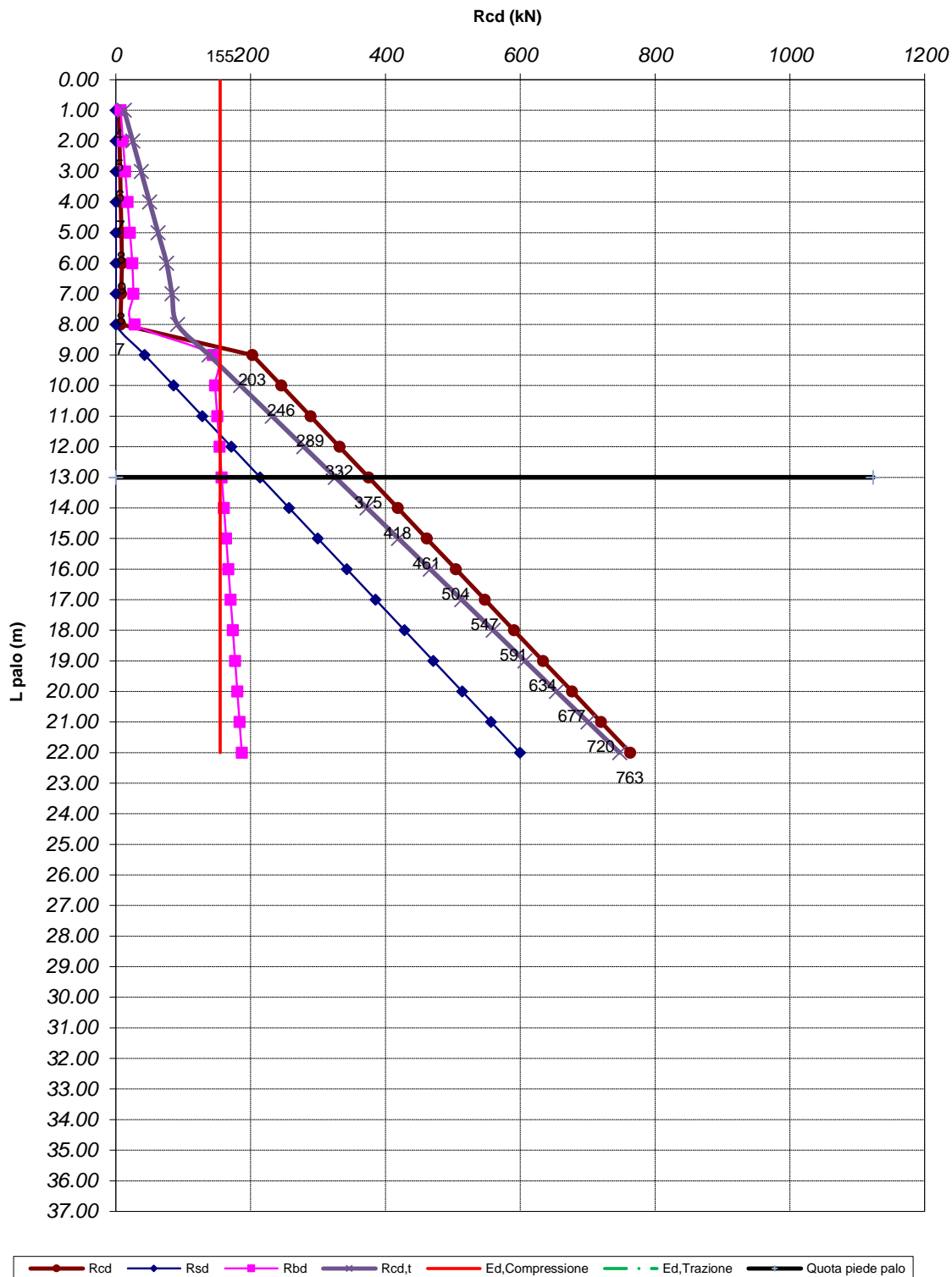
	Ed
PROFONDITA' INDAGATA	0.00
quota minima	22.00
quota massima	1124

Unità	z	cu	c'	ϕ'	γ	γ'	qa	K	σ_v	σ_v'	tan δ	qs,lim	qs	qs	Nq*	c*Nc (9Cu)	qb,lim	qb	Qb	Rsd	Rsd,t	Rbd	Wp	Rcd	Rcd,t	Wp'
1	0.0						0.650	20.0	20.0			150	0.0	0	1.0	0.0	0	40.0	20	0	0	12	3	9	13	13
1	1.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	40.0	40.0	0.000	150	0.0	0	1.0	0.0	0	60.0	30	0	0	18	5	13	25	25
1	2.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	60.0	60.0	0.000	150	0.0	0	1.0	0.0	0	80.0	40	0	0	24	8	16	38	38
1	3.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	80.0	80.0	0.000	150	0.0	0	1.0	0.0	0	100.0	50	0	0	30	10	20	50	50
1	4.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	100.0	100.0	0.000	150	0.0	0	1.0	0.0	0	120.0	60	0	0	35	13	23	63	63
1	5.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	120.0	120.0	0.000	150	0.0	0	1.0	0.0	0	140.0	70	0	0	41	15	26	75	75
1	6.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	140.0	140.0	0.000	150	0.0	0	1.0	0.0	0	150.0	75	0	0	44	18	26	83	83
2	7.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	159.0	150.0	0.000	150	0.0	0	1.0	0.0	0	160.0	80	0	0	47	21	26	91	91
2	8.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	178.0	160.0	0.000	150	0.0	0	1.0	0.0	0	170.0	80	0	0	47	21	26	91	91
3	9.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	197.0	170.0	0.000	150	42.0	106	1.0	630.0	0	827.0	416	62	62	245	24	283	162	100
3	10.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	216.0	180.0	0.000	150	42.0	211	1.0	630.0	0	846.0	425	124	124	250	27	347	232	108
3	11.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	235.0	190.0	0.000	150	42.0	317	1.0	630.0	0	865.0	435	186	186	256	30	412	302	116
3	12.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	254.0	200.0	0.000	150	42.0	422	1.0	630.0	0	884.0	444	248	248	261	33	477	372	124
3	13.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	273.0	210.0	0.000	150	42.0	528	1.0	630.0	0	903.0	454	310	310	267	36	541	442	132
3	14.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	292.0	220.0	0.000	150	42.0	633	1.0	630.0	0	922.0	463	373	373	273	39	606	512	140
3	15.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	311.0	230.0	0.000	150	42.0	739	1.0	630.0	0	941.0	473	435	435	278	42	671	582	148
3	16.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	330.0	240.0	0.000	150	42.0	844	1.0	630.0	0	960.0	483	497	497	284	45	735	653	156
3	17.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	349.0	250.0	0.000	150	42.0	950	1.0	630.0	0	979.0	492	559	559	289	48	800	723	164
3	18.0	70.0	0.0	0.0	19.0	10.0	42.0	0.650	368.0	260.0	0.000	150	42.0	1056	1.0	630.0	0	998.0	502	621	621	295	51	865	793	172

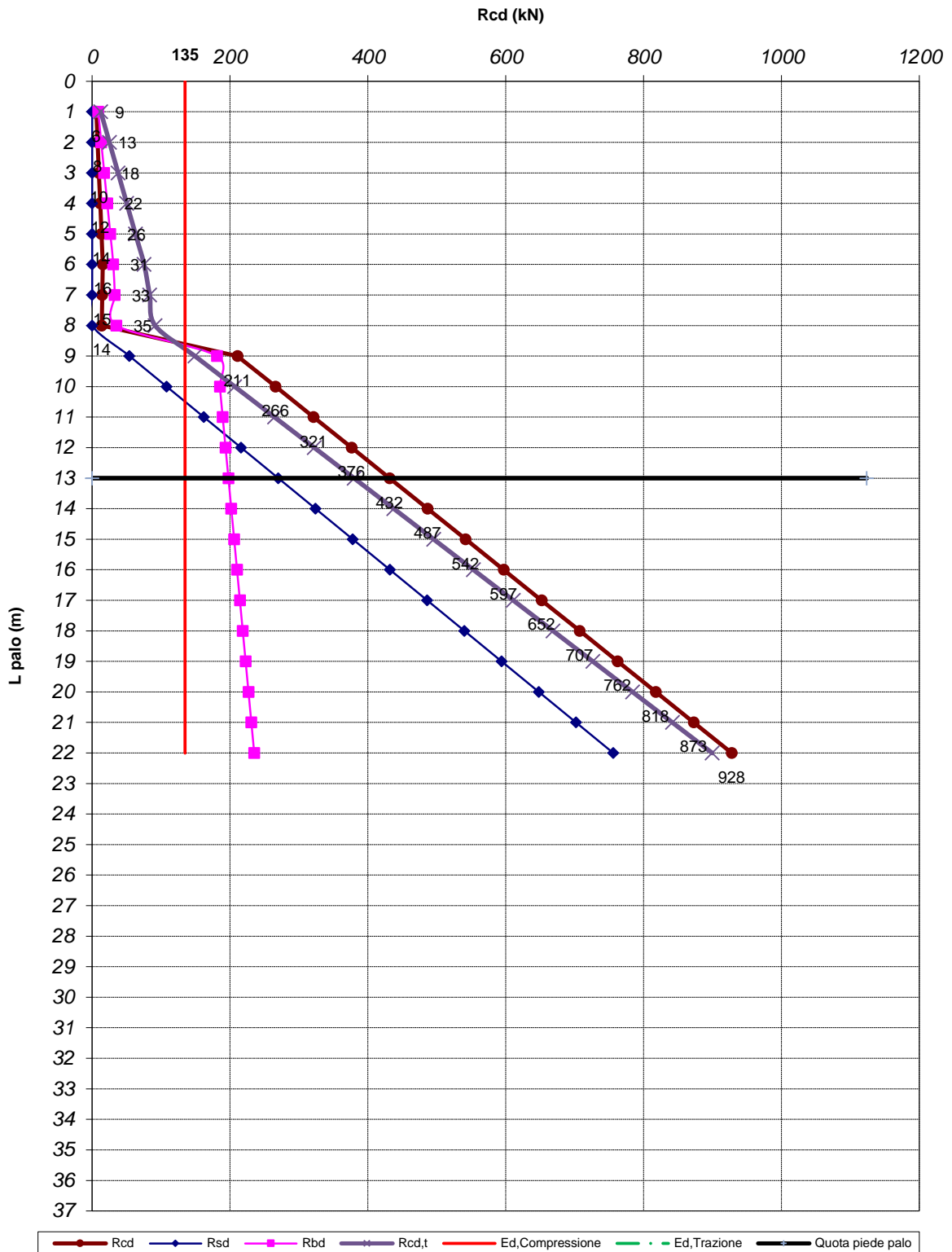
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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8.) Barriere Hb=6.75m, Hril=3.0m, terreno Tipo 4 (non drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO:

Pali di barriere su Rilevato. Hril=3.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 4. Condizioni Non Drenate

Il carico limite di progetto viene determinato come:

$Rcd = Rbd + Rsd + Wp$

Carico limite e Trazione

$Rcd,t = Rsd,t + Wp'$

in cui:

$Rbd = Rbk / \gamma_b$

Resistenza alla punta di progetto

$Rsd = Rsk / \gamma_s$

Resistenza laterale di progetto

$Rbk = Rbm / \gamma_c$

Resistenza alla punta caratteristica

$Rsk = Rsm / \gamma_c$

Resistenza laterale caratteristica

$Rbm = Qb$

Resistenza media alla punta

$Rsm = Qs$

Resistenza media laterale

$Rsd,t =$

Resistenza laterale di progetto a trazione

$Wp =$

Peso proprio del palo (alleggerito se in compressione)

$Wp' =$

Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari ($c = 0, \phi < 0$)

In accordo alla teoria di Berenzantsev, per pali di grande diametro¹⁾:

$qb = Nq^* \times \alpha$

con: Nq^* : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (ced. = 0,06 - 0,10 D)

Per i pali di grosso diametro ($d > 70cm$) Nq^* è dato dal grafico a destra riportato.

Mentre per pali di piccolo diametro ($d = 8-30cm$) e medio diametro ($d = 31-70cm$): $qb = Nq \times s^* \times v$

In cui: $Nq = 2^* \times \alpha \times (\tan \phi)^2 \times \tan^2(45 + \phi/2)$ (equivalente ai valori del grafico di Berenzantsev)

In ogni caso viene assunto per qb il valore limite di qb,lim.

Terreni coesivi ($c > 0$)

Il calcolo viene svolto in termini di tensori totali

La resistenza alla punta viene espressa come:

$qb = \sigma_v + 9 \times c_u$

(in condizioni non drenate)

$qb = \sigma_v + Nq^* \times c^* \times Nc$

(in condizioni drenate) essendo: $Nc = (Nq^* - 1) \times \tan \phi^*$

RESISTENZA LATERALE UNITARIA

Terreni granulari ($c = 0, \phi < 0$)

$qs = K \times \tan^2 \alpha \times \sigma_v$

con: K assunto pari a 0.65 (pali di grande/medio diametro)-0.50 (pali di piccolo diametro), $\tan^2 = \tan^2 \phi$

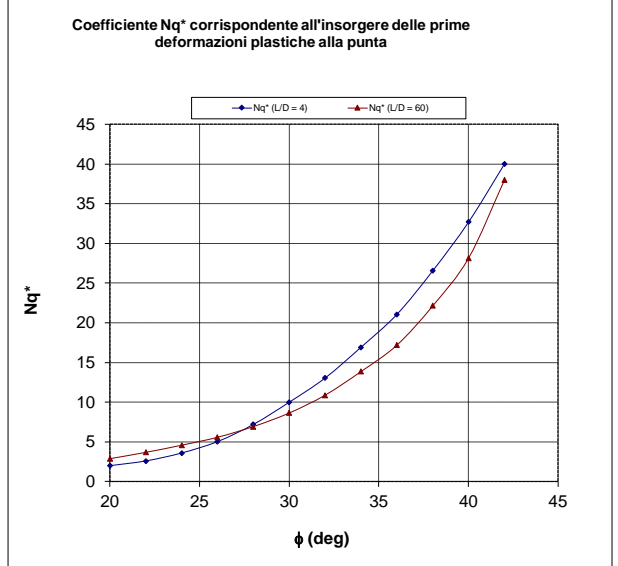
In ogni caso non viene superato il valore limite di ql,lim.

Terreni coesivi ($c > 0$)

$qs = \alpha \times c + \sigma_v \times K \times \tan^2 \alpha + \sigma_v$

con: α variabile in funzione di c secondo la seguente tabella (AGI - 1984)

$c \leq 26$	0.90
da 26 a 50	0.80
da 51 a 75	0.60
> 75	0.40



CARATTERISTICHE GEOMETRICHE

	unità		
Diametro palo	m	0.60	palo di grande/medio diam.?
Superficie resistente alla punta	mq	0.50	si
Superficie laterale per lunghezza unitaria	mq	2.51	
peso specifico del palo	kN/m ³	25.00	

FALDA

	unità	
Quota livello falda da q.t.p.	m	2.00

SOVRACCARICO A Q.T.P.

Tensione totale in testa palo	kN/m ²	20.0
Tensione efficace in testa palo	kN/m ²	20.0

CARICO DI PROGETTO Ed

	Ed,Conn,Ed,Trazione
APP.1-COMB1 SLU-STRU	195
APP.1-COMB2 SLU-GEO	155
APP.1-COMB2 SLV-SIS	135

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	cu	phi	gamma	c*
1	Rilevato (inerte)	0.0	-2.0	0.0	0.0	20.0	0.0
2	Terreno Tipo 1 inerte	-2.0	-7.0	0.0	0.0	19.0	0.0
3	Terreno Tipo 4	-7.0	-24.0	30.0	0.0	19.0	0.0
4							
5							
6							
7							
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10							

COEFFICIENTI DI SICUREZZA

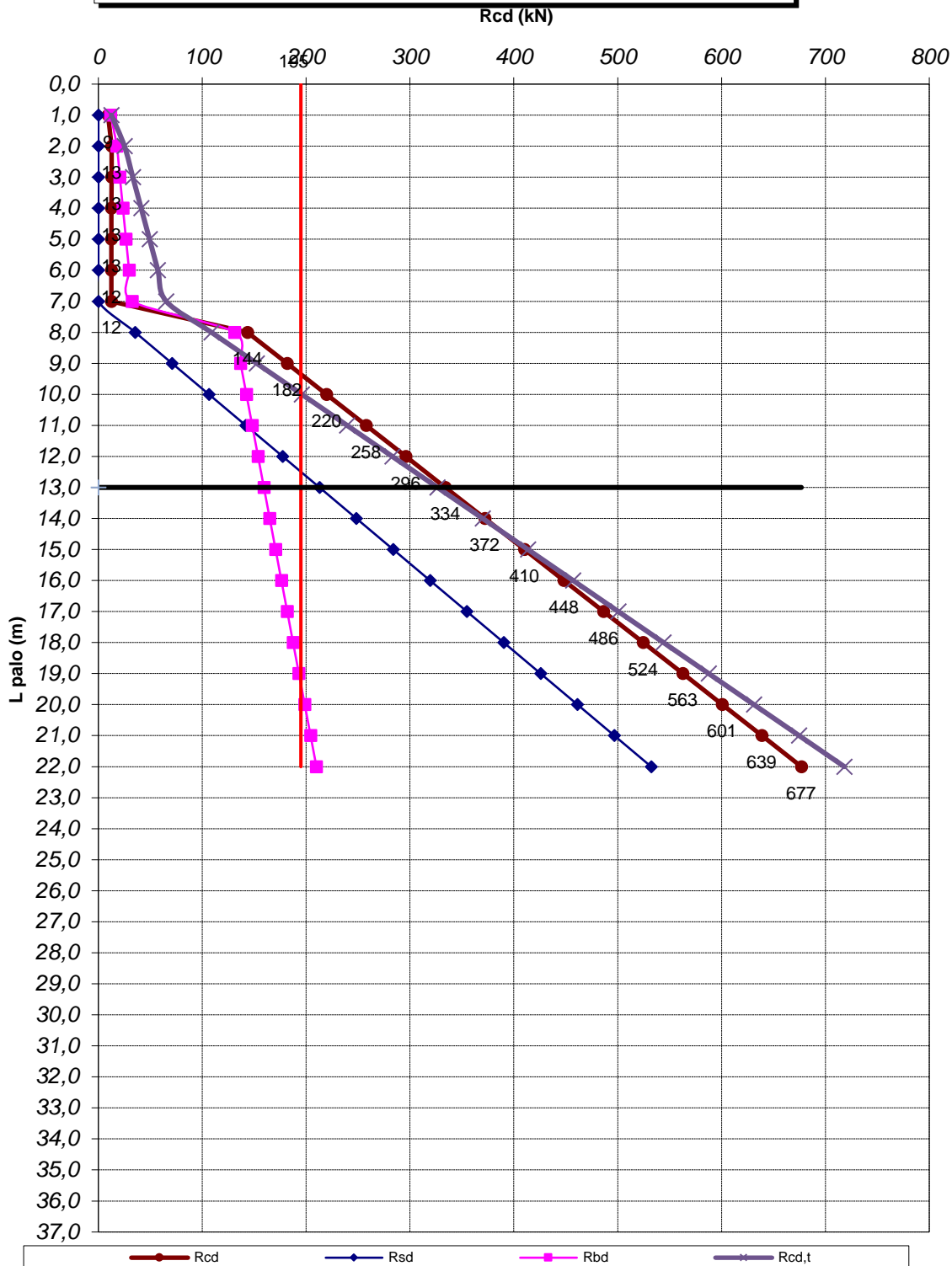
Tipo di Palo	t	Trivellato
coefficiente γ_b		1.00
coefficiente γ_s		1.00
coefficiente γ_{ph}		1.00
coefficiente γ_c		1.70

	m
Lunghezza palo di progetto	13.00
Profondità testa palo	0.00
Quota piede palo	13.00

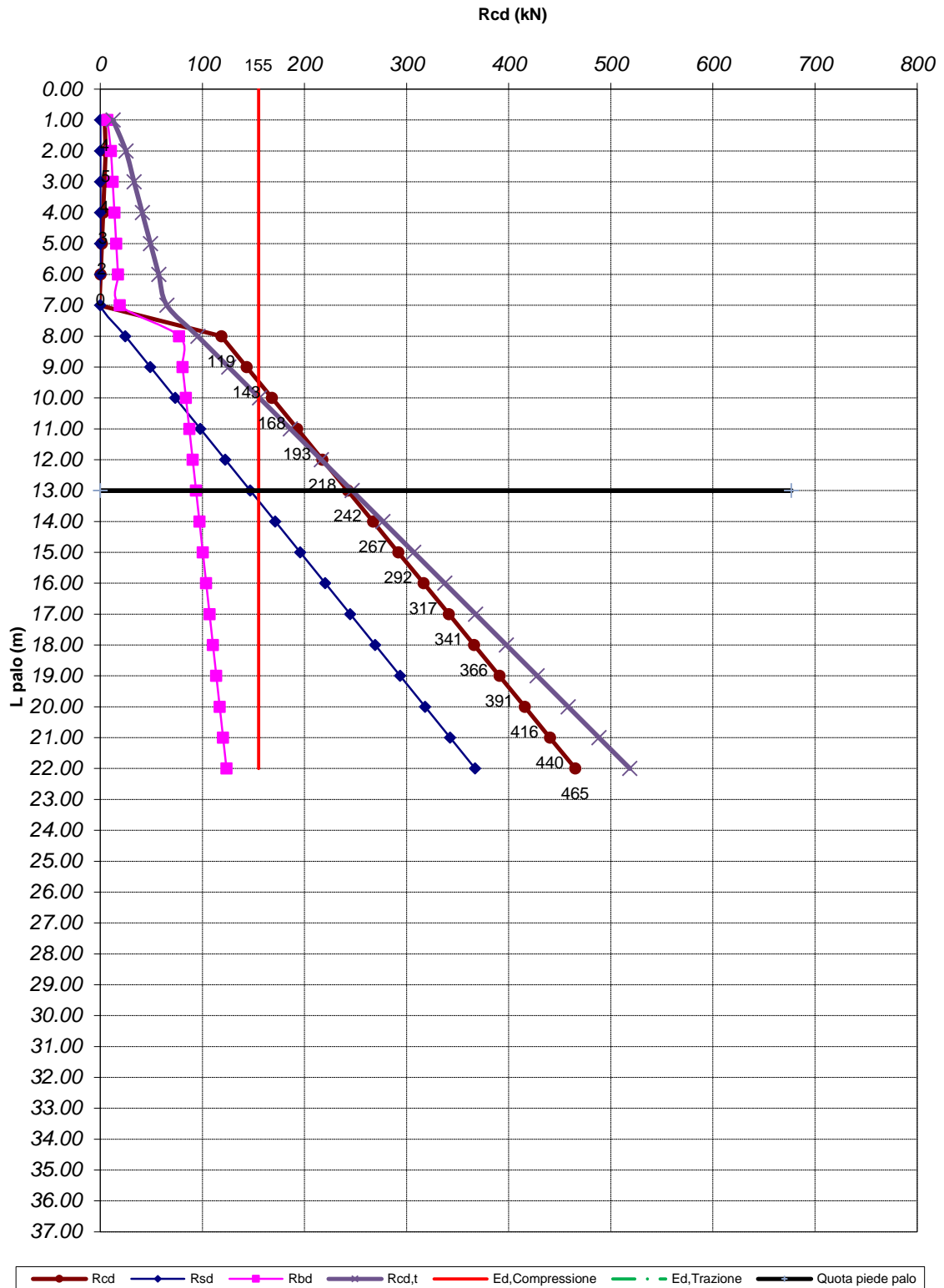
PROFONDITA' INDAGATA	Red
quota minima	0.00
quota massima	22.00

Unità	z	cu	c*	phi	gamma	gamma'	qa	K	sigma_v	sigma_v'	tan delta	qs,lim	qs	Qs	Nq*	c*Nc (9Cu)	qb,lim	qb	Qb	Rsd	Rsd,t	Rbd	Wp	Rcd	Rcd,t	Wp'
1	0.0																									
1	1.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	40.0	40.0	0.000	150	0.0	0	1.0	0.0	0	40.0	20	0	0	12	3	9	13	13
1	2.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	60.0	60.0	0.000	150	0.0	0	1.0	0.0	0	60.0	30	0	0	18	5	13	25	25
2	3.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	79.0	70.0	0.000	150	0.0	0	1.0	0.0	0	70.0	35	0	0	21	8	13	33	33
2	4.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	98.0	80.0	0.000	150	0.0	0	1.0	0.0	0	80.0	40	0	0	24	11	13	41	41
2	5.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	117.0	90.0	0.000	150	0.0	0	1.0	0.0	0	90.0	45	0	0	27	14	13	49	49
2	6.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	136.0	100.0	0.000	150	0.0	0	1.0	0.0	0	100.0	50	0	0	30	17	12	57	57
2	7.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	155.0	110.0	0.000	150	0.0	0	1.0	0.0	0	110.0	55	0	0	33	20	12	65	65
3	8.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	174.0	120.0	0.000	150	24.0	60	1.0	270.0	0	444.0	223	35	35	131	23	144	109	73
3	9.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	193.0	130.0	0.000	150	24.0	121	1.0	270.0	0	463.0	233	71	71	137	26	182	152	81
3	10.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	212.0	140.0	0.000	150	24.0	181	1.0	270.0	0	482.0	242	106	106	143	29	220	196	89
3	11.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	231.0	150.0	0.000	150	24.0	241	1.0	270.0	0	501.0	252	142	142	148	32	258	239	98
3	12.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	250.0	160.0	0.000	150	24.0	302	1.0	270.0	0	520.0	261	177	177	154	35	296	283	106
3	13.0	30.0	0.0	0.0	19.0	10.0	24.0	0.650	269.0	170.0	0.000	150	24.0	362	1.0	270.0	0	539.0	271	213	213	159	38	334	326	114

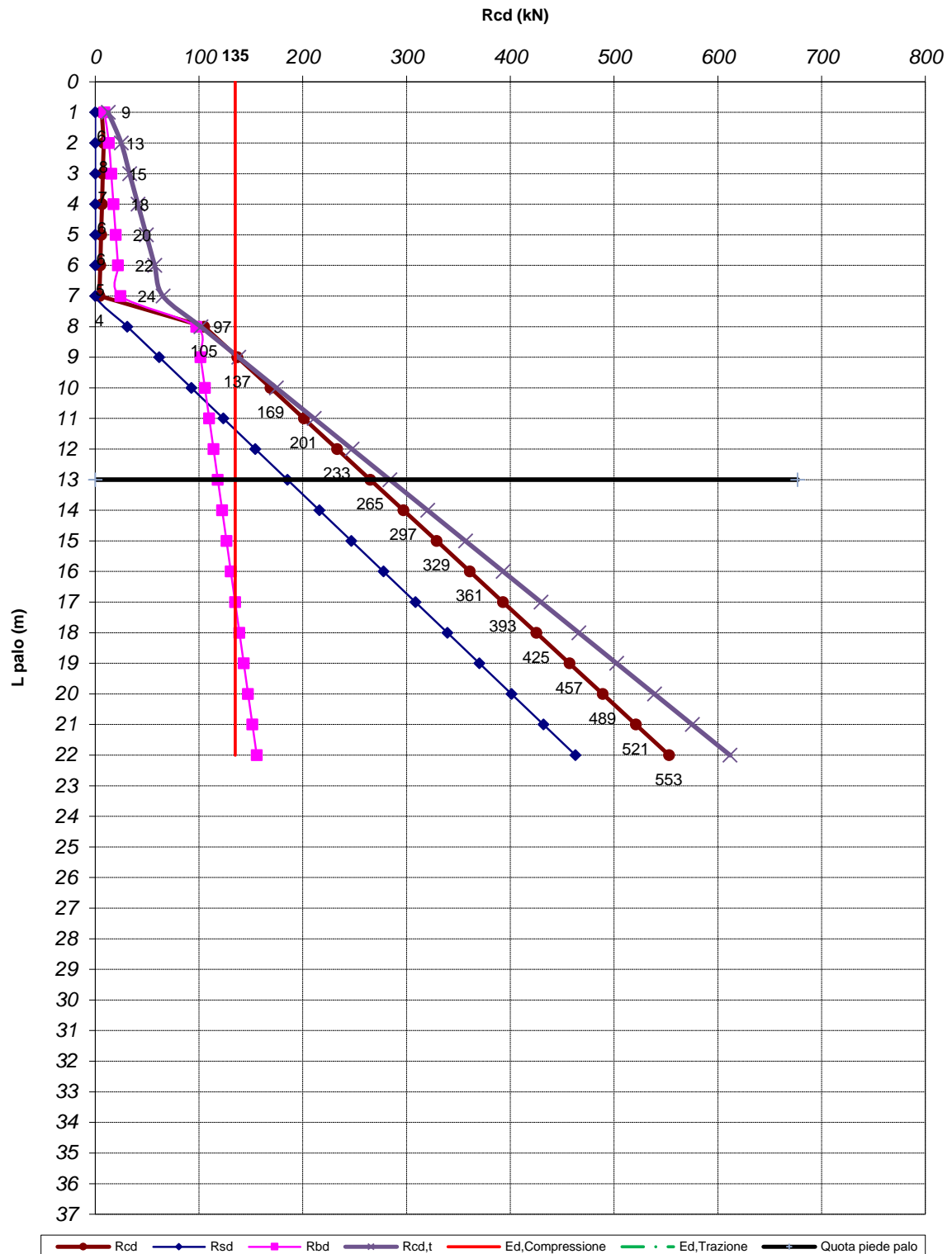
Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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9.) Barriere Hb=6.75m, Hril=7.0m, terreno Tipo 4 (drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 4. Condizioni Drenate

Il carico limite di progetto viene determinato come:
 $R_{cd} = R_{bd} + R_{sd} + W_p$
 Carico limite e Trazione
 $R_{cd,t} = R_{sd,t} + W_p'$

In cui:
 $R_{bd} = R_{bk} / \gamma_b$: Resistenza alla punta di progetto
 $R_{sd} = R_{sk} / \gamma_s$: Resistenza laterale di progetto
 $R_{bk} = R_{bm} / \zeta$: Resistenza alla punta caratteristica
 $R_{sk} = R_{sm} / \zeta$: Resistenza laterale caratteristica
 $R_{bm} = Q_b$: Resistenza media alla punta
 $R_{sm} = Q_s$: Resistenza media laterale
 $R_{sd,t}$: Resistenza laterale di progetto a trazione
 W_p : Peso proprio del palo (alleggerito se in compressione)
 W_p' : Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari ($c = 0, \phi > 0$)

In accordo alla teoria di Berenzantsev, per pali di grande diametro¹⁾:

$q_b = N_q^* \cdot \alpha \cdot v$ con: N_q^* : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche ($ced. = 0,06 - 0,10 D$)

Per i pali di grosso diametro ($d > 70cm$) N_q^* è dato dal grafico a destra riportato:

Mentre per pali di piccolo diametro ($d = 8-30cm$) e medio diametro ($d = 31-70cm$): $q_b = N_q \cdot \alpha \cdot v$

In cui: $N_q = 2 \cdot e^{(\gamma \cdot \tan \phi) / \tan \phi} \cdot \tan^2(45 + \phi/2)$ (equivalente ai valori del grafico di Berenzantsev)

In ogni caso viene assunto per q_b il valore limite di q_b,lim .

Terreni coesivi ($c > 0$)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

$q_b = \alpha \cdot v + 9 \cdot c_u$ (in condizioni non drenate)

$q_b = \alpha \cdot v + N_q^* + c' \cdot N_c$ (in condizioni drenate) essendo: $N_c = (N_q^* - 1) / \tan \phi'$

RESISTENZA LATERALE UNITARIA

Terreni granulari ($c = 0, \phi > 0$)

$q_s = K' \cdot \tan^2 \alpha \cdot v$ con:

K assunto pari a 0.65 (pali di grande/medio diametro)-0.50 (pali di piccolo diametro), $\tan^2 \alpha = \tan^2 \phi$

In ogni caso non viene superato il valore limite di q_s,lim .

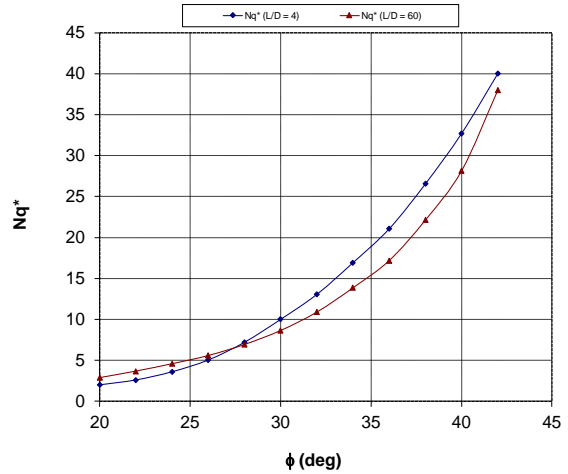
Terreni coesivi ($c > 0$)

$q_s = \alpha \cdot c_u$ (in cond. non dren.) con:

$q_s = \alpha \cdot c' + \alpha \cdot v \cdot K' \cdot \tan^2 \alpha \cdot v$ (in cond. dren.) α variabile in funzione di ϕ secondo la seguente tabella (AGI - 1984)

cu (kPa)	α
<= 25	0.90
da 26 a 50	0.80
da 51 a 75	0.60
> 75	0.40

Coefficiente N_q^* corrispondente all'insorgere delle prime deformazioni plastiche alla punta



CARATTERISTICHE GEOMETRICHE

	unità	
Diametro palo	m	0.80
Superficie resistente alla punta	m ²	0.50
Superficie laterale per lunghezza unitaria	m ²	2.51
peso specifico del palo	kN/m ³	25.00

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	cu	ϕ'	γ	c'
1	Rilevato (m=0)	0.0	-6.0	0.0	0.0	20.0	0.0
2	Terreno Tipo 1 sabbie	-6.0	-8.0	0.0	0.0	19.0	0.0
3	Terreno Tipo 4	-8.0	-25.0	0.0	28.0	19.0	0.0
4							
5							
6							
7							
8							
9							
10							

FALDA

unità	
Quota livello falda da q.t.p.	6.00

SOVRACCARICO A Q.T.P.

	unità	
Tensione totale in testa palo	kN/m ²	20.0
Tensione efficace in testa palo		20.0

COEFFICIENTI DI SICUREZZA

Tipo di Palo	γ	Trivellato
coefficiente γ_b	1.00	
coefficiente γ_s	1.00	
coefficiente γ_{sk}	1.00	
coefficiente ζ	1.70	

CARICO DI PROGETTO Ed

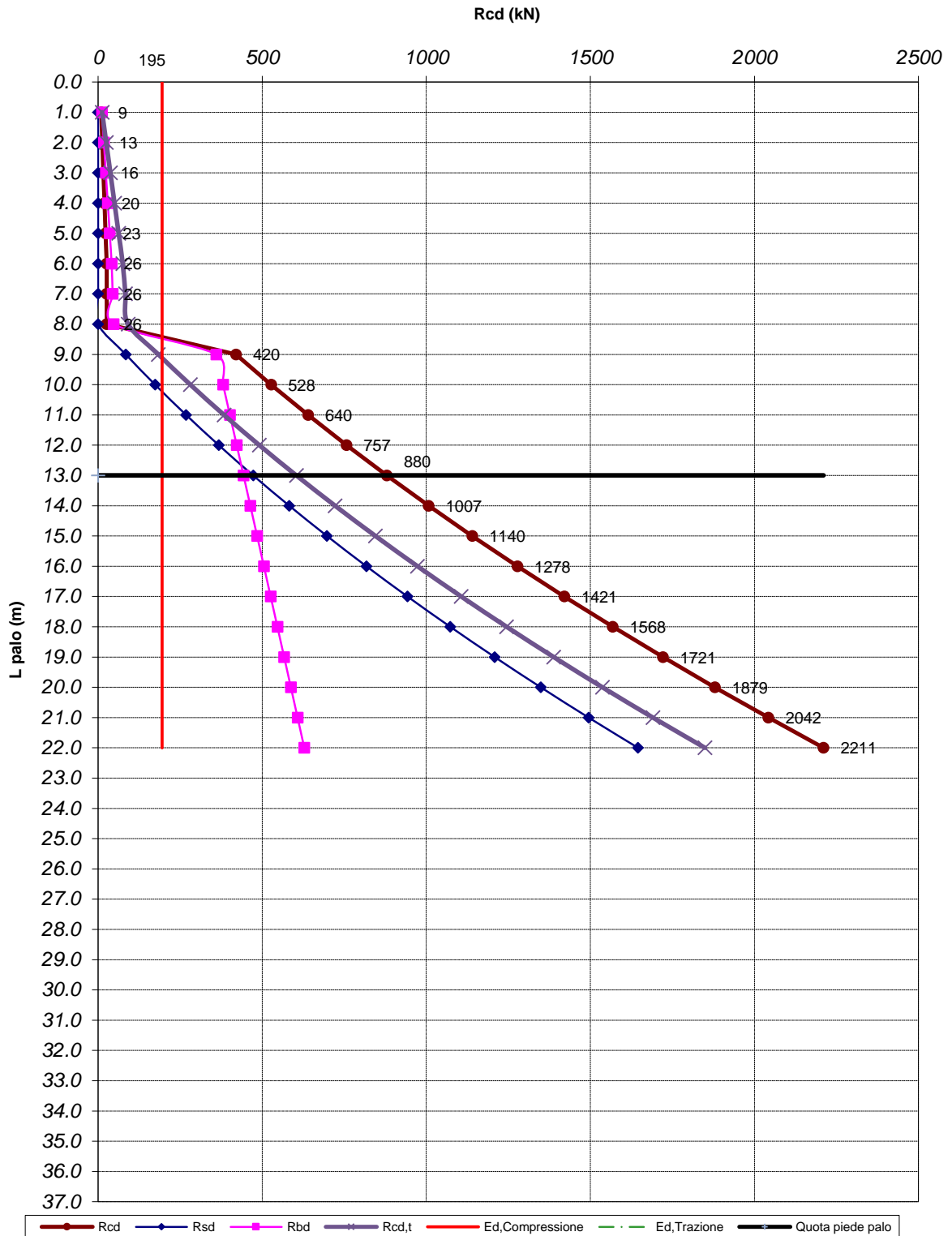
	Ed, Com Ed, Trazione	unità
APP.1-COMB1 SLU-STRU	195	kN
APP.1-COMB2 SLU-GEO	155	kN
APP.1-COMB2 SLV-SIS	135	kN

	unità
Lunghezza palo di progetto	13.00
Profondità testa palo	0.00
Quota piede palo	13.00

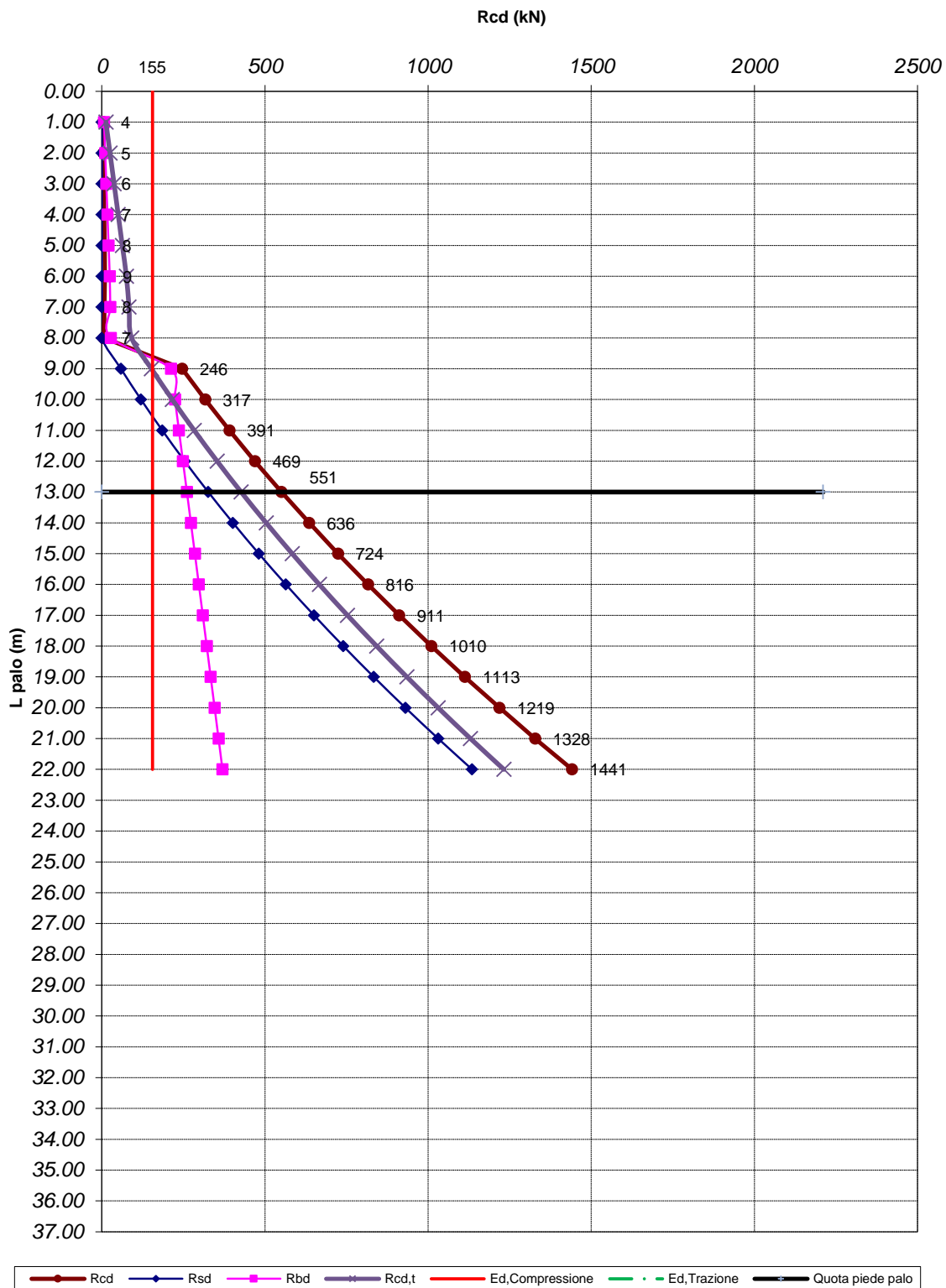
	ProfONDITA' INDAGATA	Ed
quota minima	0.00	
quota massima	22.00	2211

Unità	z	cu	c'	ϕ'	γ	γ'	qa	K	σ_v	σ_v'	$\tan \delta$	qs,lim	qs	Qs	N_q^*	c'Nc (9Cu)	qb,lim	qb	Qb	Rsd	Rsd,t	Rbd	Wp	Rcd	Rcd,t	Wp'
1	0.0							0.650	20.0	20.0																
1	1.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	40.0	40.0	0.000	150	0.0	0	1.0	0.0	0	40.0	20	0	0	12	3	9	13	13
1	2.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	60.0	60.0	0.000	150	0.0	0	1.0	0.0	0	60.0	30	0	0	18	5	13	25	25
1	3.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	80.0	80.0	0.000	150	0.0	0	1.0	0.0	0	80.0	40	0	0	24	8	16	38	38
1	4.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	100.0	100.0	0.000	150	0.0	0	1.0	0.0	0	100.0	50	0	0	30	10	20	50	50
1	5.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	120.0	120.0	0.000	150	0.0	0	1.0	0.0	0	120.0	60	0	0	35	13	23	63	63
1	6.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	140.0	140.0	0.000	150	0.0	0	1.0	0.0	0	140.0	70	0	0	41	15	26	75	75
2	7.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	159.0	150.0	0.000	150	0.0	0	1.0	0.0	0	150.0	75	0	0	44	18	26	83	83
2	8.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	178.0	160.0	0.000	150	0.0	0	1.0	0.0	0	160.0	80	0	0	47	21	26	91	91
3	9.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	197.0	170.0	0.532	150	57.0	143	7.2	0.0	0	1218.1	612	84	84	360	24	420	184	100
3	10.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	216.0	180.0	0.532	150	60.5	295	7.2	0.0	0	1288.6	648	174	174	381	27	528	281	108
3	11.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	235.0	190.0	0.532	150	63.9	456	7.2	0.0	0	1359.1	683	268	268	402	30	640	384	116
3	12.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	254.0	200.0	0.532	150	67.4	625	7.1	0.0	0	1429.4	718	368	368	423	33	757	492	124
3	13.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	273.0	210.0	0.532	150	70.9	803	7.1	0.0	0	1499.6	754	473	473	443	36	880	604	132
3	14.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	292.0	220.0	0.532	150	74.3	990	7.1	0.0	0	1569.7	789	582	582	464	39	1007	722	140
3	15.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	311.0	230.0	0.532	150	77.8	1186	7.1	0.0	0	1639.6	824	697	697	485	42	1140	845	148
3	16.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	330.0	240.0	0.532	150	81.2	1390	7.1	0.0	0	1709.5	859	818	818	505	45	1278	973	156
3	17.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	349.0	250.0	0.532	150	84.7	1603	7.1	0.0	0	1779.2	894	943	943	526	48	1421	1107	164
3	18.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	368.0	260.0	0.532	150	88.1	1824	7.1	0.0	0	1848.8	929	1073	1073	547	51	1568	1245	172
3	19.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	387.0	270.0	0.532	150	91.6	2054	7.1	0.0	0	1918.3	964	1208	1208	567	54	1721	1388	180
3	20.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	406.0	280.0	0.532	150	95.0	2293	7.1	0.0	0	1987.7	999	1349	1349	588	57	1879	1537	188
3	21.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	425.0	290.0	0.532	150	98.5	2541	7.1	0.0	0	2056.9	1034	1495	1495	608	60	2042	1691	196
3	22.0	0.0	0.0	28.0	19.0	10.0	0.0	0.650	444.0	300.0	0.532	150	102.0	2797	7.1	0.0	0	2126.0	1069	1645	1645	629	63	2211	1849	204

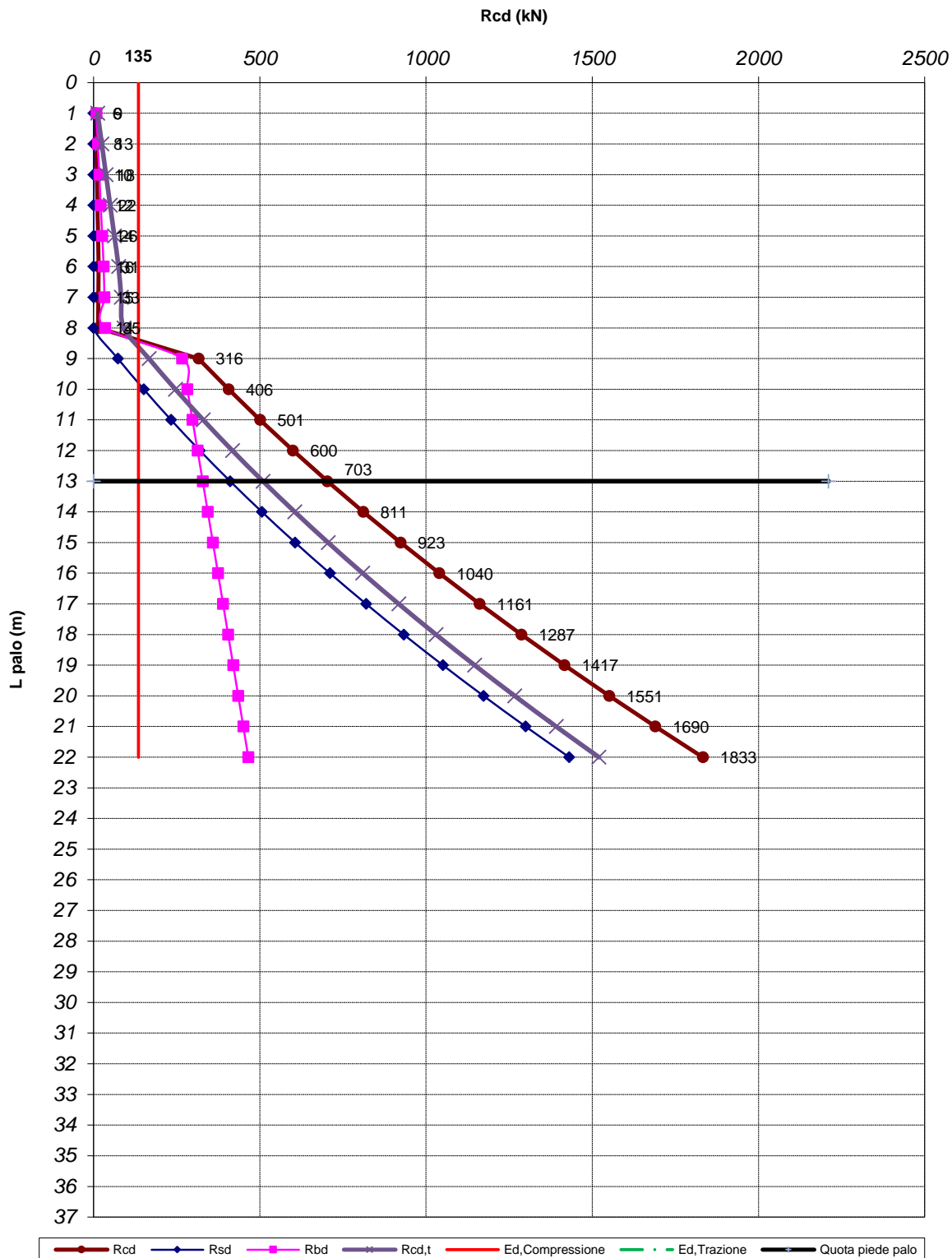
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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10.) Barriere Hb=6.75m, Hril=3.0m, terreno Tipo 4 (drenate)

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=3.0m. Hbarr=6.75m. Varco 0.0m. Terreno di fondazione Tipo 4. Condizioni Drenate

Il carico limite di progetto viene determinato come:
Rcd = Rbd + Rsd - Wp
Carico limite e Trazione
Rcd,t = Rsd,t + Wp'

in cui:
Rbd = Rbk / γb; Resistenza alla punta di progetto
Rsd = Rsk / γs; Resistenza laterale di progetto
Rbk = Rbm / γ; Resistenza alla punta caratteristica
Rsk = Rsm / γ; Resistenza laterale caratteristica
Rbm = Qb; Resistenza media alla punta
Rsm = Qs; Resistenza media laterale
Rsd,t = Resistenza laterale di progetto a trazione
Wp; Peso proprio del palo (alleggerito se in compressione)
Wp'; Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, φ > 0)

In accordo alla teoria di Berezantsev, per pali di grande diametro:

qb = Nq' * α * v con: Nq': coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (ced. = 0.06 - 0.10 D)

Per i pali di grosso diametro (d>70cm) Nq' è dato dal grafico a destra riportato:

Mentre per pali di piccolo diametro (d=8-30cm) e medio diametro (d=31-70cm): qb = Nq * s * v

In cui: Nq = 2 * e * (c * tan φ) * tan²(45 + φ/2) (equivalente ai valori del grafico di Berezantsev)

In ogni caso viene assunto per qb il valore limite di qb,lim.

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

qb = α * v + 9 * c (in condizioni non drenate)

qb = α * v' * Nq' + c' * Nc (in condizioni drenate) essendo: Nc = (Nq' - 1) / tan φ

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, φ > 0)

ql = K * tan² α * v

K assunto pari a 0.65 (pali di grande/medio diametro)-0.50 (pali di piccolo diametro), tan² = tan² φ

In ogni caso non viene superato il valore limite di ql,lim.

Terreni coesivi (c > 0)

ql = α * cu (in cond. non dr.)

ql = α' * c' + α * v' * K * tan² α * v (in cond. dren.)

α variabile in funzione di cu secondo la seguente tabella (AG1 - 1984)

cu (kPa)	α
≤ 25	0.90
da 25 a 50	0.80
da 51 a 75	0.60
> 75	0.40

CARATTERISTICHE GEOMETRICHE

	unità		
Diametro palo	m	0.80	palo di grande/medio diam.?
Superficie resistente alla punta	m²	0.50	
Superficie laterale per lunghezza unitaria	m²	2.51	
peso specifico del palo	kN/m³	25.00	

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

n.	DESCRIZIONE	DA	A	cu	φ'	γ	c'
1	Rilevato (terzo)	0.0	-2.0	0.0	0.0	20.0	0.0
2	Terreno Tipo 1 inerte	-2.0	-7.0	0.0	0.0	19.0	0.0
3	Terreno Tipo 4	-7.0	-25.0	0.0	28.0	19.0	0.0
4							
5							
6							
7							
8							
9							
10							

FALDA

Quota livello falda da q.t.p.

SOVRACCARICO A Q.T.P.

Tensione totale in testa palo	kN/m²
	20.0
Tensione efficace in testa palo	
	20.0

COEFFICIENTI DI SICUREZZA

Tipo di Palo	t	Trivellato
coefficiente γs	1.00	1.00
coefficiente γb	1.00	1.00
coefficiente γcu	1.00	1.00
coefficiente c	1.70	

CARICO DI PROGETTO Ed

Ed, Comq, Ed, Trazione

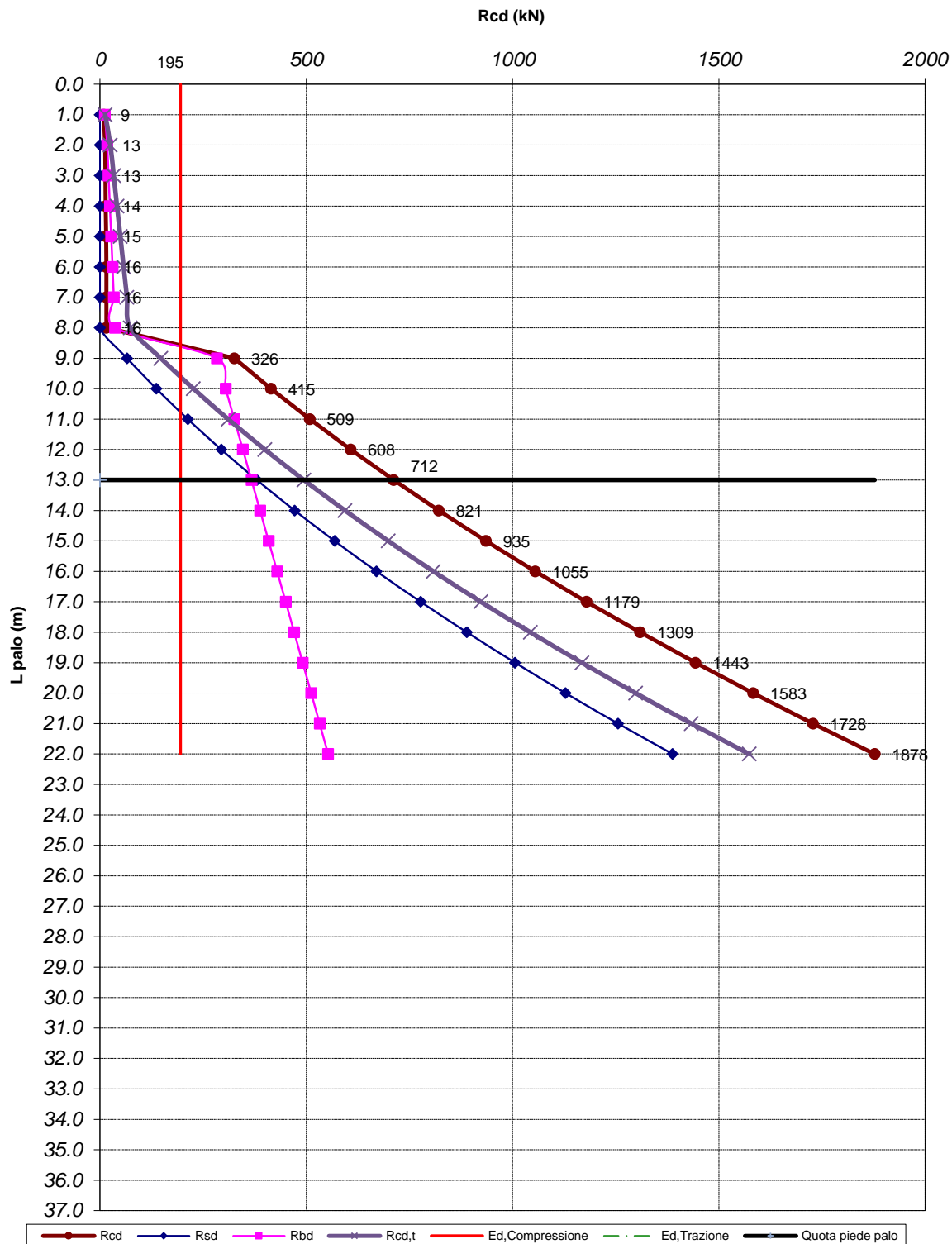
	kN	kN
APP.1-COMB1 SLU-STRU	195	
APP.1-COMB2 SLU-GEO	155	
APP.1-COMB2 SLV-SIS	135	

	m
Lunghezza palo di progetto	13.00
Profondità testa palo	0.00
Quota piede palo	13.00

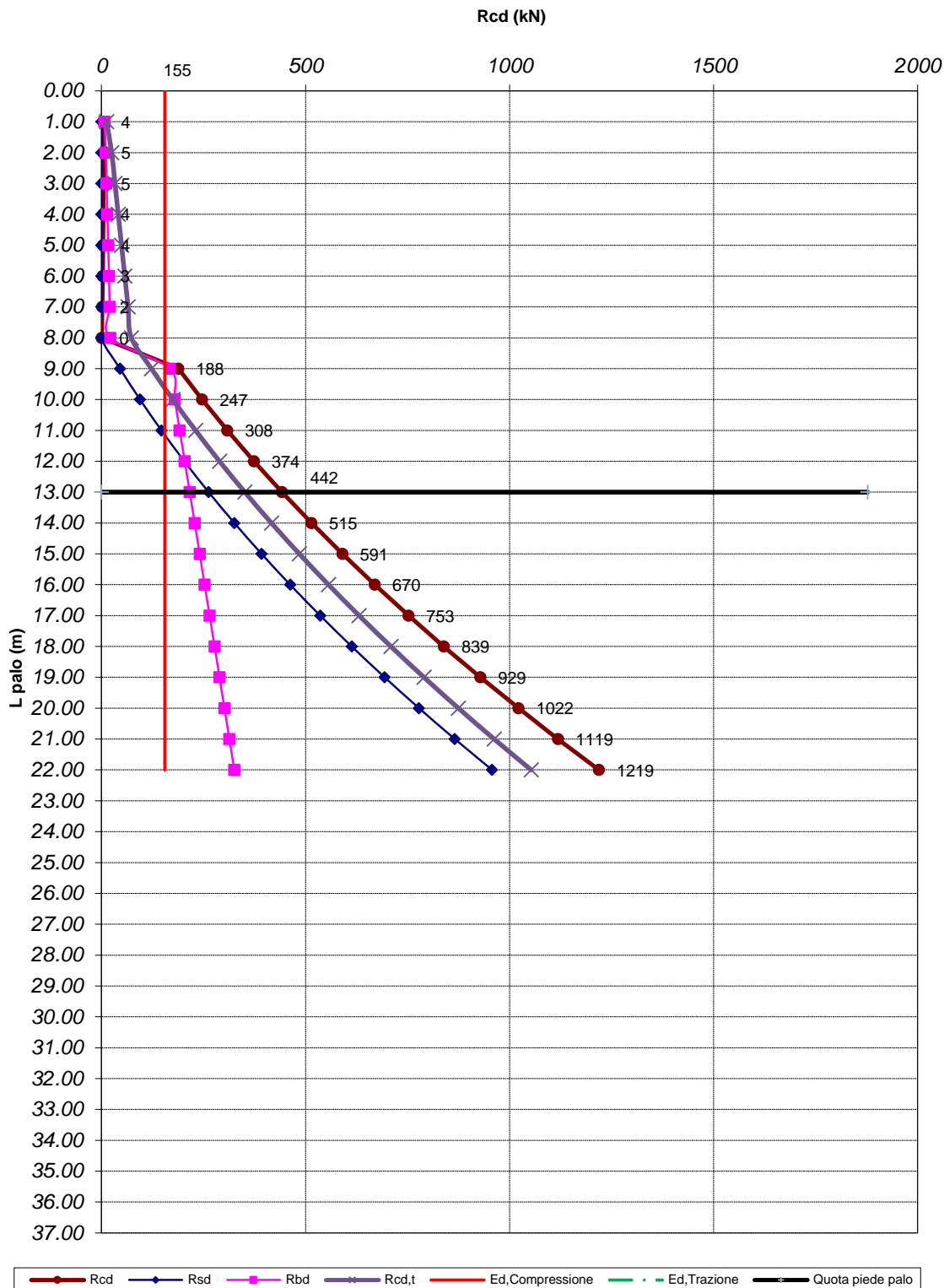
PROFONDITA' INDAGATA	Rcd
quota minima	0.00
quota massima	22.00

Unità	z	cu	c'	φ'	γ	γ'	qa	K	σv	σv'	tanδ	qs,lim	qs	Qs	Nq'	c'Nc (9Cu)	qb,lim	qb	Qb	Rsd	Rsd,t	Rbd	Wp	Rcd	Rcd,t	Wp'
1	0.0							0.650	20.0	20.0																
1	1.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	40.0	40.0	0.000	150	0.0	0	1.0	0.0	0	40.0	20	0	0	12	3	9	13	13
1	2.0	0.0	0.0	0.0	20.0	20.0	0.0	0.650	60.0	60.0	0.000	150	0.0	0	1.0	0.0	0	60.0	30	0	0	18	5	13	25	25
1	3.0	0.0	0.0	0.0	20.0	11.0	0.0	0.650	80.0	71.0	0.000	150	0.0	0	1.0	0.0	0	71.0	36	0	0	21	8	13	33	33
1	4.0	0.0	0.0	0.0	20.0	11.0	0.0	0.650	100.0	82.0	0.000	150	0.0	0	1.0	0.0	0	82.0	41	0	0	24	10	14	41	41
1	5.0	0.0	0.0	0.0	20.0	11.0	0.0	0.650	120.0	93.0	0.000	150	0.0	0	1.0	0.0	0	93.0	47	0	0	27	13	15	49	49
1	6.0	0.0	0.0	0.0	20.0	11.0	0.0	0.650	140.0	104.0	0.000	150	0.0	0	1.0	0.0	0	104.0	52	0	0	31	15	16	57	57
2	7.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	159.0	114.0	0.000	150	0.0	0	1.0	0.0	0	114.0	57	0	0	34	18	16	65	65
2	8.0	0.0	0.0	0.0	19.0	10.0	0.0	0.650	178.0	124.0	0.000	150	0.0	0	1.0	0.0	0	124.0	62	0	0	37	21	16	73	73
3	9.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	197.0	134.0	0.532	150	44.6	112	7.2	0.0	0	960.1	483	66	66	284	24	326	147	81
3	10.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	216.0	144.0	0.532	150	48.0	233	7.2	0.0	0	1030.9	518	137	137	305	27	415	226	89
3	11.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	235.0	154.0	0.532	150	51.5	362	7.2	0.0	0	1101.6	554	213	213	326	30	509	311	98
3	12.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	254.0	164.0	0.532	150	55.0	500	7.1	0.0	0	1172.1	589	294	294	347	33	608	400	106
3	13.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	273.0	174.0	0.532	150	58.4	647	7.1	0.0	0	1242.5	625	381	381	367	36	712	494	114
3	14.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	292.0	184.0	0.532	150	61.9	803	7.1	0.0	0	1312.8	660	472	472	388	39	821	594	122
3	15.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	311.0	194.0	0.532	150	65.3	967	7.1	0.0	0	1383.0	695	569	569	409	42	935	698	130
3	16.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	330.0	204.0	0.532	150	68.8	1140	7.1	0.0	0	1453.1	730	670	670	430	45	1055	808	138
3	17.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	349.0	214.0	0.532	150	72.2	1321	7.1	0.0	0	1523.9	766	777	777	450	48	1179	923	146
3	18.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	368.0	224.0	0.532	150	75.7	1511	7.1	0.0	0	1592.8	801	889	889	471	51	1309	1043	154
3	19.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	387.0	234.0	0.532	150	79.1	1710	7.1	0.0	0	1662.5	836	1006	1006	492	54	1443	1168	162
3	20.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	406.0	244.0	0.532	150	82.6	1918	7.1	0.0	0	1732.1	871	1128	1128	512	57	1583	1298	170
3	21.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	425.0	254.0	0.532	150	86.1	2134	7.1	0.0	0	1801.6	906	1255	1255	533	60	1728	1433	178
3	22.0	0.0	0.0	0.0	28.0	19.0	10.0	0.650	444.0	264.0	0.532	150	89.5	2359	7.1	0.0	0	1870.9	940	1388	1388	553	63	1878	1574	186

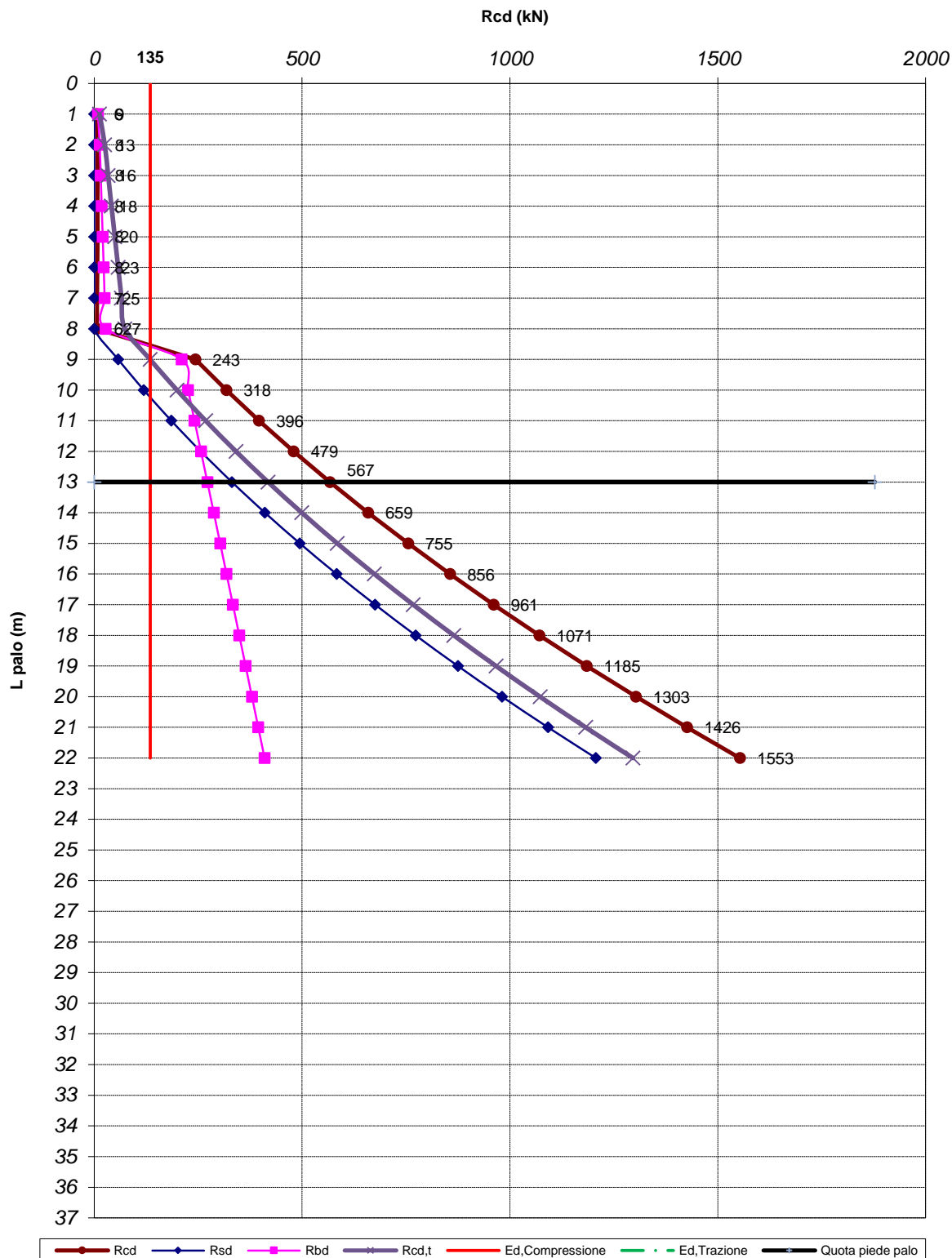
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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8.3.2 Barriere Hb=4.75m

1.) Barriere Hb=4.75m, Hril=7.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-F1)

LAVORO: Pali di barriere su Rilevato. Hril=7.0m. Hbarr=4.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:
Carico limite e Tensione
Red = Rbd + Red + Wp
in cui:
Rbd = Rbk / \gamma_b Resistenza alla punta di progetto
Red = Rsk / \gamma_s Resistenza laterale di progetto
Rbk = Rbm / \gamma_c Resistenza alla punta caratteristica
Rsk = Rsm / \gamma_c Resistenza laterale caratteristica
Rbm = Qb Resistenza media alla punta
Rsm = Qs Resistenza media laterale
Redf = Resistenza laterale di progetto a fessurazione
Wp = Peso proprio del palo (alloggiato se in compressione)
Wp = Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, \phi > 0)

In accordo alla teoria di Berezantsev, per pali di grande diametro?

qb = Nq * \alpha * \psi con: Nq = coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (vedi = 0,06 - 0,10 D)

Per i pali di grosso diametro (d > 70cm) Nq' è dato dal grafico a destra riportato.

Metodo per pali di piccolo diametro (d < 30cm) e medio diametro (d < 31,70cm): qb = Nq * \alpha * \psi

In cui: Nq = 2 * c * (\psi * \tan \phi + \tan \phi) * (5 - \psi / 2) (normalizzato ai valori del grafico di Berezantsev)

In ogni caso viene assegnato per qb il valore limite di qb,lim.

Terreni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

qb = \sigma_v * S_u (in condizioni non drenate)
qb = \sigma_v * N_q' * c' / \gamma_c (in condizioni drenate) essendo: N_q = (N_q' / \gamma_{sat} * F)

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, \phi > 0)

qs = K' * \sigma_v' * \psi con: K' azzerato pari a 0,65 (pali di grande/medio diametro) 0,50 (pali di piccolo diametro), \psi_{sat} = \psi_{sat}

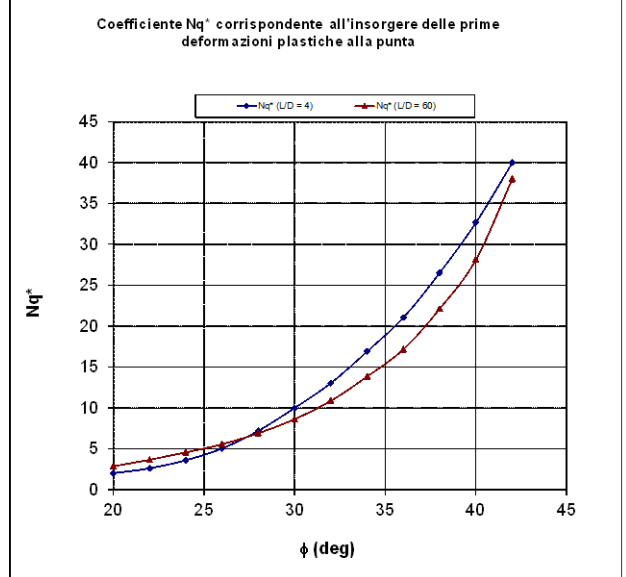
In ogni caso non viene superato il valore limite di ql,lim.

Terreni coesivi (c > 0)

qs = \alpha * ca (in cond. non dr.) con: \alpha variabile in funzione di ca secondo la seguente tabella (ACI - 1984)

qs = \alpha' * c' * \psi * K' * \psi_{sat} * \psi_v (in cond. drenate)

Table with 2 columns: ca (kPa) and \alpha. Values: <= 25: 0.90; da 26 a 50: 0.80; da 51 a 75: 0.60; > 75: 0.40.



CARATTERISTICHE GEOMETRICHE

Table with 2 columns: Dimensione palo (m), Superficie resistente alla punta (mq), Superficie laterale per lunghezza unitaria (mq), peso specifico del palo (kN/m^3). Values: 6.00, 0.50, 2.51, 25.00.

FALDA

Table with 2 columns: Falda (m), Unità (m). Value: 6.00.

SOVRACCARICO A Q.L.P.

Table with 2 columns: Tensione totale in testa palo (kN/m^2), Tensione efficace in testa palo (kN/m^2). Values: 20.0, 20.0.

COEFFICIENTI DI SICUREZZA

Table with 2 columns: Tipo di Palo, coefficiente \gamma_c, coefficiente \gamma_s, coefficiente \gamma_e, coefficiente \gamma_c. Values: 1.00, 1.00, 1.00, 1.70.

CARICO DI PROGETTO Ed

Ed, Com Ed, Tensione

Table with 2 columns: APP.1.COMB1.SLU.STR (kN), APP.1.COMB2.SLU.GEO (kN), APP.1.COMB2.SLU.SIS (kN). Values: 186, 130, 130.

Table with 2 columns: Immersione palo di progetto (kN), Per la testata in testa palo (kN), Quarta parte palo (kN). Values: 11.00, 0.00, 11.00.

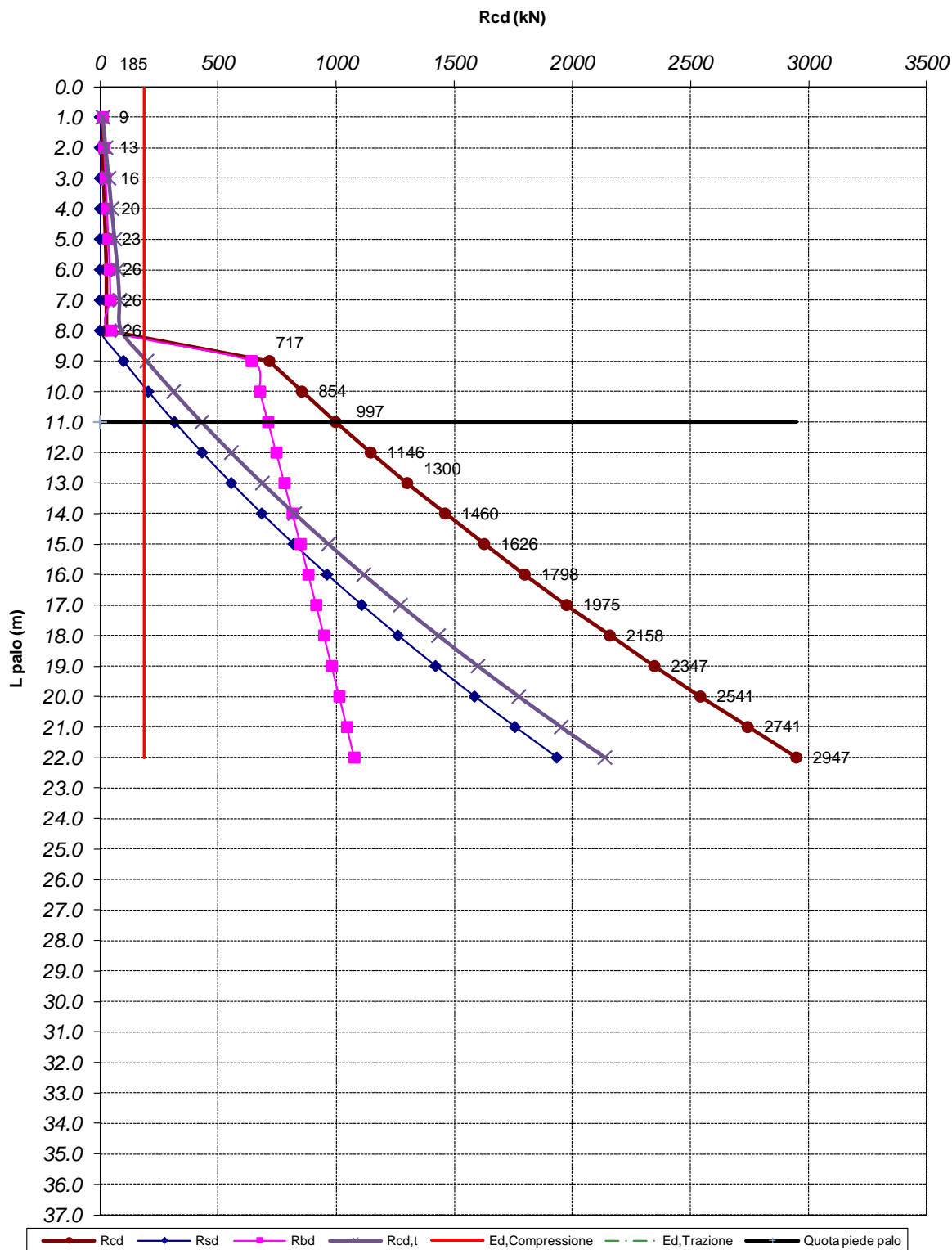
Table with 2 columns: PROFONDITA' INDAGATA (m), quota minima (m), quota massima (m). Values: 0.00, 22.00, 2947.

STRATEGIA DI PROGETTO (BA, Q.L.P.)

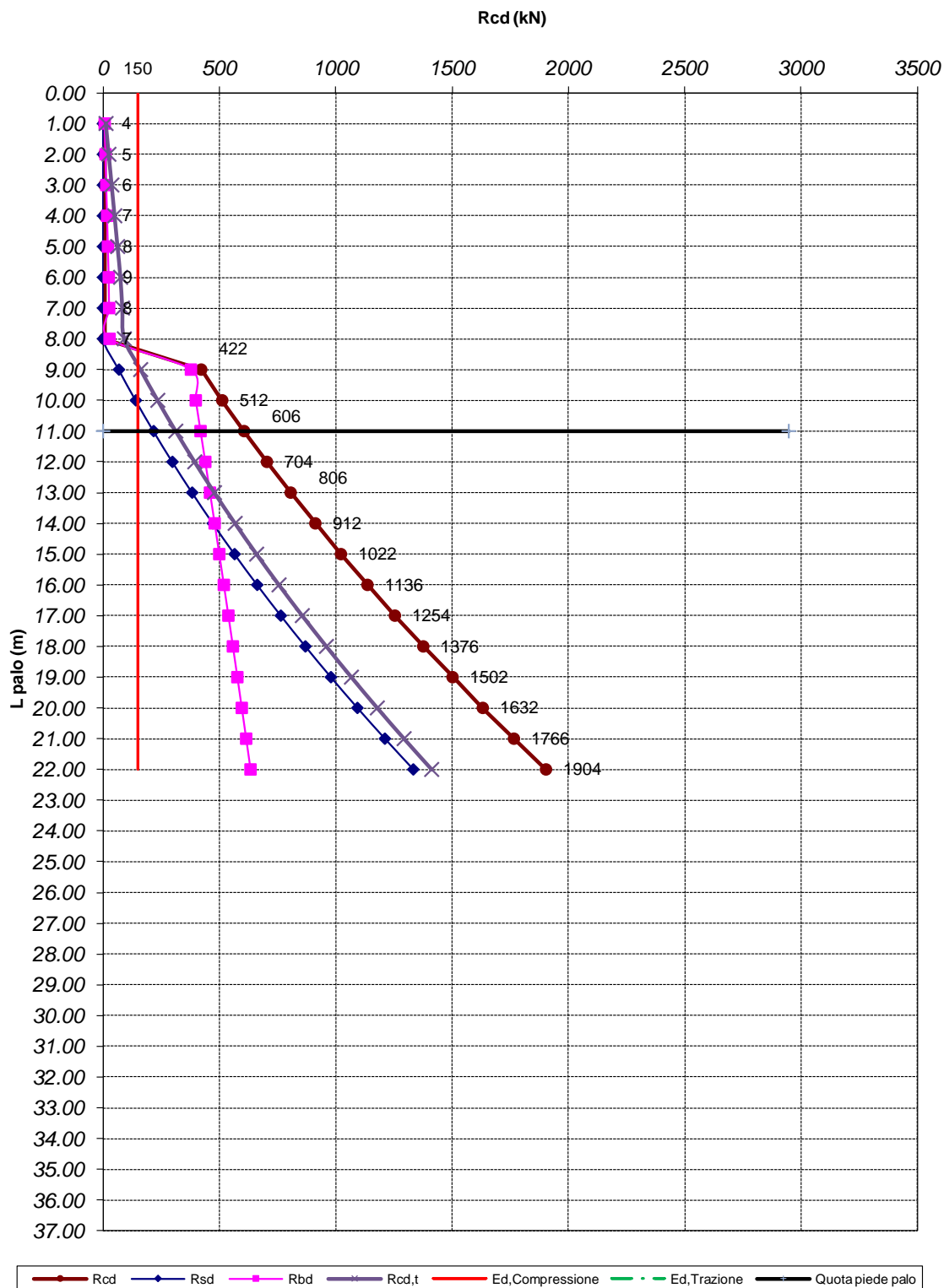
Table with 8 columns: n, DISEGNIO, BA, A, cu, \phi, \gamma, c'. Values for 1-10 rows.

Main calculation table with columns: Unità, z (m), cu (kPa), c' (kPa), \phi (deg), \gamma (kN/m^3), \gamma' (kN/m^3), qs (kPa), K, \sigma_v (kPa), \sigma_v' (kPa), \psi_{lim}, \psi_{lim} (kPa), qs (kPa), Qe (kN), Nq', c' * \psi_c (kPa), \psi_{lim} (kPa), qb (kN), Qb (kN), Red (kN), Redf (kN), Rbd (kN), Wp (kN), Red (kN), Redf (kN), Wp' (kN). Values for 1-10 rows.

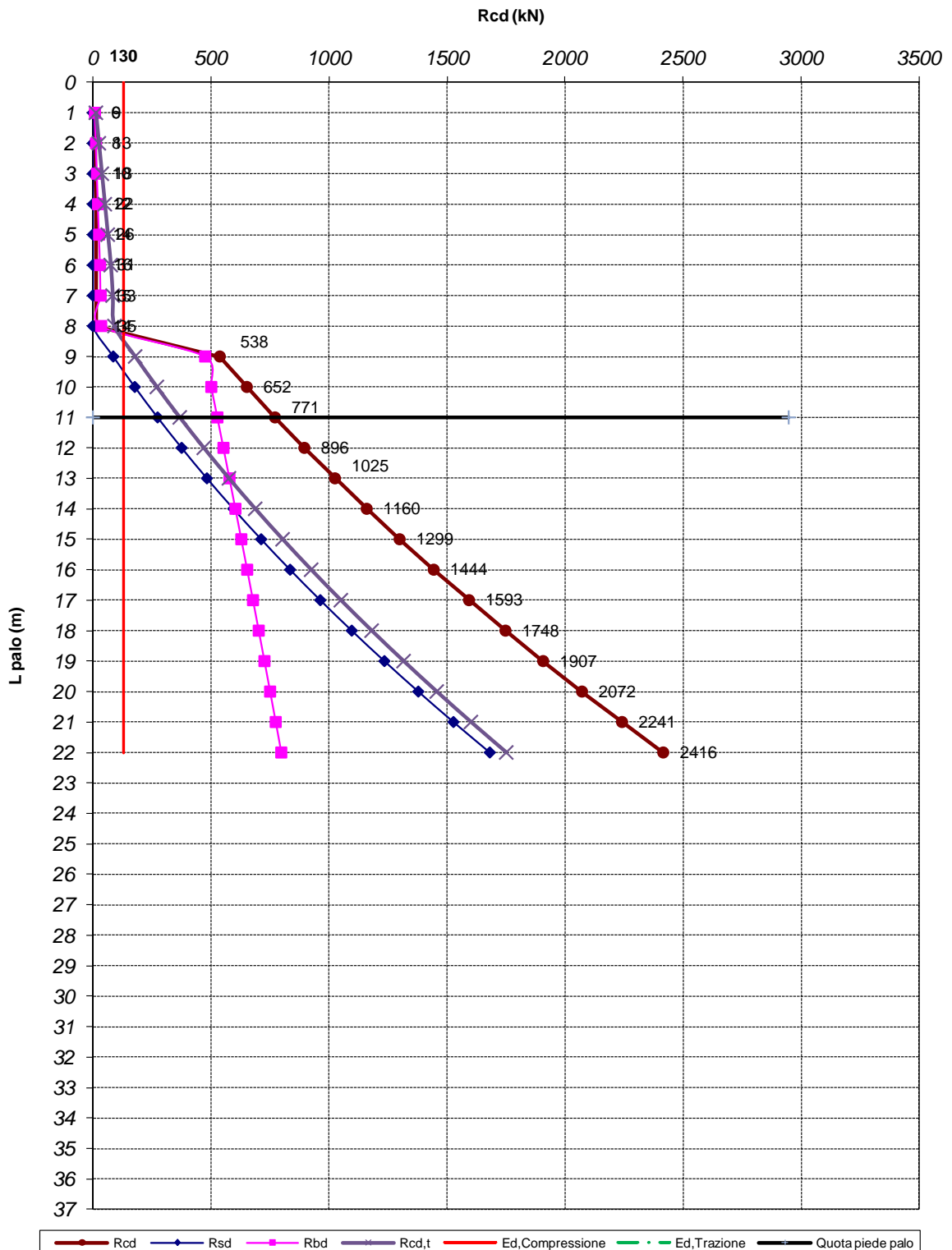
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**



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2.) Barriere Hb=4.75m, Hril=3.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M-R1)

LAVORO: Pali di barriere su Rilevato. Hril=3.0m. Hbam=4.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:
Rcd = Rbd + Rsd + Wp
in cui:
Rbd = Rbl / gamma; Resistenza alla punta di progetto
Rsd = Rsl / gamma; Resistenza laterale di progetto
Rbl = Rbm / C; Resistenza alla punta caratteristica
Rsl = Rsm / C; Resistenza laterale caratteristica
Rbm = Qb; Resistenza media alla punta
Rsm = Qs; Resistenza media laterale
RsdT = Resistenza laterale di progetto a trazione
Wp: Peso proprio del palo (alloggiato se in compressione)
Wp': Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terroni granulari (c = 0, phi > 0)

In accordo alla teoria di Berzantsev, per pali di grande diametro?

qb = Nq * av con:
Nq: coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (cd = 0.05 - 0.10 D)

Per i pali di piccolo diametro (d < 70cm) Nq' è dato dal grafico a destra riportato.

Medie per pali di piccolo diametro (d=8-30cm) e medio diametro (d=31-70cm): qb = Nq * av

in cui: Nq = 7 * c * (1 + gamma / gamma_s) * (4 + phi / 2) (correlazione ai valori del grafico di Berzantsev)

In ogni caso viene assunto per qb il valore limite di qb,lim.

Terroni coesivi (c > 0)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

qb = av * (9 c_s (in condizioni non drenate)
qb = av * (Nq' + c' * Mc (in condizioni drenate) essendo: Mc = (Mc' / 1) * phi

RESISTENZA LATERALE UNITARIA

Terroni granulari (c = 0, phi > 0)

cs = K * (sigma_v)' * av con:
K: secondo passi a 0.65 (pali di grande/medio diametro) 0.50 (pali di piccolo diametro),
tan delta = delta

In ogni caso non viene superato il valore limite di ql,lim.

Terroni coesivi (c > 0)

cs = alpha * ca (in cond. non d.) con:
alpha: variabile in funzione di ca secondo le seguenti tabelle (ACI - 1984)

Table with 2 columns: ca (kPa) and alpha. Values: <= 25: 0.90, da 26 a 50: 0.80, da 51 a 75: 0.60, > 75: 0.40

CARATTERISTICHE GEOMETRICHE

Table with 3 columns: Unità, Valore, Descrizione. Includes Diameter palo (2.00 m), Superficie residuale alla punta (8.50 mq), Superficie laterale per lunghezza unitaria (2.51 mq), peso specifico del palo (25.00 kN/m³)

FALDA

Table with 2 columns: Unità, Valore. Quota livello falda da q.t.p. (2.00 m)

SOVRACCARICO A Q.T.P.

Table with 2 columns: Unità, Valore. Tensione totale in testa palo (20.00 kN/m²), Tensione efficace in testa palo (20.00 kN/m²)

COEFFICIENTI DI SICUREZZA

Table with 2 columns: Unità, Valore. Tipo di Palo (1 Tracciato), coefficiente gamma (1.00), coefficiente gamma_s (1.00), coefficiente gamma_c (1.00), coefficiente gamma_c' (1.70)

CARICO DI PROGETTO Ed

Table with 2 columns: Unità, Valore. APP.1-COMB1 SLU_STRU (185 kN), APP.1-COMB2 SLU_GEO (150 kN), APP.1-COMB2 SLV_SIS (130 kN)

Table with 2 columns: Unità, Valore. Immersione palo di progetto (11.00 m), Profondità testa palo (0.00 m), Quota palo (11.80 m)

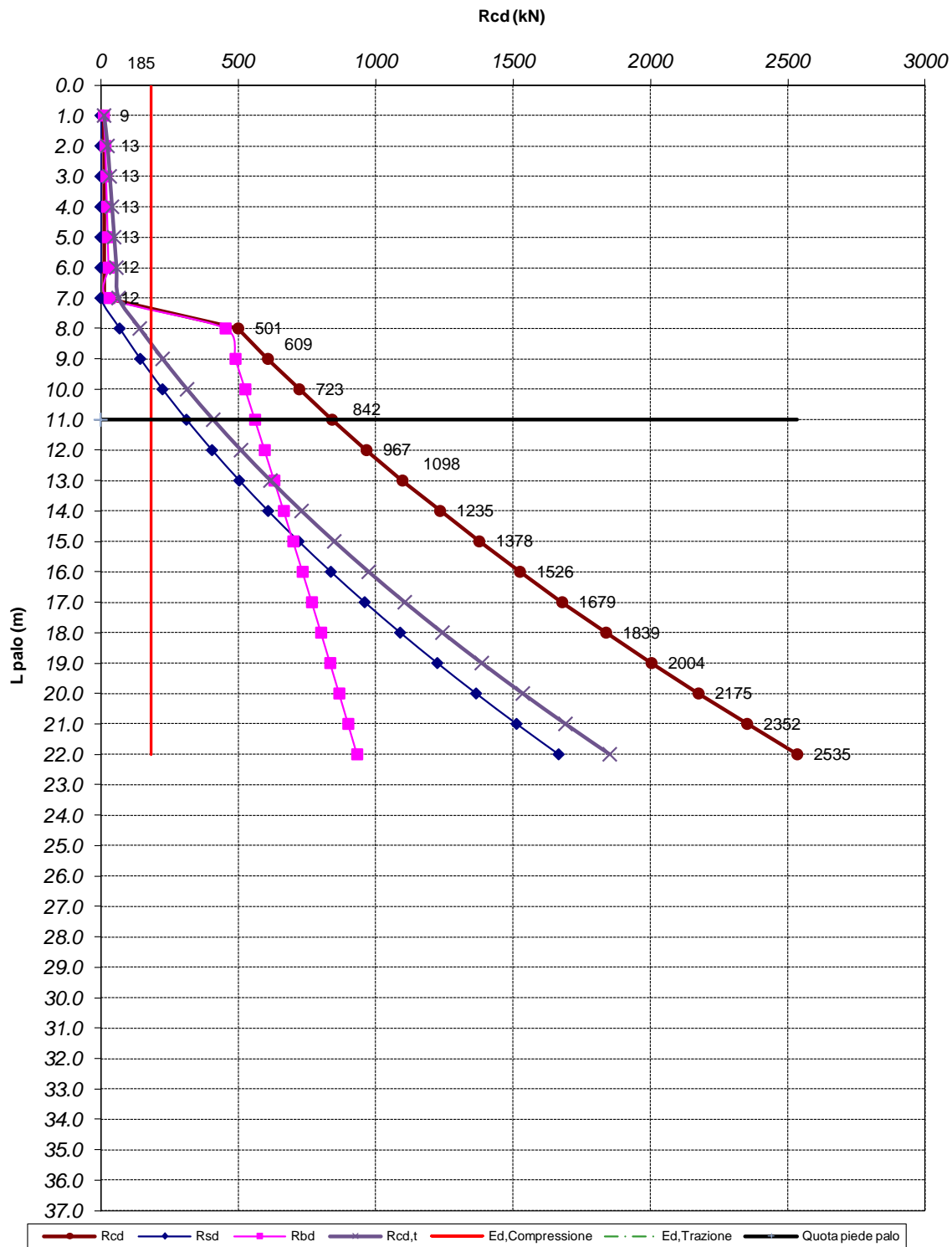
Table with 2 columns: Unità, Valore. PROFONDITA' INDAGATA (0.00 m), quota massima (22.00 m), Rcd (2535)

STRUTTURE DI PROGETTO (DA Q.T.P.)

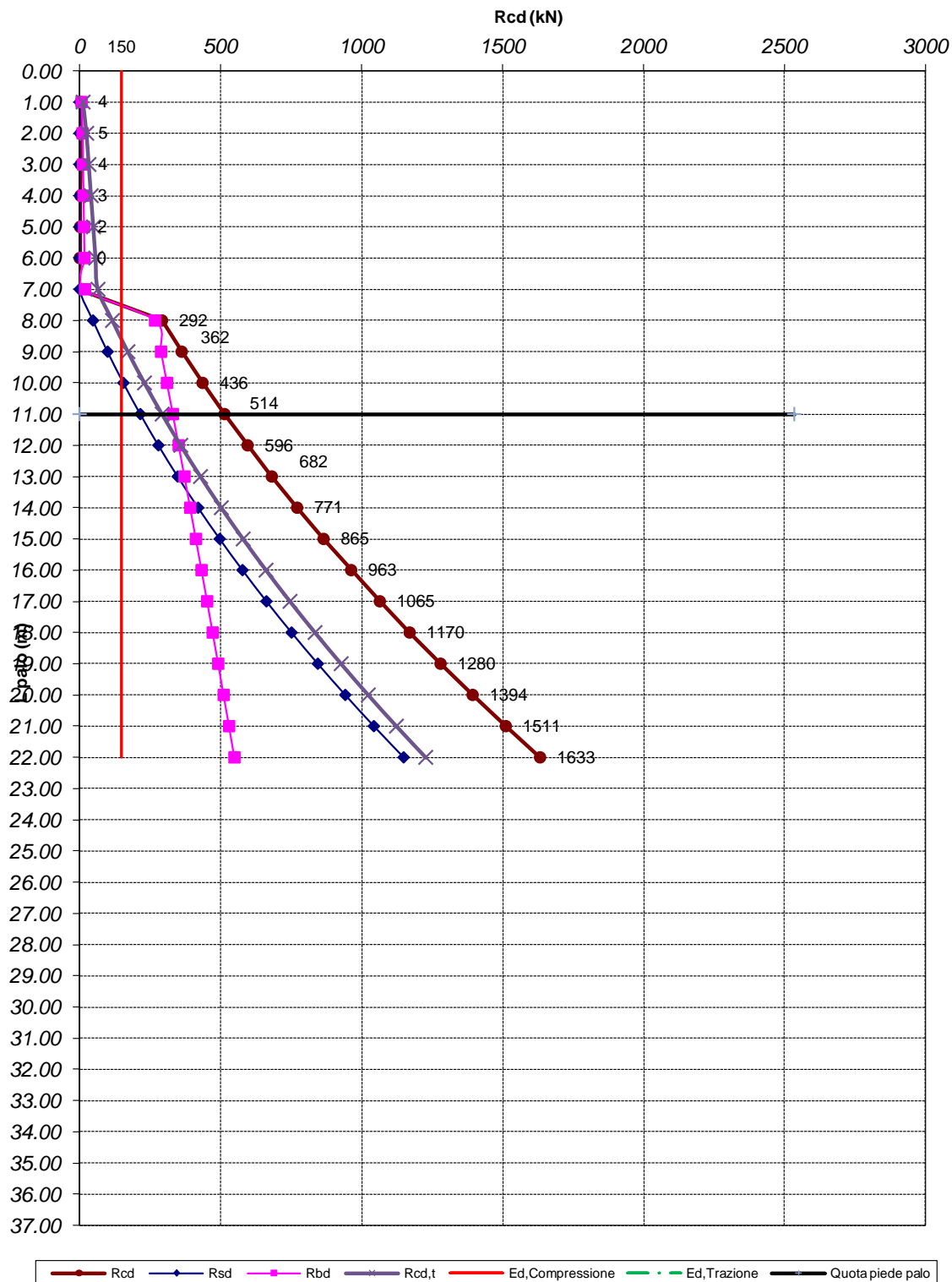
Table with 8 columns: n, DE SCRIZIONE, DA, A, cu, phi, gamma, c'. Lists 10 pile with varying depths and soil types.

Main calculation table with 20 columns: Unità, z, cu, c', phi, gamma, gamma', qs, K, av, av', tan delta, qslim, qs, Qs, Nq, c' * Mc (BCd), qb,lim, qb, Qb, Rsd, RsdT, Rbd, Wp, Rcd, RcdT, Wp'. Contains detailed data for each pile depth and soil condition.

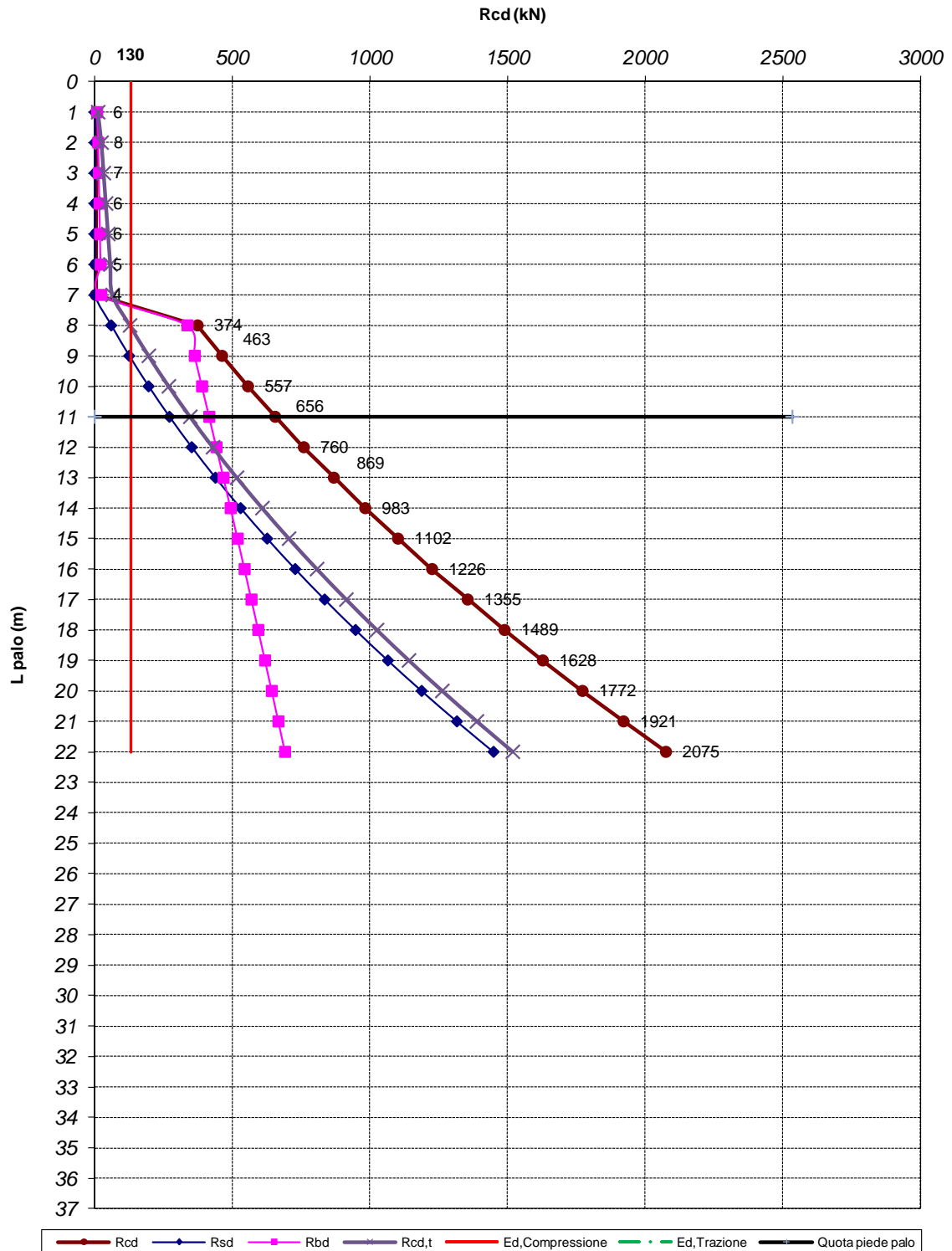
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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8.3.3 Barriere Hb=3.75m

1.) Barriere Hb=3.75m, Hrl=7.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hrl=7.0m. Hbarr=3.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:
Rcd = Rkd + Rsd + Wp
in cui:
Rkd = Rk(d)/gamma
Resistenza alla punta di progetto
Rsd = Rk(s)/gamma
Resistenza laterale di progetto
Rk(d) = Rk(d)/gamma
Resistenza alla punta caratteristica
Rk(s) = Rk(s)/gamma
Resistenza laterale caratteristica
Rkm = Qk
Resistenza media alla punta
Rsm = Qs
Resistenza media laterale
Rsd,j =
Resistenza laterale di progetto a lazione
Wp:
Peso proprio del palo (alloggiato se in compressione)
Wp':
Peso proprio del palo

PORTANZA UNITARIA ALLA PUNTA

Terreni granulari (c = 0, phi > 0)

In accordo alla teoria di Berzantsev, per pali di grande diametro:

qb = Nq * A * v

con: Nq = coefficiente di capacita' portante corrispondente all'origine delle prime deformazioni plastiche (cod. = 0,85 - 0,10 D)

Per i pali di grande diametro (d >= 70cm) Nq' è dato dal grafico a destra riportato.

Metodi per pali di piccolo diametro (d < 6-30cm) e medio diametro (d=31-70cm): qb = Nq * A * v

in cui: Nq = 7 * e^((1/2) * tan(phi)) * tan^2(45 + (phi)/2) (consigliate ai valori del grafico di Berzantsev)

In ogni caso viene assunto per qb il valore limite di q_bim.

Terreni coesivi (c < 0)

La resistenza alla punta viene espressa come:

qb = q_v + 9 * c

(in condizioni non drenate)

qb = q_v' + 9 * c'

(in condizioni drenate) essendo: Nq = 8 * (q' * 1/2 * tan(phi) + c')

RESISTENZA LATERALE UNITARIA

Terreni granulari (c = 0, phi > 0)

qs = K * tan^2(phi) * q_v

con: K secondo punti a) 0,65 (pali di grande/medio diametro) o 0,50 (pali di piccolo diametro), tan^2 = tan(phi)^2

In ogni caso non viene superato il valore limite di q_slm.

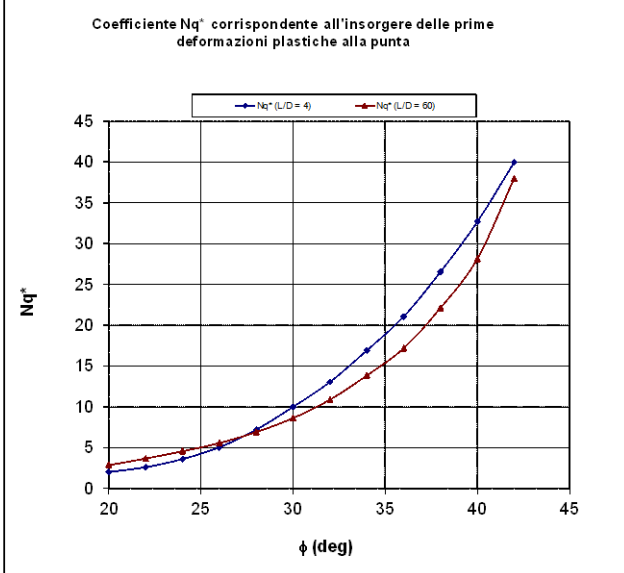
Terreni coesivi (c < 0)

qs = alpha * c (in cond. non dr.)

con: alpha variabile in funzione di c si secondo la seguente tabella (AGI - 1984)

qs = alpha' * c' + alpha'' * K * tan^2(phi) * q_v (in cond. dren.)

Table with 2 columns: c (kPa) and alpha. Rows: <= 25, 26 a 50, da 51 a 75, > 75.



CARATTERISTICHE GEOMETRICHE

Table with 2 columns: param and value. Rows: Diametro palo (0.60 m), Superficie residuale alla punta (0.28 mq), Superficie laterale per lunghezza unitaria (1.88 mq), peso specifico del palo (25.00 kN/m^3).

FALDA

Quota livello falda da c.d.p. (m) 6.00

SOMMARCARICO A Q.T.P.

Table with 2 columns: param and value. Rows: Tensione totale in testa palo (20.0 kN/m^2), Tensione efficace in testa palo (20.0 kN/m^2).

COEFFICIENTI DI SICUREZZA

Table with 2 columns: param and value. Rows: Tipo di Palo (Traliccio), coefficiente S (1.00), coefficiente Y (1.00), coefficiente Xa (1.00), coefficiente Yc (1.70).

CARICO DI PROGETTO Ed

Ed, Com Ed, Revisione

Table with 2 columns: param and value. Rows: APP.1.COMB1.SLU_STRU (170 MM), APP.1.COMB2.SLU-GE0 (135 MM), APP.1.COMB2.SLU-SIS (120 MM).

Immediata: palo di progetto (11.00), Pro-fondità testa palo (6.00), Quarta prova: palo (11.00)

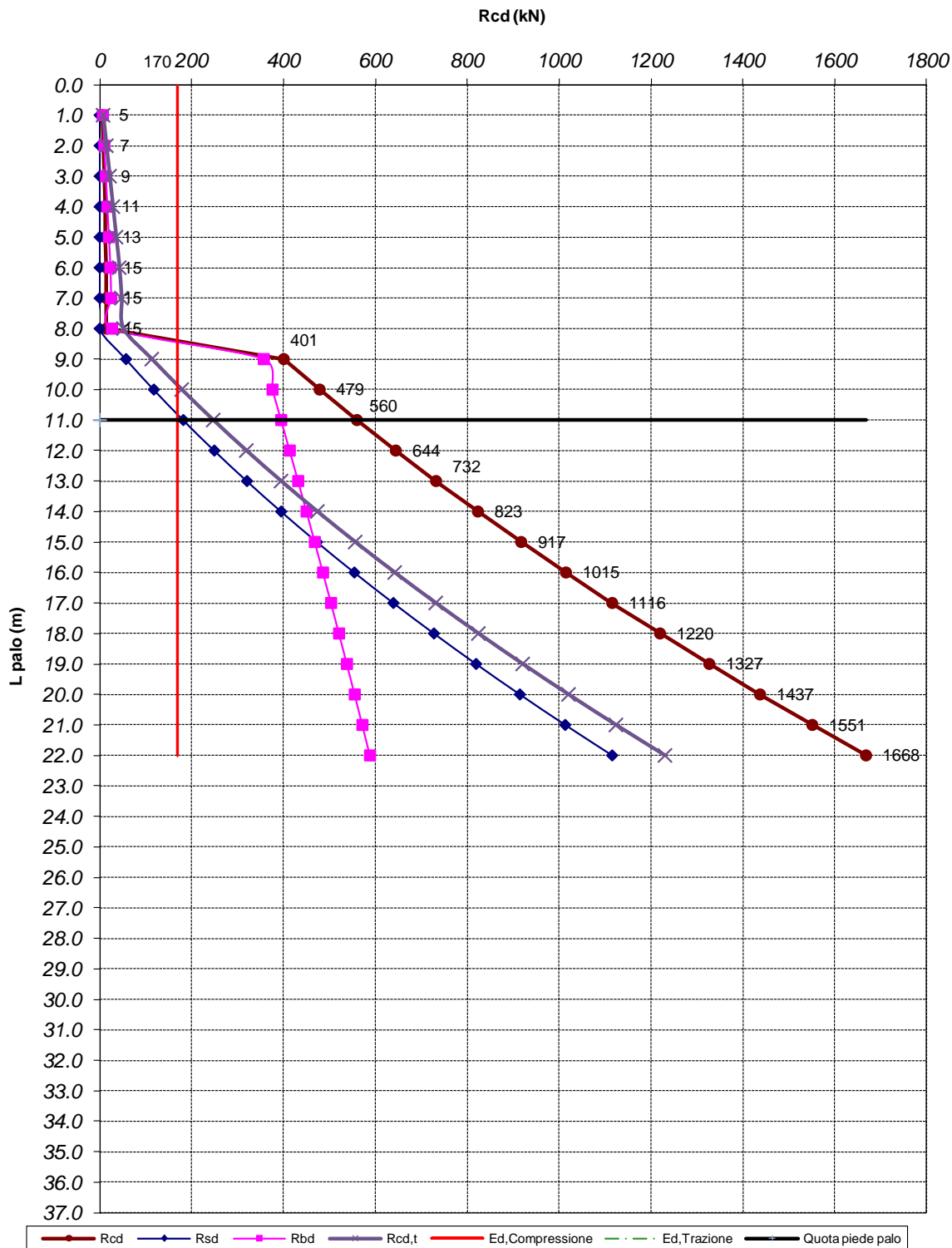
Table with 2 columns: param and value. Rows: PROFONDITA' INDAGATA (0.00), quota minima (22.00), quota massima (658)

STRATIGRAFIA DI PROGETTO (DA Q.T.P.)

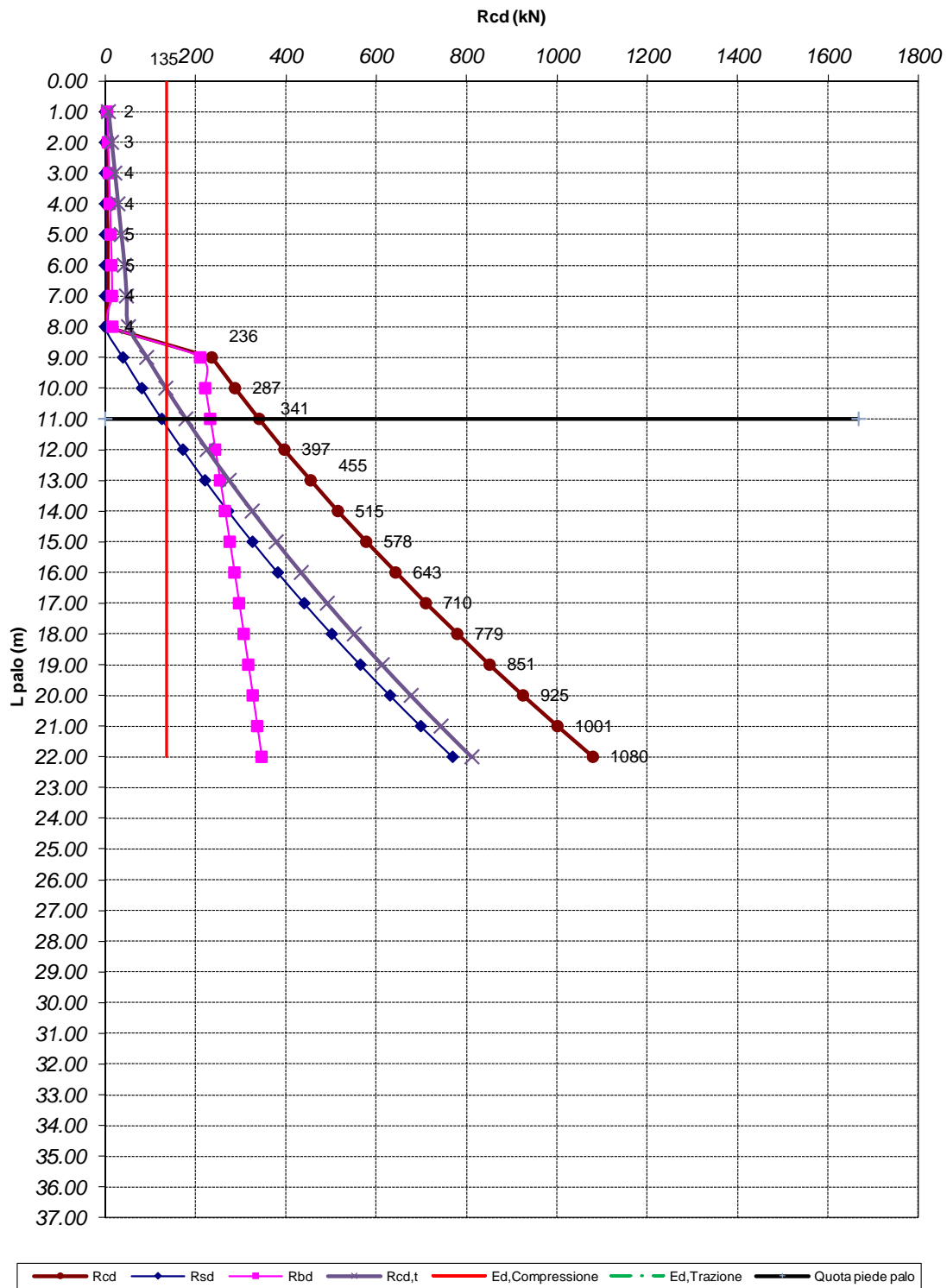
Table with 7 columns: n, D, A, cu, phi, gamma, c'. Rows 1-10 showing soil profile details.

Main results table with 27 columns: Units, z, cu, cs, phi, gamma, gamma', qs, K, cv, cs', tano, qslm, qsa, Qs, Nq', c'Nc (RCd), qslm, qb, Qb, Rcd, Rcd, Rcd, Rkd, Wp, Rcd, Rcd, Wp'. Rows 1-22 showing calculated values for different depths.

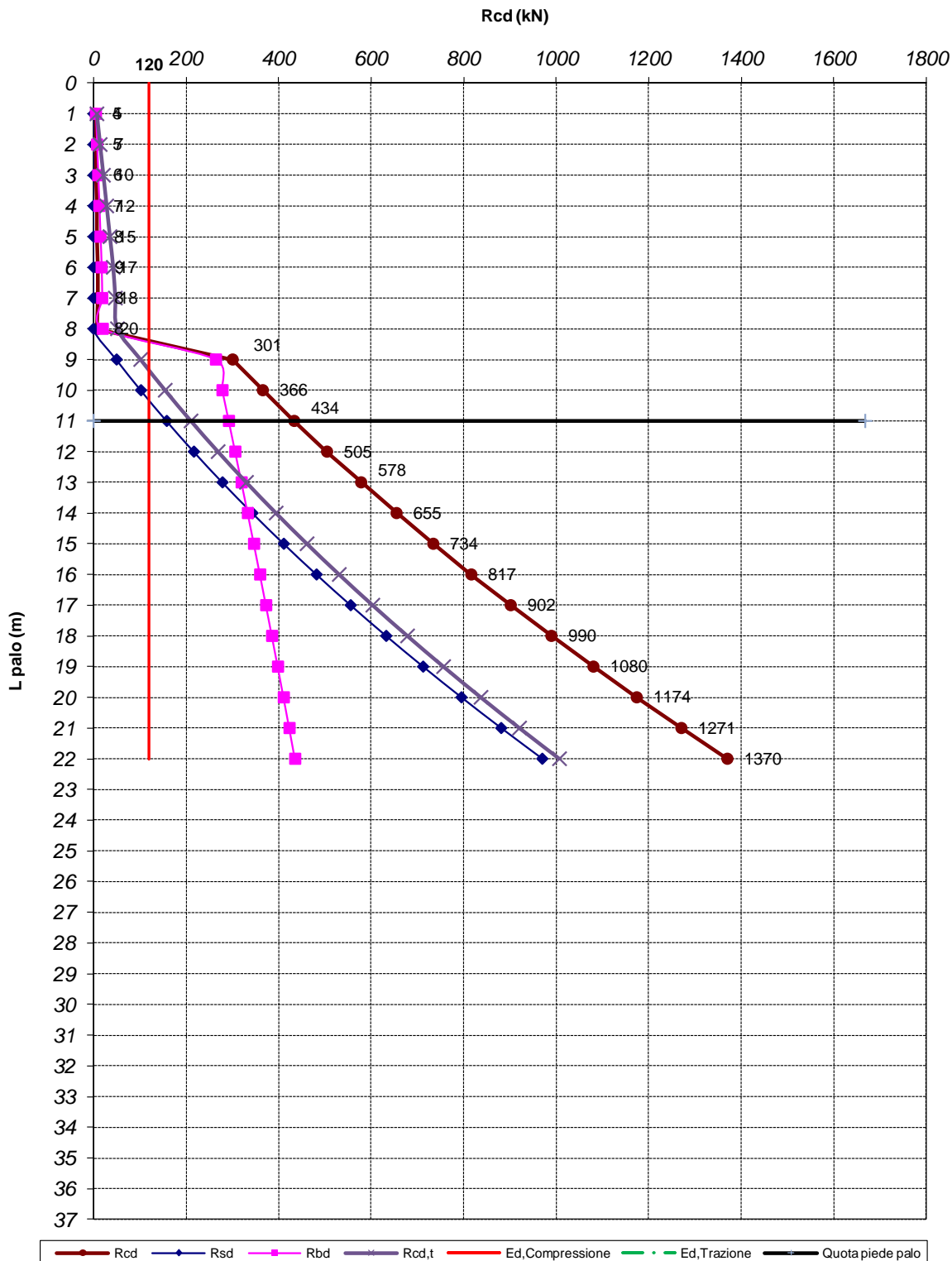
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**





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2.) Barriere Hb=3.75m, Hril=3.0m, terreno Tipo 2

CAPACITA' PORTANTE DI UN PALO COMPRESSO (D.M. 14.01.2008) - APPROCCIO 1 - COMBINAZIONE 1 - SLU_STRU (A1-M1-R1)

LAVORO: Pali di barriere su Rilevato. Hril=3.0m. Hbar=3.75m. Varco 0.0m. Terreno di fondazione Tipo 2. Condizioni Drenate

Il carico limite di progetto viene determinato come:

$R_{dL} = R_{dL1} + R_{dL2} + W_p$ Carico limite e Trazione $R_{dL1} = R_{dL1} + W_p'$

- R_{dL1} : Resistenza alla punta di progetto
- R_{dL2} : Resistenza laterale di progetto
- R_{dL3} : Resistenza alla punta caratteristica
- R_{dL4} : Resistenza laterale caratteristica
- R_{dL5} : Resistenza alla punta media
- R_{dL6} : Resistenza laterale media
- W_p : Peso proprio del palo (allungamento se in compressione)
- W_p' : Peso proprio del palo

PORTANZA LINEARE ALLA PUNTA

Tensioni ammissibili ($\sigma = \phi \cdot \phi \cdot \phi$)

In accordo alla teoria di Berezantsev, per pali di grande diametro?

$q_b = N_q \cdot \alpha \cdot \beta \cdot \gamma$ con: N_q : coefficiente di capacità portante corrispondente all'insorgere delle prime deformazioni plastiche (esd. = 0,06 - 0,10 D)

Per i pali di grosso diametro ($D > 70$ cm) N_q è dato dal grafico a destra riportato:

Merito: per pali di piccolo diametro ($D = 8-30$ cm) e medio diametro ($D = 31-70$ cm): $q_b = N_q \cdot \alpha \cdot \beta \cdot \gamma$

In cui: $N_q = 2 \cdot c \cdot \tan(\phi) \cdot \tan^2(45 + \phi/2)$ (equivalente ai valori del grafico di Berezantsev)

In ogni caso viene assunto per q_b il valore limite di q_{lim} .

Tensioni ammissibili ($\sigma < \phi$)

Il calcolo viene svolto in termini di tensioni totali

La resistenza alla punta viene espressa come:

$q_b = \sigma_v + \sigma_c$ (in condizioni non drenate) $q_b = \sigma_v + N_q \cdot \alpha \cdot \beta \cdot \gamma$ (in condizioni drenate) essendo: $N_q = (N_q \cdot 1) \cdot \tan(\phi)$

RESISTENZA LATERALE LINEARE

Tensioni ammissibili ($\sigma = \phi \cdot \phi \cdot \phi$)

$q_s = K \cdot \sigma_v \cdot \alpha \cdot \beta$

K è assunto pari a 0,05 (pali di grande/medio diametro) 0,10 (pali di piccolo diametro), $\tan(\phi) = \tan(\phi)$

In ogni caso non viene superato il valore limite di q_{lim} .

Tensioni ammissibili ($\sigma < \phi$)

$q_s = \sigma_v + \sigma_c$ (in cond. non dr.) $q_s = \sigma_v + K \cdot \sigma_v \cdot \alpha \cdot \beta$ (in cond. dren.)

Le variabili in funzione di cui secondo la seguente tabella (AGI - 1984)

cu (MPa)	α
<= 25	0,50
da 25 a 50	0,30
da 51 a 75	0,10
> 75	0,40

CARATTERISTICHE GEOMETRICHE

Parametro	unità	valore	note
Diametro palo	m	0,60	palo di grande/medio diam.?
Superficie resistente alla punta	m ²	0,28	
Superficie laterale per lunghezza unitaria	m ²	1,88	
peso specifico del palo	kN/m	25,00	

FALDA

Quota livello falda da q.p.

Parametro	unità	valore
Tensione totale in testa palo	kN/m ²	20,0
Tensione efficace in testa palo	kN/m ²	20,0

COEFFICIENTI DI SICUREZZA

Parametro	valore
Tipo di Palo	1
Coefficiente γ_s	Traslabdo
Coefficiente γ_c	1,00
Coefficiente γ_m	1,00
Coefficiente γ_r	1,70

CARICO DI PROGETTO ED

APP.1-COMB1 SLU STRU	Ed.Com.Ed.Traslabdo
LN	LN
170	135
120	120

Parametro	unità	valore
Lunghezza palo di progetto	m	11,00
Profondità testa palo	m	0,00
Quota parte palo	m	11,00

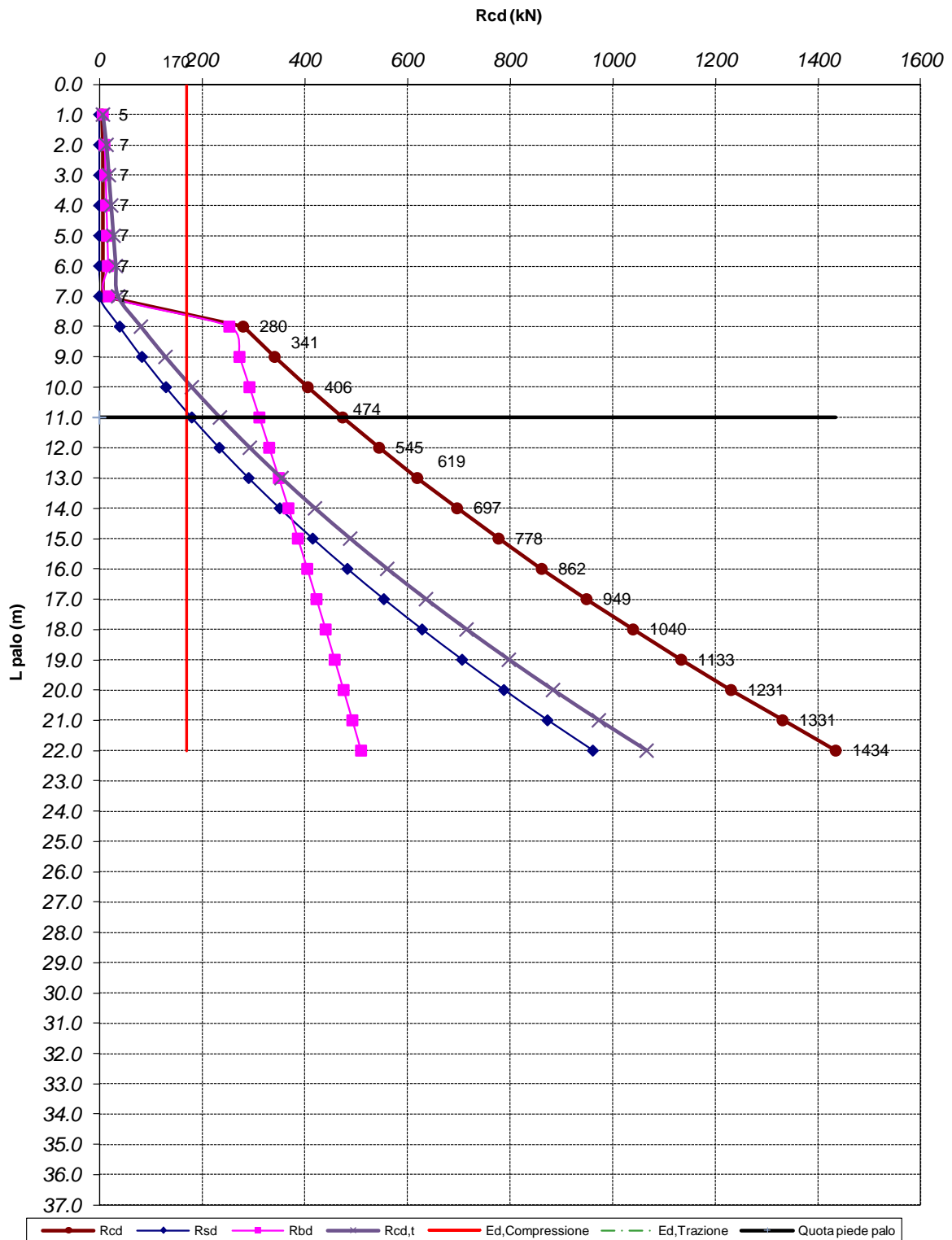
PROFONDITA' INDAGATA	unità	valore
quota minima	m	0,00
quota massima	m	22,00

SIRATEGIA DI PROGETTO (DA Q.T.P.)

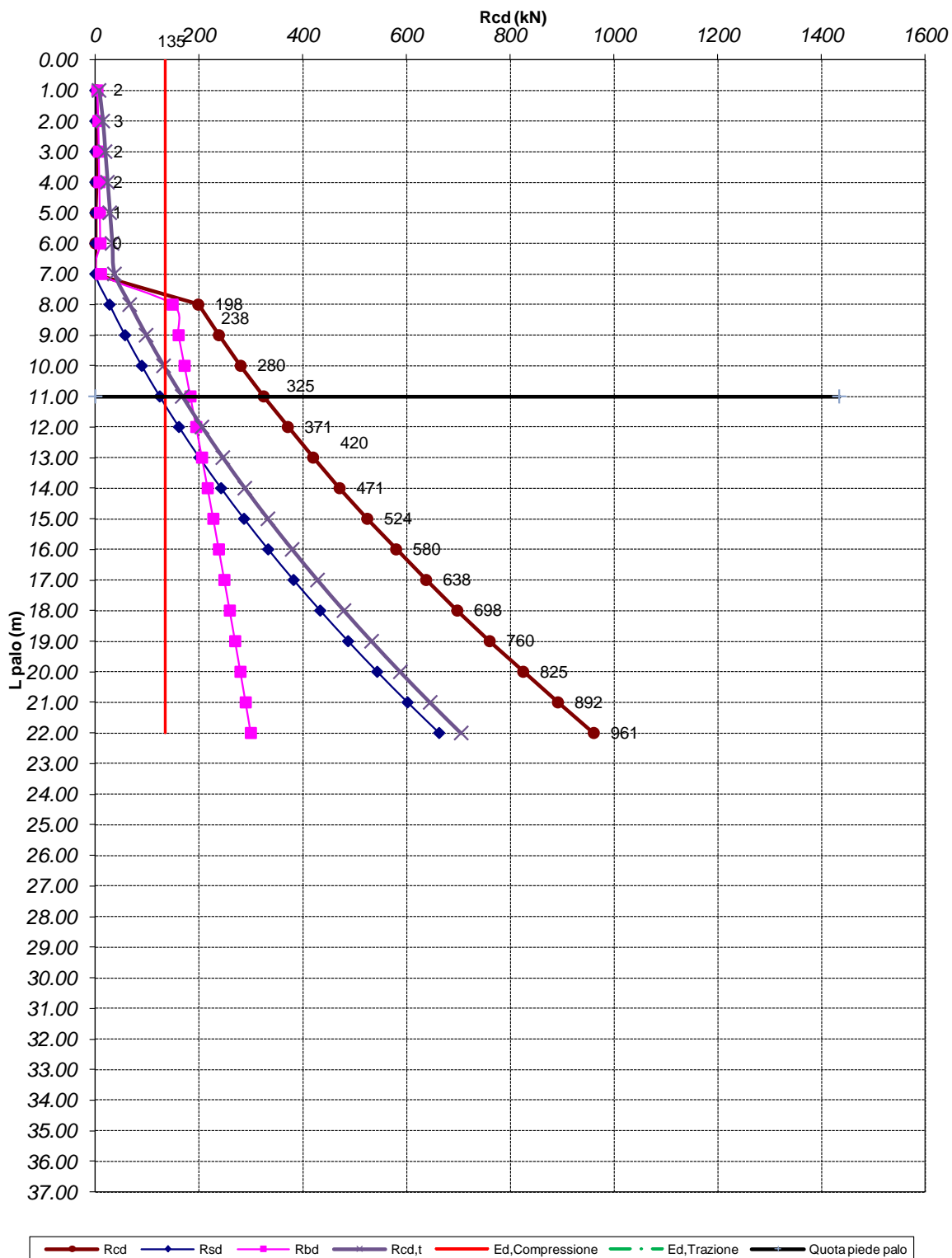
z	DESCRIZIONE	DA	A	ca	ψ	γ	c'
1	Rilevato (stato)	0,0	-2,0	0,0	0,0	20,0	0,0
2	Terreno Tipo 2 dren	-2,0	-7,0	0,0	0,0	19,0	0,0
3	Terreno Tipo 2	-8,0	-25,0	0,0	32,0	19,0	0,0
4							
5							
6							
7							
8							
9							
10							

Usabilità	z	ca	c'	ψ	γ	γ'	σ _v	K	σ _v	σ _v '	Es ₀	q _{s,lim}	q _s	Q _s	N _q	c' _{Mc} (Pa)	q _{b,lim}	q _b	Q _b	R _{dL1}	R _{dL2}	R _{dL3}	W _p	R _{dL}	R _{dL1}	W _p '
1	0,0						0,00	0,500	20,0	20,0		150	0,0	0	1,0	0,0	0	40,0	11	0	0	7	1	5	7	7
1	1,0	0,0	0,0	0,0	20,0	20,0	0,0	0,500	40,0	40,0	0,000	150	0,0	0	1,0	0,0	0	60,0	17	0	0	10	3	7	14	14
1	2,0	0,0	0,0	0,0	20,0	20,0	0,0	0,500	60,0	60,0	0,000	150	0,0	0	1,0	0,0	0	70,0	26	0	0	12	5	7	19	19
2	3,0	0,0	0,0	0,0	19,0	10,0	0,0	0,500	79,0	70,0	0,000	150	0,0	0	1,0	0,0	0	80,0	23	0	0	13	6	7	23	23
2	4,0	0,0	0,0	0,0	19,0	10,0	0,0	0,500	98,0	80,0	0,000	150	0,0	0	1,0	0,0	0	90,0	25	0	0	15	8	7	28	28
2	5,0	0,0	0,0	0,0	19,0	10,0	0,0	0,500	117,0	90,0	0,000	150	0,0	0	1,0	0,0	0	100,0	28	0	0	17	10	7	32	32
2	6,0	0,0	0,0	0,0	19,0	10,0	0,0	0,500	136,0	100,0	0,000	150	0,0	0	1,0	0,0	0	110,0	31	0	0	18	11	7	37	37
2	7,0	0,0	0,0	0,0	19,0	10,0	0,0	0,500	155,0	110,0	0,000	150	0,0	0	1,0	0,0	0	120,0	34	0	0	19	12	7	42	42
3	8,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	174,0	120,0	0,625	150	36,9	88	12,7	0,0	0	132,8	431	88	48	253	13	290	81	41
3	9,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	193,0	130,0	0,625	150	39,1	141	12,6	0,0	0	144,3	464	83	83	273	15	341	129	46
3	10,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	212,0	140,0	0,625	150	42,2	221	12,6	0,0	0	158,0	497	108	108	292	16	405	160	50
3	11,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	231,0	150,0	0,625	150	45,3	305	12,5	0,0	0	174,0	530	139	139	312	18	474	235	55
3	12,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	250,0	160,0	0,625	150	48,4	388	12,4	0,0	0	190,0	562	224	224	331	20	545	292	59
3	13,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	269,0	170,0	0,625	150	51,6	475	12,4	0,0	0	207,0	595	291	291	358	21	619	355	64
3	14,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	288,0	180,0	0,625	150	54,7	568	12,3	0,0	0	224,0	628	352	352	388	23	697	420	68
3	15,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	307,0	190,0	0,625	150	57,8	707	12,2	0,0	0	242,0	661	416	416	427	25	778	489	73
3	16,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	326,0	200,0	0,625	150	60,9	822	12,2	0,0	0	260,0	694	483	483	465	27	862	561	77
3	17,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	345,0	210,0	0,625	150	64,0	942	12,1	0,0	0	278,0	727	554	554	423	28	949	636	82
3	18,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	364,0	220,0	0,625	150	67,2	1069	12,0	0,0	0	296,0	760	629	629	441	30	1040	715	87
3	19,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	383,0	230,0	0,625	150	70,3	1201	12,0	0,0	0	314,0	793	707	707	458	32	1133	796	91
3	20,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	402,0	240,0	0,625	150	73,4	1340	11,9	0,0	0	332,0	826	788	788	476	33	1231	886	96
3	21,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	421,0	250,0	0,625	150	76,5	1484	11,9	0,0	0	350,0	858	873	873	493	35	1331	973	100
3	22,0	0,0	0,0	32,0	19,0	10,0	0,0	0,500	440,0	260,0	0,625	150	79,7	1634	11,8	0,0	0	368,0	891	961	961	510	37	1434	1066	105

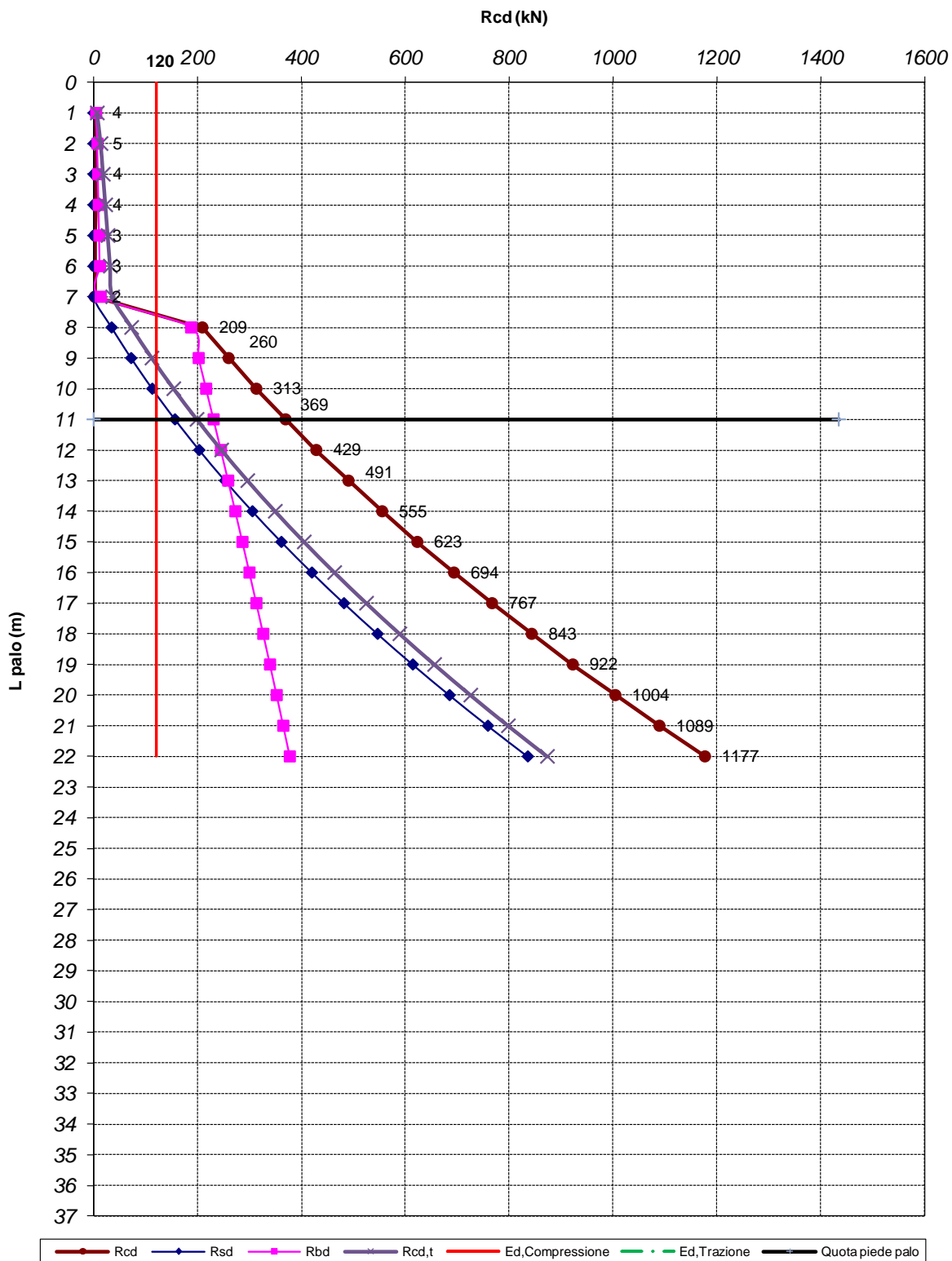
**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.1 - SLU_STRU (A1-M1-R1)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 COMB.2 - SLU_GEO (A2-M1-R2)**



**Diagramma del carico limite del palo in funzione della lunghezza
APP.1 e 2 COMB. - SLV_SIS (1-M1-R3)**



8.4. 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 per le azioni ortogonali al cordolo e di palo con incastro scorrevole per quelle parallele al cordolo, 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.

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 ai paragrafi precedenti e raggruppati nelle tabelle si seguito riportate (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, oppure quelle parallele al cordolo).

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 preliminarmente 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.

Riepilogo delle azioni longitudinali (X) e trasversali (Y) ad asse cordolo in testa al palo											
		Ritiro cordolo (Q)		1) Press. sui pannelli (Q)		2) Spinta terreno (G1)		3) Spinta sovraccarico (Q)		4) Passerella di servizio (G2-Q)	
		Mx (kNm)	Tx (kN)	My1 (kNm)	Ty1 (kN)	My2 (kNm)	Ty2 (kN)	My3 (kNm)	Ty3 (kN)	My4 (kNm)	Ty4 (kN)
Altezza barriere Hb=6.75m	Rilevato 7m	281.9	146.2	224.0	50.6	2.4	7.1	7.1	14.3	8.3	3.0
	Rilevato 3m	108.4	76.9	224.0	50.6	2.4	7.1	7.1	14.3	8.3	3.0
Altezza barriere Hb=4.75m	Rilevato 7m	263.6	135.4	122.0	35.6	2.4	7.1	7.1	14.3	8.3	3.0
	Rilevato 3m	87.7	69.5	122.0	35.6	2.4	7.1	7.1	14.3	8.3	3.0
Altezza barriere Hb=3.75m	Rilevato 7m	111.8	73.6	82.3	28.1	2.4	7.1	7.1	14.3	8.3	3.0
	Rilevato 3m	27.4	39.3	82.3	28.1	2.4	7.1	7.1	14.3	8.3	3.0
Coefficienti di combinazione per Stati Limite											
				STRU		GEO					
				Strutturali	γ_{G1}	1.35	1.00				
				Perm. Port.	γ_{G2}	1.50	1.30				
				Accidentali	γ_Q	1.50	1.30				

ASSENZA DI VARCHI							
		STRU					
		Mx (kNm)	Tx (kN)	My (kNm)	Ty (kN)	Mr (kNm)	Tr (kN)
Altezza barriere Hb=6.75m	Rilevato 7m	422.9	219.3	362.3	111.4	556.8	246.0
	Rilevato 3m	162.6	115.4	362.3	111.4	397.1	160.4
Altezza barriere Hb=4.75m	Rilevato 7m	395.4	203.1	209.3	88.9	447.4	221.7
	Rilevato 3m	131.6	104.3	209.3	88.9	247.2	137.0
Altezza barriere Hb=3.75m	Rilevato 7m	167.7	110.4	149.8	77.7	224.8	135.0
	Rilevato 3m	41.1	59.0	149.8	77.7	155.3	97.5
		GEO					
		Mx (kNm)	Tx (kN)	My (kNm)	Ty (kN)	Mr (kNm)	Tr (kN)
Altezza barriere Hb=6.75m	Rilevato 7m	366.5	190.1	313.6	95.4	482.3	212.6
	Rilevato 3m	140.9	100.0	313.6	95.4	343.8	138.2
Altezza barriere Hb=4.75m	Rilevato 7m	342.7	176.0	181.0	75.9	387.5	191.7
	Rilevato 3m	114.0	90.4	181.0	75.9	213.9	118.0
Altezza barriere Hb=3.75m	Rilevato 7m	145.3	95.7	129.4	66.1	194.6	116.3
	Rilevato 3m	35.6	51.1	129.4	66.1	134.2	83.6

01.1.a) Barriere Hb=6.75m, Azioni Trasversali, STRU

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	431.03	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	53.57	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.78 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	13.0 m				
h =	3.25 m		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
R =	1.00 (STRU)				
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	3'531.00 kNm				
Sezione libera in sommità					
$M_{max} =$	3531.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	548.57 kN	ok			
$z_\gamma =$	4.78 m				
$H_{ult,d} =$	353.91 kN				
$V_{Ed} =$	111.50 kN				
$H_{ult,d}/V_{Ed} =$	3.17 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	7.18 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	1'081.63 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	4'056.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.71 m		$z_\gamma = L =$	13.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	8'355.64 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	48'332.00 kNm	

01.1.b) Barriere Hb=6.75m, Azioni Trasversali, GEO

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	431.03	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	53.34	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.77 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	13.0 m				
h =	3.28 m		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
R =	1.60 (GEO)				
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	3'531.00 kNm				
Sezione libera in sommità					
$M_{max} =$	3531.00 kNm	ok	$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	546.18 kN				
$z_\gamma =$	4.77 m				
$H_{ult,d} =$	220.23 kN				
$V_{Ed} =$	95.40 kN				
$H_{ult,d}/V_{Ed} =$	2.31 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	7.17 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	1'079.30 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	4'056.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.71 m		$z_\gamma = L =$	13.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	8'370.29 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	48'474.27 kNm	

01.2.a) Barriere Hb=6.75m, Azioni Longitudinali, STRU

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	431.03	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	107.15	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.76 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	13.0 m				
h =	1.93 m				
R =	1.00 (STRU)		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	3'531.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	3531.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	1'097.25 kN	ok			
$z_\gamma =$	6.76 m				
$H_{ult,d} =$	707.90 kN				
$V_{Ed} =$	219.30 kN				
$H_{ult,d}/V_{Ed} =$	3.23 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	9.16 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	1'177.35 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	4'056.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	7.00 m		$z_\gamma = L =$	13.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	7'767.89 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	42'973.63 kNm	

01.2.b) Barriere Hb=6.75m, Azioni Longitudinali, GEO

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	431.03	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	107.16	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.76 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	13.0 m				
h =	1.93 m				
R =	1.60 (GEO)		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	3'531.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	3531.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	1'097.31 kN	ok			
$z_\gamma =$	6.76 m				
$H_{ult,d} =$	442.46 kN				
$V_{Ed} =$	190.10 kN				
$H_{ult,d}/V_{Ed} =$	2.33 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	9.16 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	1'177.39 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	4'056.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	7.00 m		$z_\gamma = L =$	13.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	7'767.66 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	42'971.69 kNm	

8.4.2 Barriere Hb=4.75m

Verifica C.A. S.L.U. - File: Barriere H4.75-Pali Tipo A
_ □ ×

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

Titolo : Barriere H=4.75m. Pali Tipo A

Numero barre **Zoom**

Sezione circolare cava

Raggio esterno [cm]

Raggio interno [cm]

N° barre uguali

Diametro barre [cm]

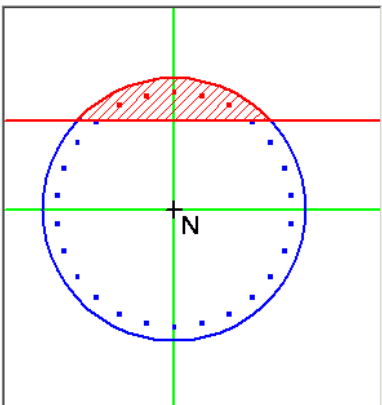
Copriferro (baric.) [cm]

Tipo Sezione

Rettan.re Trapezi

a T Circolare

Rettangoli Coord.



Sollecitazioni

S.L.U. → **Metodo n** ←

N_{Ed}	<input style="width: 40px;" type="text" value="125"/>	<input style="width: 40px;" type="text" value="0"/>	kN
M_{xEd}	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="0"/>	kNm
M_{yEd}	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="0"/>	

P.to applicazione N

Centro Baricentro cls

Coord.[cm] xN

yN

Tipo rottura

Lato calcestruzzo - Acciaio snervato

Materiali

B450C	C25/30
ϵ_{su} <input style="width: 40px;" type="text" value="67.5"/> ‰	ϵ_{c2} <input style="width: 40px;" type="text" value="2"/> ‰
f_{yd} <input style="width: 40px;" type="text" value="391.3"/> N/mm ²	ϵ_{cu} <input style="width: 40px;" type="text" value="3.5"/>
E_s <input style="width: 40px;" type="text" value="200'000"/> N/mm ²	f_{cd} <input style="width: 40px;" type="text" value="14.17"/>
E_s/E_c <input style="width: 40px;" type="text" value="15"/>	f_{cc}/f_{cd} <input style="width: 40px;" type="text" value="0.8"/> ?
ϵ_{syd} <input style="width: 40px;" type="text" value="1.957"/> ‰	$\sigma_{c,adm}$ <input style="width: 40px;" type="text" value="9.75"/>
$\sigma_{s,adm}$ <input style="width: 40px;" type="text" value="255"/> N/mm ²	τ_{co} <input style="width: 40px;" type="text" value="0.6"/>
	τ_{c1} <input style="width: 40px;" type="text" value="1.829"/>

M_{xRd} kN m

σ_c N/mm²

σ_s N/mm²

ϵ_c ‰

ϵ_s ‰

d cm

x **x/d**

δ

Metodo di calcolo

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

Metodo n

Tipo flessione

Retta Deviala

Vertici: **N° rett.**

Calcola MRd **Dominio M-N**

L_o cm **Col. modello**

Precompresso

02.1.a) Barriere Hb=4.75m, Azioni Trasversali, STRU

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	319.95	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	47.75	
$K_{p\delta} =$	3.00		$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.51 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
$D =$	0.80 m				
$L =$	11.0 m				
$h =$	2.35 m				
$R =$	1.00 (STRU)		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	2'621.00 kNm				
Sezione libera in sommità					
$M_{max} =$	2621.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	488.91 kN	ok			
$z_r =$	4.51 m				
$H_{ult,d} =$	315.43 kN				
$V_{Ed} =$	89.00 kN				
$H_{ult,d}/V_{Ed} =$	3.54 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_r + 3D =$	6.91 m				
$L > L_{min}?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	797.49 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'904.00 kN	
$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.76 m		$z_r = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_r) =$	4'940.34 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	28'125.95 kNm	

02.1.b) Barriere Hb=4.75m, Azioni Trasversali, GEO

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	319.95	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	47.51	
$K_{p\delta} =$	3.00		$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.50 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
$D =$	0.80 m				
$L =$	11.0 m				
$h =$	2.39 m				
$R =$	1.60 (GEO)		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	2'621.00 kNm				
Sezione libera in sommità					
$M_{max} =$	2621.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	486.53 kN	ok			
$z_r =$	4.50 m				
$H_{ult,d} =$	196.18 kN				
$V_{Ed} =$	75.90 kN				
$H_{ult,d}/V_{Ed} =$	2.58 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_r + 3D =$	6.90 m				
$L > L_{min}?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	795.48 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'904.00 kN	
$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.76 m		$z_r = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_r) =$	4'950.84 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	28'223.67 kNm	

02.2.a) Barriere Hb=4.75m, Azioni Longitudinali, STRU

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	319.95	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	85.65	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.05 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	11.0 m				
h =	1.95 m				
R =	1.00 (STRU)				
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	2'621.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	2621.00 kNm	ok			
$H_{ult} =$	877.04 kN				
$z_\gamma =$	6.05 m				
$H_{ult,d} =$	565.83 kN				
$V_{Ed} =$	203.10 kN				
$H_{ult,d}/V_{Ed} =$	2.79 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	8.45 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	822.44 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'904.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.85 m		$z_\gamma = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	4'810.82 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	26'949.58 kNm	

02.2.b) Barriere Hb=4.75m, Azioni Longitudinali, GEO

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	319.95	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	85.65	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	6.04 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.80 m				
L =	11.0 m				
h =	1.95 m				
R =	1.60 (GEO)				
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	2'621.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	2621.00 kNm	ok			
$H_{ult} =$	877.01 kN				
$z_\gamma =$	6.04 m				
$H_{ult,d} =$	353.63 kN				
$V_{Ed} =$	176.00 kN				
$H_{ult,d}/V_{Ed} =$	2.01 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	8.44 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	822.42 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'904.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.85 m		$z_\gamma = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	4'810.93 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	26'950.55 kNm	

8.4.3 Barriere Hb=3.75m

Verifica C.A. S.L.U. - File: Barriere H3.75-Pali Tipo A
_ □ ×

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

Titolo : Barriere H=3.75m. Pali Tipo A

Sezione circolare cava

Raggio esterno [cm]

Raggio interno [cm]

N° barre uguali

Diametro barre [cm]

Copriferro (baric.) [cm]

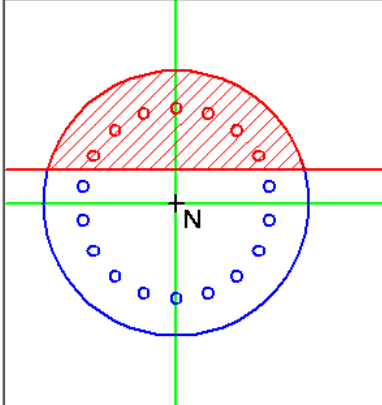
N° barre **Zoom**

Tipo Sezione

Rettan.re Trapezi

a T Circolare

Rettangoli Coord.



P.to applicazione N

Centro Baricentro cls

Coord.[cm] x_N y_N

Tipo rottura

Lato calcestruzzo - Acciaio snervato

Sollecitazioni

S.L.U. → Metodo n ←

N _{Ed}	<input type="text" value="115"/>	<input type="text" value="0"/> kN
M _{xEd}	<input type="text" value="0"/>	<input type="text" value="0"/> kNm
M _{yEd}	<input type="text" value="0"/>	<input type="text" value="0"/>

M_{xRd} kN m

σ_c N/mm²

σ_s N/mm²

ϵ_c ‰

ϵ_s ‰

d cm

x x/d

δ

Metodo di calcolo

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

Metodo n

Tipo flessione

Retta Deviata

Vertici: N° rett.

Calcola MRd **Dominio M-N**

L_o cm **Col. modello**

Precompresso

Materiali

B450C	C25/30
ϵ_{su} <input type="text" value="67.5"/> ‰	ϵ_{c2} <input type="text" value="2"/> ‰
f _{yd} <input type="text" value="391.3"/> N/mm ²	ϵ_{cu} <input type="text" value="3.5"/>
E _s <input type="text" value="200'000"/> N/mm ²	f _{cd} <input type="text" value="14.17"/>
E _s /E _c <input type="text" value="15"/>	f _{cc} /f _{cd} <input type="text" value="0.8"/> ?
ϵ_{syd} <input type="text" value="1.957"/> ‰	$\sigma_{c,adm}$ <input type="text" value="9.75"/>
$\sigma_{s,adm}$ <input type="text" value="255"/> N/mm ²	τ_{co} <input type="text" value="0.6"/>
	τ_{c1} <input type="text" value="1.829"/>

03.1.a) Barriere Hb=3.75m, Azioni Trasversali, STRU

Terreno Incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	250.77	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	38.90	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_i))^{0.5} =$	3.06 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
$D =$	0.60 m				
$L =$	11.0 m				
$h =$	1.83 m		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$R =$	1.00 (STRU)				
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	650.00 kNm				
Sezione libera in sommità					
$M_{max} =$	650.00 kNm		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	168.06 kN	ok			
$z_\gamma =$	3.06 m				
$H_{ult,d} =$	108.43 kN				
$V_{Ed} =$	77.70 kN				
$H_{ult,d}/V_{Ed} =$	1.40 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	4.86 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_i * D * L^3 * K_p) / (h + L) =$	622.42 kN		$H_{ult} = 1.5 * \gamma_i * L^2 * D * K_p =$	2'178.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_i))^{0.5} =$	5.88 m		$z_\gamma = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	3'579.42 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	19'958.95 kNm	

03.1.b) Barriere Hb=3.75m, Azioni Trasversali, GEO

Terreno Incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	250.77	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	38.83	
$K_{p\delta} =$	3.00		$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_i))^{0.5} =$	3.05 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
$D =$	0.60 m				
$L =$	11.0 m				
$h =$	1.84 m		$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = M_{ult}$		Testa libera
$R =$	1.60 (GEO)				
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	650.00 kNm				
Sezione libera in sommità					
$M_{max} =$	650.00 kNm	ok	$H_{ult} \left(h + \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} \right) - \frac{1}{3} H_{ult} \sqrt{\frac{2H_{ult}}{\gamma DK_{p\delta}}} = 2M_{ult}$		Testa incastrata
$H_{ult} =$	167.75 kN				
$z_\gamma =$	3.05 m				
$H_{ult,d} =$	67.64 kN				
$V_{Ed} =$	66.20 kN				
$H_{ult,d}/V_{Ed} =$	1.02 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_\gamma + 3D =$	4.85 m				
$L > L_{min} ?$	(SI')				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_i * D * L^3 * K_p) / (h + L) =$	621.97 kN		$H_{ult} = 1.5 * \gamma_i * L^2 * D * K_p =$	2'178.00 kN	
$z_\gamma = ((2 * H_{ult}) / (3 * D * K_p * \gamma_i))^{0.5} =$	5.88 m		$z_\gamma = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_\gamma) =$	3'581.71 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	19'978.99 kNm	

03.2.a) Barriere Hb=3.75m, Azioni Longitudinali, STRU

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	250.77	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	70.59	
$K_{p\delta} =$	3.00		$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.12 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.60 m				
L =	11.0 m				
h =	1.52 m				
R =	1.00 (STRU)				
$\xi =$	1.55				
$R * \xi =$	1.55				
$M_{ult} =$	650.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	650.00 kNm				
$H_{ult} =$	304.95 kN	ok			
$z_r =$	4.12 m				
$H_{ult,d} =$	196.74 kN				
$V_{Ed} =$	110.40 kN				
$H_{ult,d}/V_{Ed} =$	1.78 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_r + 3D =$	5.92 m				
$L > L_{min}?$	(SI)				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	637.91 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'178.00 kN	
$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.95 m		$z_r = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_r) =$	3'500.69 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	19'280.43 kNm	

03.2.b) Barriere Hb=3.75m, Azioni Longitudinali, GEO

Terreno incoerente e palo flessibile					
$\phi =$	0°				
$\gamma_{M1} =$	1.0		$M_{ult}/\gamma D^4 K_p =$	250.77	
$\phi' =$	0.00				
$K_p =$	1.00		$H_{ult}/\gamma D^3 K_p =$	70.60	
$K_{p\delta} =$	3.00		$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	4.12 m	
$\gamma_{ter} =$	20.0 kN/mc		$K_{p\delta} = 3 * K_p$		
D =	0.60 m				
L =	11.0 m				
h =	1.52 m				
R =	1.60 (GEO)				
$\xi =$	1.55				
$R * \xi =$	2.48				
$M_{ult} =$	650.00 kNm				
Sezione incastrata in sommità					
$M_{max} =$	650.00 kNm				
$H_{ult} =$	304.99 kN	ok			
$z_r =$	4.12 m				
$H_{ult,d} =$	122.98 kN				
$V_{Ed} =$	95.70 kN				
$H_{ult,d}/V_{Ed} =$	1.29 (>=1)				
VERIFICA PORTANZA SODDISFATTA					
$L_{min} = z_r + 3D =$	5.92 m				
$L > L_{min}?$	(SI)				
VERIFICA GEOMETRICA SODDISFATTA					
b.1.1) Pali a Testa Libera Rigidi			b.2.1) Pali a Testa Incastrata Rigidi		
$H_{ult} = (0.5 * \gamma_t * D * L^3 * K_p) / (h + L) =$	637.95 kN		$H_{ult} = 1.5 * \gamma_t * L^2 * D * K_p =$	2'178.00 kN	
$z_r = ((2 * H_{ult}) / (3 * D * K_p * \gamma_t))^{0.5} =$	5.95 m		$z_r = L =$	11.00 m	
$M_{max} = H_{ult} * (h + 2/3 * z_r) =$	3'500.50 kNm		$M_{max} = H_{ult} * (h + 2/3 * L) =$	19'278.83 kNm	

9. 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:

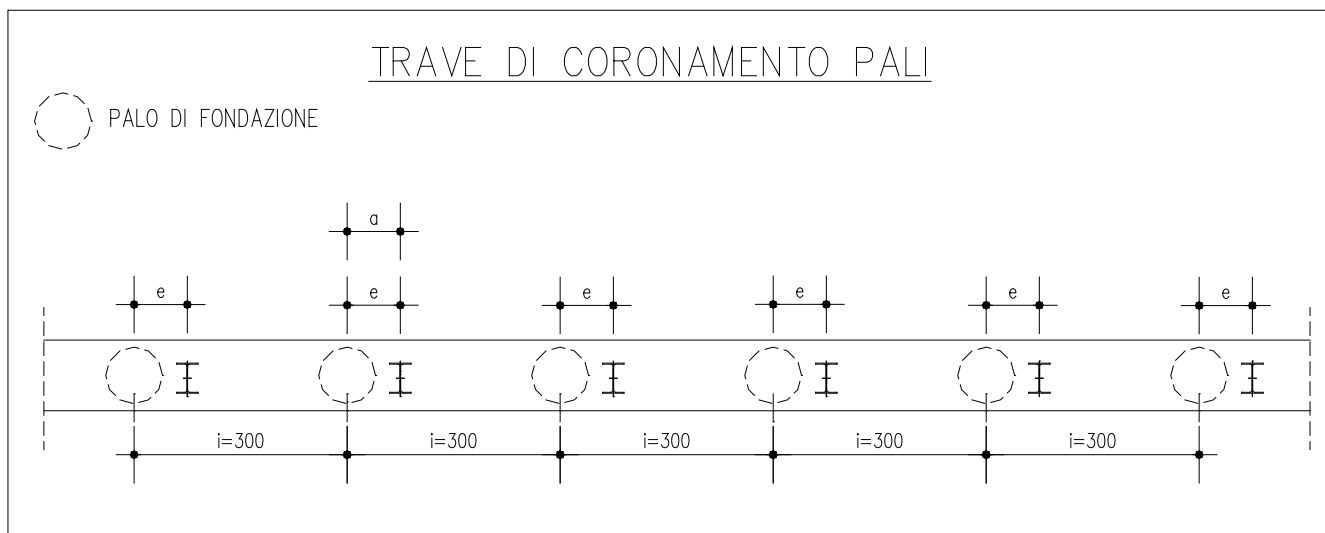
CARATTERISTICHE GEOMETRICHE TRAVE		
BARRIERA H=6.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=4.75m	B(m)	1.00
	H(m)	1.00
BARRIERA H=3.75m	B(m)	0.90
	H(m)	1.00

9.1. AZIONI AGENTI

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

- Azioni trasmesse dai montanti delle barriere antirumore
- Azioni dovute alla spinta del terreno e del sovraccarico accidentale di cantiere
- Peso proprio cordolo
- Azioni trasmesse dalla passerella di servizio
- Azioni dovute al ritiro

a) Azioni trasmesse dai montanti delle barriere antirumore



Poiché i montanti delle barriere non sono in asse-palo ma sono eccentrici con $e=0.75m$ (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 (orizzontale) trasmessa da un montante delle barriere antirumore alla base del montante,

M_{B0} = azione flessionale agente nel piano orizzontale trasmessa dalle barriere.

M_{BV} = azione flessionale agente nel piano verticale trasmessa dalle barriere

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,

M_{BOAT} = M_{B0} azione flessionale agente nel piano orizzontale trasmessa dalle barriere portata in asse trave

$M_{BVAT} = M_{BV}$ azione flessionale agente nel piano verticale trasmessa dalle barriere 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:

$$V_{BATP} = N_{BAT} * 0.75 \text{ (taglio max verticale in prossimità del palo)}$$

$$M_{BATP} = M_{BAT} * 0.75 \text{ (momento torcente max in prossimità del palo)}$$

$$T_{BPP} = T_{BAT} * 0.75 \text{ (taglio max orizzontale in prossimità del palo)}$$

$$M_{BOATP} = M_{BOAT} * 1.00 \text{ (momento max orizzontale in prossimità del palo)}$$

$$M_{BVATP} = N_B * (i-e) * e/i \text{ (momento flettente verticale max in prossimità del palo)}$$

Nella tabella sotto riportata sono riassunte le azioni agenti nella trave trasmesse dai montanti delle barriere:

	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)	5'757.5	$V_{BATP} = \rho * N_{BAT}$ (daN)	0.75	4318.1
	$M_{BAT} = M_b + T_b * (H/2 + s)$ (daNm)	19'870.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	0.75	14902.7
	$M_{BOAT} = (\rho_w * H_b) * i^2 / 12$ (daNm)	1'265.6	$M_{BOATP} = M_{BOAT}$ (daNm)	1.00	1'265.6
	$T_{BAT} = T_b$ (daN)	5'062.5	$T_{BPP} = \rho * T_{BAT}$ (daN)	0.75	3796.9
	$M_{BVAT} = N_b * (i-e) * e/i$ (daNm)	3'238.6	$M_{BVATP} = N_b * (i-e) * e/i$ (daNm)	1.00	3238.6
BARRIERA H=5.75m	$N_{BAT} = N_b$ (daN)	4'560.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	0.75	3420.0
	$M_{BAT} = M_b + T_b * (H/2 + s)$ (daNm)	14'770.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	0.75	11077.7
	$M_{BOAT} = (\rho_w * H_b) * i^2 / 12$ (daNm)	890.6	$M_{BOATP} = M_{BOAT}$ (daNm)	1.00	890.6
	$T_{BAT} = T_b$ (daN)	4'312.5	$T_{BPP} = \rho * T_{BAT}$ (daN)	0.75	3234.4
	$M_{BVAT} = N_b * (i-e) * e/i$ (daNm)	2'132.0	$M_{BVATP} = N_b * (i-e) * e/i$ (daNm)	1.00	2132.0
BARRIERA H=3.75m	$N_{BAT} = N_b$ (daN)	4'895.0	$V_{BATP} = \rho * N_{BAT}$ (daN)	0.75	3671.3
	$M_{BAT} = M_b + T_b * (H/2 + s)$ (daNm)	6'820.3	$M_{BATP} = \rho * M_{BAT}$ (daNm)	0.75	5115.2
	$M_{BOAT} = (\rho_w * H_b) * i^2 / 12$ (daNm)	703.1	$M_{BOATP} = M_{BOAT}$ (daNm)	1.00	703.1
	$T_{BAT} = T_b$ (daN)	2'812.5	$T_{BPP} = \rho * T_{BAT}$ (daN)	0.75	2109.4
	$M_{BVAT} = N_b * (i-e) * e/i$ (daNm)	2'753.4	$M_{BVATP} = N_b * (i-e) * e/i$ (daNm)	1.00	2753.4

b) Azioni dovute alla spinta del terreno e del sovraccarico accidentale di cantiere

Si considera un terreno con $\gamma = 20 \text{ kN/m}^3$ e $\phi = 38^\circ$, con un sovraccarico $q_{acc} = 20 \text{ kN/m}^2$.

Il coefficiente di spinta attiva vale $\lambda_a = \tan^2(45 - \phi/2) = 0.238$.

Definito:

i = lunghezza di influenza (nel caso in oggetto = interasse dei pali = 3.0m)

T_{SAC} = Taglio dovuto alla spinta del terreno

T_Q = Taglio dovuto al sovraccarico

M_{SAC} = Momento dovuto alla spinta del terreno

M_Q = Momento dovuto al sovraccarico accidentale

si ha che:

SPINTA ATT. TERRENO RIL SU CORD.		SPINTA SOVRACCARICO ACCIDENTALE	
$T_{SAC} = i * \gamma * H^2 * \lambda_{a1} / 2$ (daN)	357.00	$T_Q = q * \lambda_{a1} * H * i$ (daN)	714.00
$M_{SAC} = \gamma * H^2 * \lambda_{a1} / 2 * i^2 / 12$	178.50	$M_Q = q * \lambda_{a1} * H * i^2 / 12$ (daNm)	357.00

c) 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 = 3.0m

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=4.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'875.0
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'750.0
BARRIERA H=3.75m	$N_{pp} = (\text{daN})$	
	$M_{pp} = B \cdot H \cdot \gamma \cdot i^2 / 12 \text{ (daNm)}$	1'687.5
	$T_{pp} = B \cdot H \cdot \gamma \cdot i / 2 \text{ (daN)}$	3'375.0

d) Azioni trasmesse dalla passerella di servizio

Definendo:

T_{VPM} = Taglio verticale bordo cordolo, per metro di cordolo

T_{OPM} = Taglio orizzontale bordo cordolo, per metro di cordolo

M_{PM} = Momento flettente bordo cordolo, per metro di cordolo

e = eccentricità asse palo bordo cordolo

Si ha che le azioni agenti alle estremità del varco valgono:

	SOLLECITAZIONI ESTREMITA' CORDOLO TRASMESSE DALLA PASSERELLA METALLICA DI ISPEZIONE	
BARRIERA H=6.75m	$T_{VP} = T_{VPM} \cdot i / 2 \text{ (daN)}$	300.0
	$M_{PT} = (M_{PM} + T_{VPM} \cdot (e)) \cdot i / 2 \text{ (daNm)}$	414.0
	$M_{PV} = T_{VPM} \cdot i^2 / 12 \text{ (daNm)}$	150.0
	$M_{PO} = T_{OPM} \cdot i^2 / 12 \text{ (daNm)}$	75.0
	$T_{OP} = T_{OPM} \cdot i / 2 \text{ (daN)}$	150.0
BARRIERA H=4.75m	$T_{VP} = T_{VPM} \cdot i / 2 \text{ (daN)}$	300.0
	$M_{PT} = (M_{PM} + T_{VPM} \cdot (e)) \cdot i / 2 \text{ (daNm)}$	414.0
	$M_{PV} = T_{VPM} \cdot i^2 / 12 \text{ (daNm)}$	150.0
	$M_{PO} = T_{OPM} \cdot i^2 / 12 \text{ (daNm)}$	75.0
	$T_{OP} = T_{OPM} \cdot i / 2 \text{ (daN)}$	150.0
BARRIERA H=3.75m	$T_{VP} = T_{VPM} \cdot i / 2 \text{ (daN)}$	300.0
	$M_{PT} = (M_{PM} + T_{VPM} \cdot (e)) \cdot i / 2 \text{ (daNm)}$	414.0
	$M_{PV} = T_{VPM} \cdot i^2 / 12 \text{ (daNm)}$	150.0
	$M_{PO} = T_{OPM} \cdot i^2 / 12 \text{ (daNm)}$	75.0
	$T_{OP} = T_{OPM} \cdot i / 2 \text{ (daN)}$	150.0

In cui i simboli su indicati hanno il seguente significato:

T_{VP} = Taglio verticale

M_{PT} = Momento torcente

M_{PV} = Momento flettente verticale

M_{PO} = Momento flettente orizzontale

T_{OP} = Taglio orizzontale

e) Azioni da ritiro e Δt

In una determinata sezione del cordolo, il ritiro produce uno sforzo normale di trazione pari alla somma dei tagli in testa ai pali che precedono (o seguono) la sezione stessa, e che si opporrebbero all'accorciamento del cordolo.

Discorso analogo vale per le distorsioni termiche.

Lo spostamento dovuto al ritiro $+\Delta t$ nel palo piu' lontano dal centro di simmetria del cordolo e' stato valutato nel par. 7.5, e risulta:

$$\Delta l = \alpha * L / 2 * \Delta T = 1.0 * 10^{-5} * 3000 / 2 * 28.6^{\circ}\text{C} = 0.429\text{cm} \text{ (si assume } 0.43\text{cm)}$$

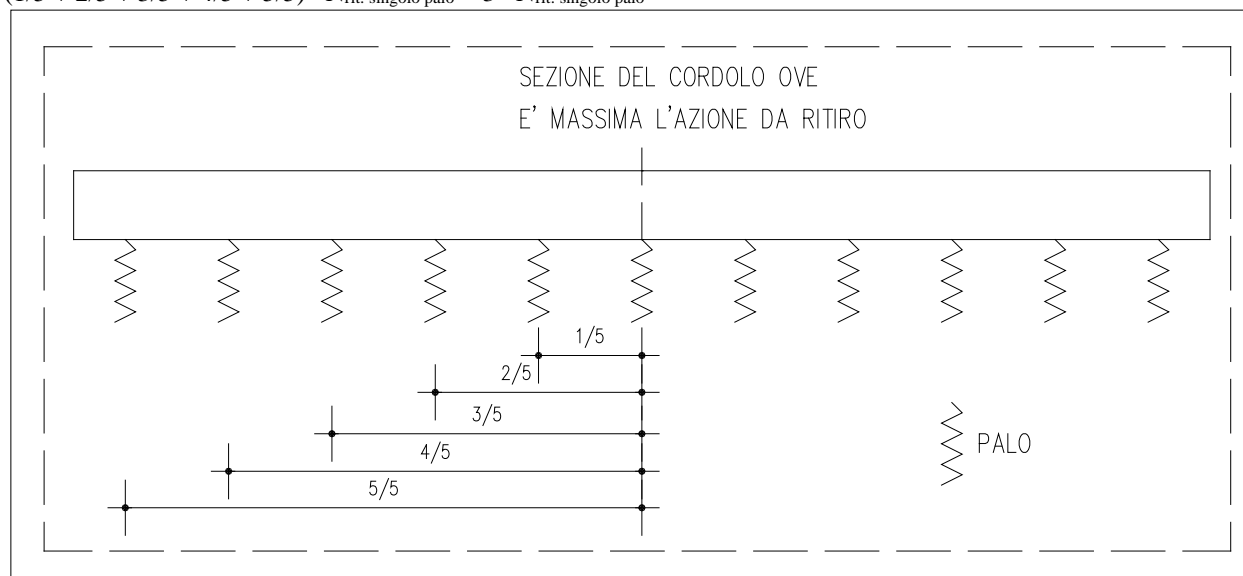
Nelle tabelle del par. 8.1 è riportato il taglio in sommità palo prodotto da tale spostamento impresso, di seguito se ne ripropone un estratto:

AZIONI DOVUTE AL RITIRO E ALLA VARIAZIONE DI TEMPERATURA			
		COMBINAZIONE SLE-RARA	COMBINAZIONE SLU
BARRIERA H=6.75m	$N_{RIT} = T_1$ (kN)	146.15	219.23
BARRIERA H=4.75m	$N_{RIT} = T_1$ (kN)	135.35	203.03
BARRIERA H=3.75m	$N_{RIT} = T_1$ (kN)	73.57	110.36

Tale valore è appunto anche lo sforzo assiale di trazione $N_{rit. \text{ singolo palo}}$ trasmesso al cordolo dal palo piu' lontano rispetto al centro di simmetria del cordolo.

I contributi degli altri pali variano in maniera lineare in funzione della loro distanza dal centro cordolo, pertanto si ha che a centro cordolo (sezione dove è massima l'azione da ritiro), lo sforzo assiale N_{RIT} da ritiro risulta pari a:

$$N_{RIT} = (1/5 + 2/5 + 3/5 + 4/5 + 5/5) * N_{rit. \text{ singolo palo}} = 3 * N_{rit. \text{ singolo palo}}$$



AZIONI DOVUTE AL RITIRO E ALLA VARIAZIONE DI TEMPERATURA NEL CORDOLO			
		COMBINAZIONE SLE-RARA	COMBINAZIONE SLU
BARRIERA H=6.75m	$N_{RIT} = T_1$ (kN)	438.45	657.68
BARRIERA H=4.75m	$N_{RIT} = T_1$ (kN)	406.05	609.08
BARRIERA H=3.75m	$N_{RIT} = T_1$ (kN)	220.71	331.07

1) Combinazioni di carico

Gli effetti dei carichi sia verticali che orizzontali, sono combinati, utilizzando i coefficienti indicati in tabella desunti dalla vigente norma ferroviaria.

Combinazione di carico	a) Peso Montante	a1) Pressioni aerodin.	a2) Vento	b1) Spinta attiva delle terre	b2) Spinta dovuta al sovrac. q	e) Peso proprio cordolo	d) Passerella	e) Ritiro e Δt.
Verifiche SLU	1.35	1.5	1.5	1.35	1.5	1.5	1.5	1.5
Verifiche SLE (Comb. Rara)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

2) Sollecitazioni Totali

Combinando i contributi delle varie condizioni di carico elementari si ottiene:

SOLLECITAZIONI TOTALI TRAVE DI CORONAMENTO			
	TIPICO	COMBINAZIONE SLE RARA	COMBINAZIONE SLU
BARRIERA H=6.75m	$N_{TC} = N_{RIT}$ (kN)	438.5	657.7
	$M_V = N_b * (e * (i - e)) / i + M_{pp} + M_{pv}$ (kNm)	52.6	76.1
	$M_O = M_{BAO} + M_{SAC} + M_Q + M_{PO}$ (kNm)	18.8	27.9
	$M_{TOT} =$ (kNm)	55.9	81.1
	$T_{TCV} = T_{PP} + V_{BATP} + T_{VP}$ (kN)	83.7	119.9
	$T_{TCO} = T_{BPP} + T_{TERR+CAR.ACC.} + T_{OP}$ (kN)	50.2	74.7
	$T_{TOT} =$ (KN)	97.6	141.3
	$M_{TORSIONE} = M_{BATP} + M_{PT}$ (kNm)	153.2	229.8
BARRIERA H=4.75m	$N_{TC} = N_{RIT}$ (kN)	406.1	609.1
	$M_V = N_b * (e * (i - e)) / i + M_{pp} + M_{pv}$ (kNm)	51.1	73.8
	$M_O = M_{BAO} + M_{SAC} + M_Q + M_{PO}$ (kNm)	15.0	22.2
	$M_{TOT} =$ (kNm)	53.2	77.1
	$T_{TCV} = T_{PP} + V_{BATP} + T_{VP}$ (kN)	81.6	116.8
	$T_{TCO} = T_{BPP} + T_{TERR+CAR.ACC.} + T_{OP}$ (kN)	38.9	57.9
	$T_{TOT} =$ (KN)	90.4	130.3
	$M_{TORSIONE} = M_{BATP} + M_{PT}$ (kNm)	82.3	123.4
BARRIERA H=3.75m	$N_{TC} = N_{RIT}$ (kN)	220.7	331.1
	$M_V = N_b * (e * (i - e)) / i + M_{pp} + M_{pv}$ (kNm)	45.9	66.3
	$M_O = M_{BAO} + M_{SAC} + M_Q + M_{PO}$ (kNm)	13.1	19.4
	$M_{TOT} =$ (kNm)	47.8	69.1
	$T_{TCV} = T_{PP} + V_{BATP} + T_{VP}$ (kN)	73.5	105.1
	$T_{TCO} = T_{BPP} + T_{TERR+CAR.ACC.} + T_{OP}$ (kN)	33.3	49.4
	$T_{TOT} =$ (KN)	80.7	116.2
	$M_{TORSIONE} = M_{BATP} + M_{PT}$ (kNm)	55.3	82.9

9.2. VERIFICA DI RESISTENZA TRAVI

Si svolgono le seguenti verifiche

- 1) verifiche a flessione in regime di tenso-flessione deviata (SLU)
- 2) verifiche a taglio (SLU)
- 3) verifiche a torsione (SLU)
- 4) verifiche a fessurazione (SLE)

Poiché in accordo al paragrafo 4.1.2.4 del D.M. 2008 le armature calcolate per la resistenza nei riguardi della sollecitazione torcente devono essere aggiunte a quelle calcolate nei riguardi delle verifiche per flessione e per le verifiche a taglio, si considera:

- 50% Armature longitudinali presenti efficaci per la verifica a tensoflessione,
- 50% Armature longitudinali presenti efficaci per la verifica a torsione,
- 50% Staffe efficaci per verifiche a taglio,
- 50% Staffe efficaci per verifiche a torsione (solo braccia esterne).

Spesso nelle verifiche che seguono, per comodità di input nei programmi, tale aliquota di area viene messa in conto ipotizzando l'impiego di barre fittizie di diametro equivalente ϕ_e tale che $A_{a\phi_e} = 50\% A_{a\phi}$, ossia $\phi_e = (\sqrt{2}/2) * \phi = 0.707 * \phi$.

Si ha quindi che:

Trave di coronamento per le barriere antirumore di H=6.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.8/2 = 7.3$ cm

$A_{tot Long.} = (6+6+5+5) \Phi 18 = 22 \Phi 18 = 22 * 2.54 = 55.88$ cm²

$St_{tipiche} = 1 + 1 \Phi 14/25'' = 12.35$ cm²/m

$St_{corrisp. montante} = 1 \Phi 14/15'' = 10.27$ cm²/m

Armatura per Verifica a tensoflessione SLU

50% $A_{tot} = 0.5 * 22 * \phi 18 = 22 * 2.54/2 = 22 * 1.27 = 27.94$ cm²

Si ottiene quindi che l'area che viene considerata per la verifica SLU di tenso-flessione è pari a 22 $\phi 12.7$ (essendo $12.7 = 0.707 * 18$)

Armatura per Verifica a torsione

50% $A_{tot} = 0.5 * 22 * \phi 18 = 22 * 2.54/2 = 22 * 1.27 = 27.94$ cm²

Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a 22 $\phi 12.7$ (essendo $12.7 = 0.707 * 18$)

Staffe per Verifica a taglio

50% $St_{corrisp. montante} = 0.5 * \phi 14 / 15'' = \phi 9.9/15''$ (essendo $9.9 = 0.707 * 14$)

Staffe per Verifica a torsione

50% $St_{corrisp. montante} = 0.5 * \phi 14 / 15'' = \phi 9.9/15''$ (essendo $9.9 = 0.707 * 14$)

Trave di coronamento per le barriere antirumore di H=4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.6/2 = 7.2$ cm

$A_{tot Long.} = (6+6+5+5) \Phi 16 = 22 \Phi 16 = 22 * 2.01 = 44.22$ cm²

$St_{tipiche} = 1 + 1 \Phi 14/25'' = 12.35$ cm²/m

$St_{corrisp. montante} = 1 \Phi 14/15'' = 10.27$ cm²/m

Armatura per Verifica a tensoflessione SLU

50% $A_{tot} = 0.5 * 22 * \phi 16 = 22 * 2.01/2 = 22 * 1.00 = 22.00$ cm²

Si ottiene quindi che l'area che viene considerata per la verifica SLU di tenso-flessione è pari a 22 $\phi 11.3$ (essendo $11.3 = 0.707 * 16$)

Armatura per Verifica a torsione

$$50\% A_{tot} = 0.5 * 22 * \phi 16 = 22 * 2.01/2 = 22 * 1.00 = 22.00 \text{ cm}^2$$

Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a $22 \phi 11.3$ (essendo $11.3=0.707*16$)

Staffe per Verifica a taglio

$$50\% St_{\text{ corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15'' \text{ (essendo } 9.9=0.707*14)$$

Staffe per Verifica a torsione

$$50\% St_{\text{ corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15'' \text{ (essendo } 9.9=0.707*14)$$

Trave di coronamento per le barriere antirumore di H=3.75mCaratteristiche geometriche trave

$$H \text{ trave} = 100\text{cm}$$

$$B \text{ trave} = 90\text{cm}$$

$$c = c' = 5 + 1.2 + 1.6/2 = 7.0 \text{ cm}$$

$$A_{\text{tot Long.}} = (5+5+5+5) \phi 16 = 20 \phi 16 = 20 * 2.01 = 40.20 \text{ cm}^2$$

$$St_{\text{ tipiche}} = 1 + 1 \phi 12 / 25'' = 12.35 \text{ cm}^2/\text{m}$$

$$St_{\text{ corrisp. montante}} = 1 \phi 12 / 15'' = 10.27 \text{ cm}^2/\text{m}$$

Armatura per Verifica a tensoflessione SLU

$$50\% A_{tot} = 0.5 * 20 * \phi 16 = 20 * 2.01/2 = 20 * 1.00 = 20.0 \text{ cm}^2$$

Si ottiene quindi che l'area che viene considerata per la verifica SLU di tenso-flessione è pari a $20 \phi 11.3$ (essendo $11.3=0.707*16$)

Armatura per Verifica a torsione

$$50\% A_{tot} = 0.5 * 20 * \phi 16 = 20 * 2.01/2 = 20 * 1.00 = 20.0 \text{ cm}^2$$

Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a $20 \phi 11.3$ (essendo $11.3=0.707*16$)

Staffe per Verifica a taglio

$$50\% St_{\text{ corrisp. montante}} = 0.5 * \phi 12 / 15'' = \phi 8.5 / 15'' \text{ (essendo } 8.5=0.707*12)$$

Staffe per Verifica a torsione

$$50\% St_{\text{ corrisp. montante}} = 0.5 * \phi 12 / 15'' = \phi 8.5 / 15'' \text{ (essendo } 8.5=0.707*12)$$

Le analisi sono state svolte con l'ausilio del programma "VcaSLU" del prof. Gelfi per quanto riguarda la verifica SLU a tensoflessione (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. Si riportano le verifiche delle travi di coronamento con altezza barriere pari a $h=6.75\text{m}$.

9.2.1 Verifica a tenso flessione

Verifica a tenso flessione SLU della trave di coronamento per le barriere antirumore di H=6.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.8/2 = 7.3 \text{ cm}$

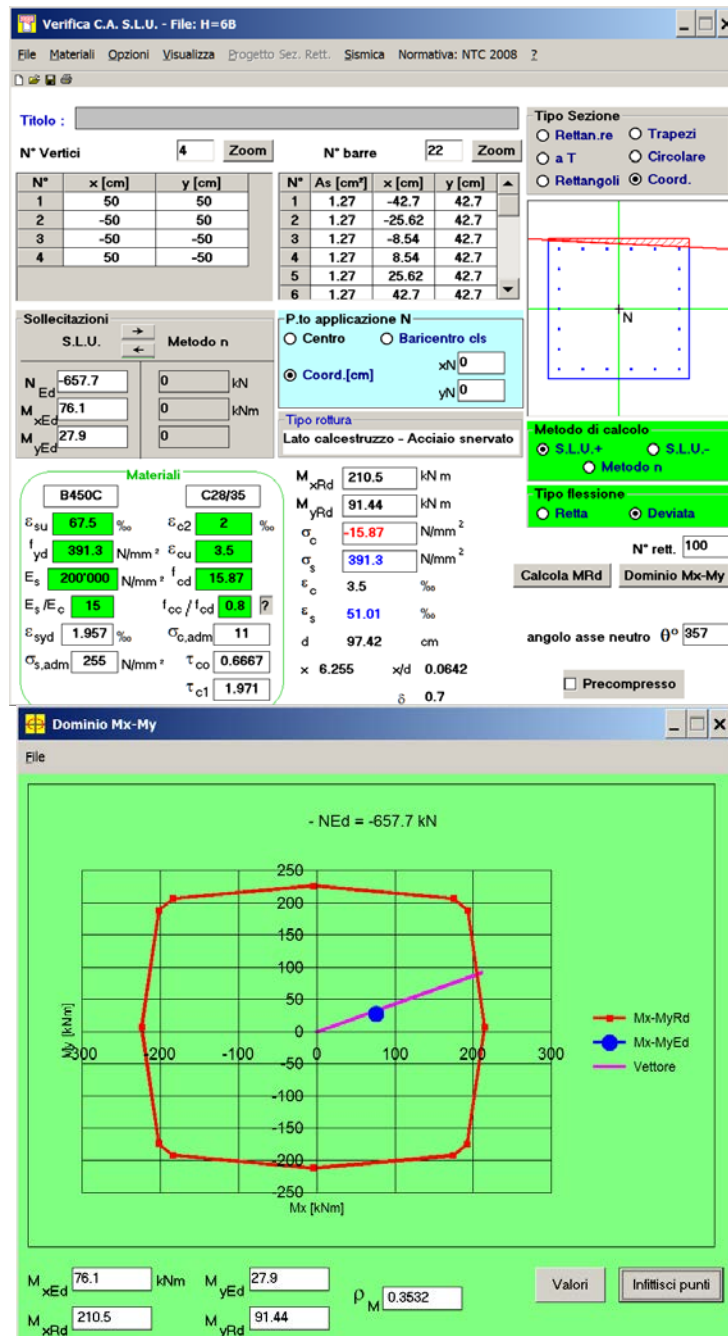
$A_{Long,per flessione} = (6+6+5+5) \Phi 12.7 = 22 \Phi 12.7 = 22 * 1.27 = 27.94 \text{ cm}^2$

Sollecitazioni

Momento verticale: $M_{TCV} = 76.1 \text{ kNm}$

Momento orizzontale: $M_{TCO} = 27.9 \text{ kNm}$

$N = 657.7 \text{ kN}$ (trazione)



Verifica a tensoflessione SLU della trave di coronamento per le barriere antirumore di H=4.75m.

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.6/2 = 7.2 \text{ cm}$

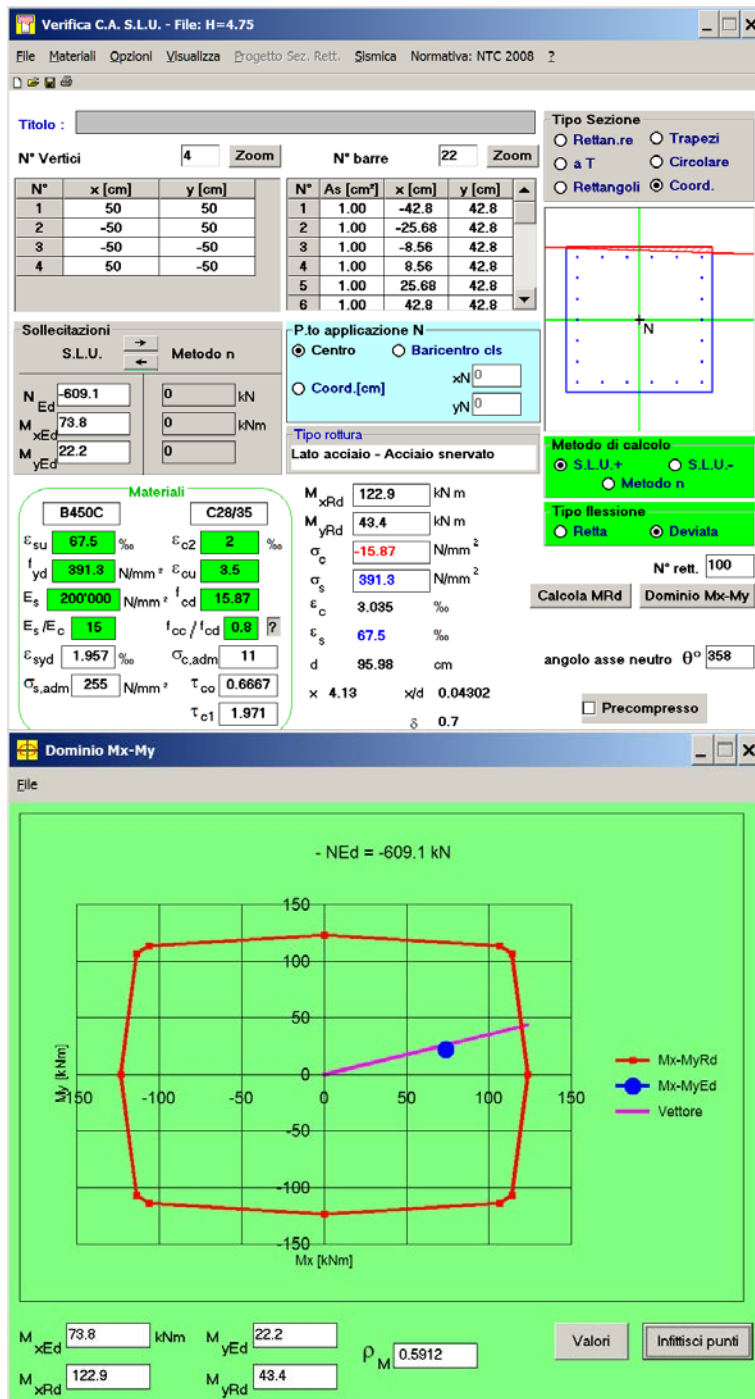
$A_{Long,per flessione} = (6+6+5+5) \Phi 11.3 = 22 \Phi 11.3 = 22 * 1.00 = 22.00 \text{ cm}^2$

Sollecitazioni

Momento verticale: $M_{TCV} = 73.8 \text{ kNm}$

Momento orizzontale: $M_{TCO} = 22.2 \text{ daNm}$

$N = 609.1 \text{ kN}$ (trazione)



Verifica a tensoflessione SLU della trave di coronamento per le barriere antirumore di H=3.75m.

Caratteristiche geometriche trave

H trave = 100cm

B trave = 90cm

$$c = c' = 5 + 1.2 + 1.6/2 = 7.0 \text{ cm}$$

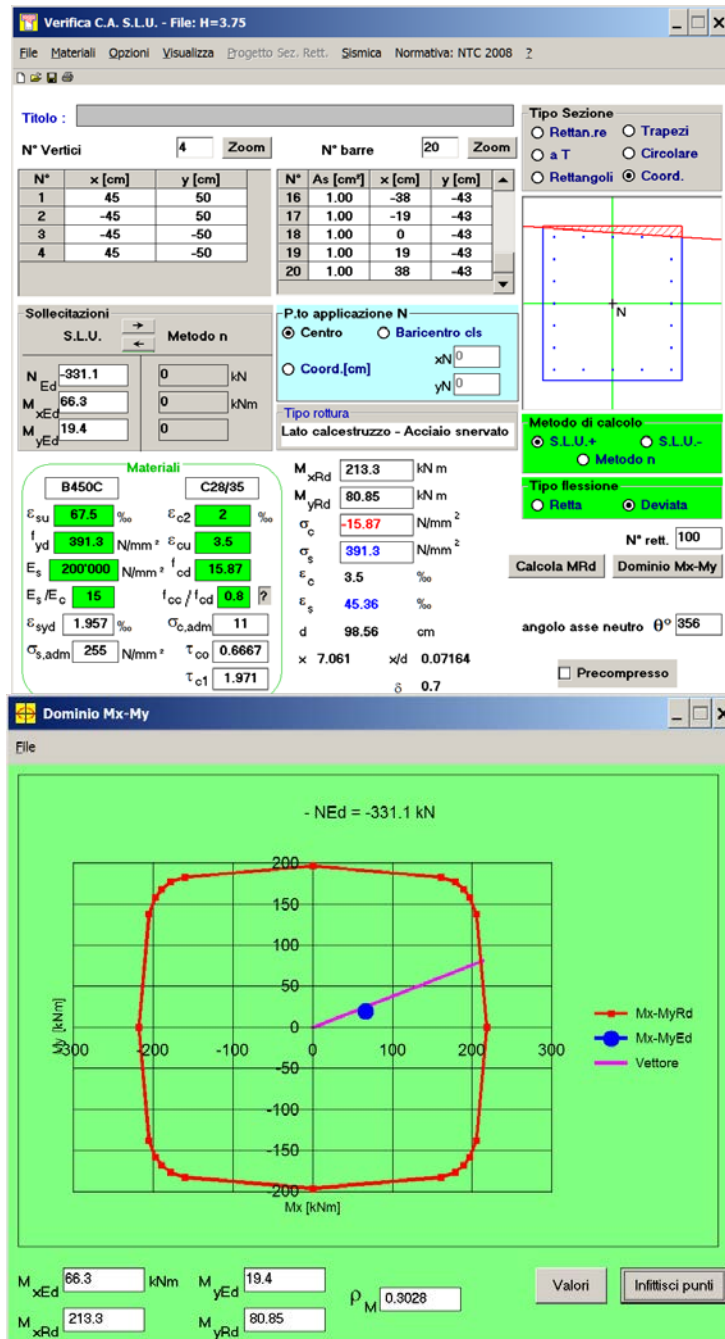
$$A_{Long, per flessione} = (5+5+5+5) \Phi 11.3 = 20 \Phi 11.3 = 20 * 1.00 = 20.00 \text{ cm}^2$$

Sollecitazioni

Momento verticale: $M_{TCV} = 66.3 \text{ kNm}$

Momento orizzontale: $M_{TCO} = 19.4 \text{ kNm}$

$N = 331.1 \text{ kN}$ (trazione)



9.2.2 Verifica a taglio

Trave di coronamento per le barriere antirumore di H=6.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

 $c = c' = 5 + 1.4 + 1.8/2 = 7.3 \text{ cm}$

Staffe per Verifica a taglio

50% $S_{t \text{ corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15''$ (essendo $9.9 = 0.707 * 14$)

Sollecitazioni

Taglio max: $V_{Ed} = 141.3 \text{ kN}$

V_{rd}	=	478.09	kN	Resistenza a taglio di elementi strutturali dotati di specifica armatura a taglio
V_{ed}	=	141.30	kN	Valore di calcolo dello sforzo di taglio agente
V_{rsd}	=	478.09	kN	Resistenza di calcolo a "taglio trazione"
V_{rcd}	=	3226.43	kN	Resistenza di calcolo a "taglio compressione"
N_{ed}	=	0.00	kN	Valore di calcolo dello sforzo normale
sezione verificata a taglio				
θ	=	35.00	°	Inclinazione puntoni di cls rispetto all'asse della trave
b	=	100.00	cm	Larghezza utile della sezione
d	=	92.70	cm	Altezza utile della sezione
ϕ_{staf}	=	9.9	mm	Diametro staffe
A_{sw}	=	153.81	mm ²	Area armatura trasversale
	=	2	cm	n°braccia staffe
s	=	15	cm	Interasse tra due armature trasversali consecutive
α	=	90	°	angolo d'inclinazione dell'armatura trasversale rispetto all'asse della trave
f_{yk}	=	450	N/mm ²	Resistenza a trazione caratteristica dell'acciaio delle staffe

Trave di coronamento per le barriere antirumore di H=4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

 $c = c' = 5 + 1.4 + 1.6/2 = 7.2 \text{ cm}$

Staffe per Verifica a taglio

50% $S_{t \text{ corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15''$ (essendo $9.9 = 0.707 * 14$)

Sollecitazioni

Taglio max: $V_{Ed} = 130.3 \text{ kN}$

V_{rd}	=	478.80	kN	Resistenza a taglio di elementi strutturali dotati di specifica armatura a taglio
V_{ed}	=	130.30	kN	Valore di calcolo dello sforzo di taglio agente
V_{rsd}	=	478.80	kN	Resistenza di calcolo a "taglio trazione"
V_{rcd}	=	3229.91	kN	Resistenza di calcolo a "taglio compressione"
N_{ed}	=	0.00	kN	Valore di calcolo dello sforzo normale
sezione verificata a taglio				
θ	=	35.00	°	Inclinazione puntoni di cls rispetto all'asse della trave
b	=	100.00	cm	Larghezza utile della sezione
d	=	92.80	cm	Altezza utile della sezione
ϕ_{staf}	=	9.9	mm	Diametro staffe
A_{sw}	=	153.88	mm ²	Area armatura trasversale
	=	2	cm	n°braccia staffe
s	=	15	cm	Interasse tra due armature trasversali consecutive
α	=	90	°	angolo d'inclinazione dell'armatura trasversale rispetto all'asse della trave
f_{yk}	=	450	N/mm ²	Resistenza a trazione caratteristica dell'acciaio delle staffe

Trave di coronamento per le barriere antirumore di H=3.75mCaratteristiche geometriche trave

H trave = 100cm

B trave = 90cm

 $c = c' = 5 + 1.2 + 1.6/2 = 7.0 \text{ cm}$ Staffe per Verifica a taglio50% $S_{t \text{ corrisp. montante}} = 0.5 * \phi 12 / 15'' = \phi 8.4 / 15''$ (essendo $8.4 = 0.707 * 12$)SollecitazioniTaglio max: $V_{Ed} = 116.2 \text{ kN}$

V_{rd}	=	345.45	kN	Resistenza a taglio di elementi strutturali dotati di specifica armatura a taglio
V_{ed}	=	116.20	kN	Valore di calcolo dello sforzo di taglio agente
V_{rsd}	=	345.45	kN	Resistenza di calcolo a "taglio trazione"
V_{rcd}	=	2913.18	kN	Resistenza di calcolo a "taglio compressione"
N_{ed}	=	0.00	kN	Valore di calcolo dello sforzo normale
sezione verificata a taglio				
θ	=	35.00	°	Inclinazione puntoni di cls rispetto all'asse della trave
b	=	90.00	cm	Larghezza utile della sezione
d	=	93.00	cm	Altezza utile della sezione
ϕ_{staf}	=	8.4	mm	Diametro staffe
A_{sw}	=	110.7792	mm ²	Area armatura trasversale
	=	2	cm	n°braccia staffe
s	=	15	cm	Interasse tra due armature trasversali consecutive
α	=	90	°	angolo d'inclinazione dell'armatura trasversale rispetto all'asse della trave
f_{yk}	=	450	N/mm ²	Resistenza a trazione caratteristica dell'acciaio delle staffe

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9.2.3 Verifica a torsione

Trave di coronamento per le barriere antirumore di H=6.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

 $c = c' = 5 + 1.4 + 1.8/2 = 7.3 \text{ cm}$ $A_{\text{tot Long.}} = (6+6+5+5) \Phi 18 = 22 \Phi 18 = 22 * 2.54 = 55.88 \text{ cm}^2$ $St_{\text{tipiche}} = 1 + 1 \Phi 14/25'' = 12.35 \text{ cm}^2/\text{m}$ $St_{\text{corrisp. montante}} = 1 \Phi 14/15'' = 10.27 \text{ cm}^2/\text{m}$

Armatura per Verifica a torsione

 $50\% A_{\text{tot}} = 0.5 * 22 * \phi 18 = 22 * 2.54/2 = 22 * 1.27 = 27.94 \text{ cm}^2$ Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a $22 \phi 12.7$ (essendo $12.7 = 0.707 * 18$)

Staffe per Verifica a torsione

 $50\% St_{\text{corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15''$ (essendo $9.9 = 0.707 * 14$)

Sollecitazioni

Momento Torcente Sollecitante $T_{\text{Ed}} = 229.8 \text{ kNm}$ Taglio max: $V_{\text{Ed}} = 141.3 \text{ kN}$

Dati trave

b	=	100 cm	Base
h	=	100 cm	Altezza
cf	=	7.3 cm	Copriferro = Distanza del centro barra con il perimetro esterno della sezione
Ac	=	10'000.00 cm ²	Area del calcestruzzo
ϕ_{sl}	=	12.7 mm	diametro dei ferri longitudinali
n°	=	22	numero ferri longitudinali
Asl	=	2'785.48 mm ²	Armatura longitudinale della sezione
ϕ_{st}	=	9.9 mm	diametro delle staffe
s	=	150 mm	Passo delle staffe
Ast	=	76.94 mm ²	Armatura di un braccio di una staffa
t	=	250.00 mm	spessore della sezione cava o per sezioni piene Ac/u con u perimetro della sezione
u_m	=	3'000.00 mm	perimetro medio del nucleo resistente
A	=	562'500.00 mm ²	
θ_{calc}	=	35 °	→ $\theta = 35.00 °$

Dati materiali

Classe cls	C28/35	
f_{cd}	=	16.46167 N/mm ²
Tipo acciaio	B450C	
f_{yd}	=	391.30 N/mm ²

Sollecitazione

$T_{Ed} = 229.8 \text{ kNm}$ **Momento Torcente Sollecitante**

Calcolo della resistenza a torsione del calcestruzzo T_{Rcd}

$T_{Rcd} = 1087.66 \text{ kNm}$

Calcolo della resistenza a torsione delle staffe trasversali T_{Rsd}

$T_{Rsd} = 322.47 \text{ kNm}$

Calcolo della resistenza a torsione dell'armatura longitudinale T_{Rld}

$T_{Rld} = 286.20 \text{ kNm}$

Resistenza a torsione della trave

$T_{Rd} = 286.20 \text{ kNm}$ **SEZIONE VERIFICATA A TORSIONE**

Taglio e Torsione

oltre a sommare le eventuali armature a taglio a quelle a torsione, si deve verificare che sia

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} \leq 1$$

Sollecitazione

$V_{Ed} = 141.3 \text{ kN}$ **Taglio sollecitante**

$N = 0.0 \text{ kN}$ sforzo normale sulla sezione (negativo di compressione)

$\sigma_{cp} = 0.00 \text{ N/mm}^2$ tensione media di compressione nella sezione

$\alpha_c = 1.000$ coefficiente che tiene conto della compressione

Resistenza a Taglio lato cls della trave

$V_{Rcd} = 3226.43 \text{ kN}$

Verifica Taglio-Torsione lato cls

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} = 0.26 \quad \text{VERIFICA SODDISFATTA}$$

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Trave di coronamento per le barriere antirumore di H=4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

 $c = c' = 5 + 1.4 + 1.6/2 = 7.2 \text{ cm}$ $A_{\text{tot Long.}} = (6+6+5+5) \Phi 16 = 22 \Phi 16 = 22 * 2.01 = 44.22 \text{ cm}^2$ $St_{\text{tipiche}} = 1 + 1 \Phi 14/25'' = 12.35 \text{ cm}^2/\text{m}$ $St_{\text{corrisp. montante}} = 1 \Phi 14/15'' = 10.27 \text{ cm}^2/\text{m}$

Armatura per Verifica a torsione

 $50\% A_{\text{tot}} = 0.5 * 22 * \phi 16 = 22 * 2.01/2 = 22 * 1.00 = 22.00 \text{ cm}^2$ Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a $22 \phi 11.3$ (essendo $11.3 = 0.707 * 16$)

Staffe per Verifica a torsione

 $50\% St_{\text{corrisp. montante}} = 0.5 * \phi 14 / 15'' = \phi 9.9 / 15''$ (essendo $9.9 = 0.707 * 14$)

Sollecitazioni

Momento Torcente Sollecitante $T_{\text{Ed}} = 123.4 \text{ kNm}$ Taglio max: $V_{\text{Ed}} = 130.3 \text{ kN}$

Dati trave

b	=	100 cm	Base
h	=	100 cm	Altezza
cf	=	7.2 cm	Copriferro = Distanza del centro barra con il perimetro esterno della sezione
Ac	=	10'000.00 cm ²	Area del calcestruzzo
ϕ_{sl}	=	11.3 mm	diametro dei ferri longitudinali
n°	=	22	numero ferri longitudinali
Asl	=	2'205.21 mm ²	Armatura longitudinale della sezione
ϕ_{st}	=	9.9 mm	diametro delle staffe
s	=	150 mm	Passo delle staffe
Ast	=	76.94 mm ²	Armatura di un braccio di una staffa
t	=	250.00 mm	spessore della sezione cava o per sezioni piene Ac/u con u perimetro della sezione
u_{m}	=	3'000.00 mm	perimetro medio del nucleo resistente
A	=	562'500.00 mm ²	
θ_{calc}	=	35 °	→ $\theta = 35.00 °$

Dati materiali

Classe cls	C28/35	
f_{cd}	=	16.46167 N/mm ²
Tipo acciaio	B450C	
f_{yd}	=	391.30 N/mm ²

Sollecitazione

$$T_{Ed} = 123.4 \text{ kNm} \quad \text{Momento Torcente Sollecitante}$$

Calcolo della resistenza a torsione del calcestruzzo T_{Rcd}

$$T_{Rcd} = 1087.66 \text{ kNm}$$

Calcolo della resistenza a torsione delle staffe trasversali T_{Rsd}

$$T_{Rsd} = 322.47 \text{ kNm}$$

Calcolo della resistenza a torsione dell'armatura longitudinale T_{Rld}

$$T_{Rld} = 226.58 \text{ kNm}$$

Resistenza a torsione della trave

$$T_{Rd} = 226.58 \text{ kNm} \quad \text{SEZIONE VERIFICATA A TORSIONE}$$

Taglio e Torsione

oltre a sommare le eventuali armature a taglio a quelle a torsione, si deve verificare che sia

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} \leq 1$$

Sollecitazione

$$V_{Ed} = 130.3 \text{ kN} \quad \text{Taglio sollecitante}$$

N = 0.0 kN sforzo normale sulla sezione (negativo di compressione)

 $\sigma_{cp} = 0.00 \text{ N/mm}^2$ tensione media di compressione nella sezione $\alpha_c = 1.000$ coefficiente che tiene conto della compressione**Resistenza a Taglio lato cls della trave**

$$V_{Rcd} = 3229.91 \text{ kN}$$

Verifica Taglio-Torsione lato cls

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} = 0.15 \quad \text{VERIFICA SODDISFATTA}$$

Trave di coronamento per le barriere antirumore di H=3.75mCaratteristiche geometriche trave

H trave = 100cm

B trave = 90cm

 $c = c' = 5 + 1.2 + 1.6/2 = 7.0 \text{ cm}$ $A_{tot \text{ Long.}} = (5+5+5+5) \Phi 16 = 20 \Phi 16 = 20 * 2.01 = 40.218 \text{ cm}^2$ $St_{tipiche} = 1 + 1 \Phi 12/25'' = 12.35 \text{ cm}^2/\text{m}$ $St_{corrisp. \text{ montante}} = 1 \Phi 12/15'' = 10.27 \text{ cm}^2/\text{m}$ Armatura per Verifica a torsione $50\% A_{tot} = 0.5 * 20 * \phi 16 = 20 * 2.01/2 = 20 * 1.00 = 20.0 \text{ cm}^2$ Si ottiene quindi che l'area che viene considerata per la verifica SLU di torsione è pari a $20 \phi 11.3$ (essendo $11.3 = 0.707 * 16$)Staffe per Verifica a taglio $50\% St_{corrisp. \text{ montante}} = 0.5 * \phi 12 / 15'' = \phi 8.4 / 15''$ (essendo $8.4 = 0.707 * 12$)

SollecitazioniMomento Torcente sollecitante $T_{Ed} = 82.9$ kNmTaglio max: $V_{Ed} = 116.8$ kNDati trave

b	=	90 cm	Base
h	=	100 cm	Altezza
cf	=	7.0 cm	Copriferro = Distanza del centro barra con il perimetro esterno della sezione
Ac	=	9'000.00 cm ²	Area del calcestruzzo
ϕ_{sl}	=	11.3 mm	diametro dei ferri longitudinali
n°	=	20	numero ferri longitudinali
Asl	=	2'004.73 mm ²	Armatura longitudinale della sezione
ϕ_{st}	=	8.4 mm	diametro delle staffe
s	=	150 mm	Passo delle staffe
Ast	=	55.39 mm ²	Armatura di un braccio di una staffa
t	=	236.84 mm	spessore della sezione cava o per sezioni piene Ac/u con u perimetro della sezione
u_m	=	2'852.63 mm	perimetro medio del nucleo resistente
A	=	506'094.18 mm ²	
θ_{calc}	=	35 °	→ $\theta = 35.00$ °

Dati materiali

Classe cls	C28/35
f_{cd}	= 16.46167 N/mm ²
Tipo acciaio	B450C
f_{yd}	= 391.30 N/mm ²

Sollecitazione $T_{Ed} = 82.9$ kNm **Momento Torcente Sollecitante**Calcolo della resistenza a torsione del calcestruzzo T_{Rcd} $T_{Rcd} = 927.09$ kNmCalcolo della resistenza a torsione delle staffe trasversali T_{Rsd} $T_{Rsd} = 208.87$ kNmCalcolo della resistenza a torsione dell'armatura longitudinale T_{Rld} $T_{Rld} = 194.90$ kNmResistenza a torsione della trave $T_{Rd} = 194.90$ kNm **SEZIONE VERIFICATA A TORSIONE**

Taglio e Torsione

oltre a sommare le eventuali armature a taglio a quelle a torsione, si deve verificare che sia

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} \leq 1$$

Sollecitazione

V_{Ed}	=	116.8 kN	Taglio sollecitante
N		0.0 kN	sforzo normale sulla sezione (negativo di compressione)
σ_{cp}		0.00	N/mm ² tensione media di compressione nella sezione
α_c		1.000	coefficiente che tiene conto della compressione

Resistenza a Taglio lato cls della trave

$$V_{Rcd} = 2913.18 \text{ kN}$$

Verifica Taglio-Torsione lato cls

$$\frac{T_{Ed}}{T_{Rcd}} + \frac{V_{Ed}}{V_{Rcd}} = 0.13 \quad \text{VERIFICA SODDISFATTA}$$

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9.2.4 Verifica a fessurazione

Trave di coronamento per le barriere antirumore di H=6.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.8/2 = 7.3$ cm

$A_{\text{tot Long.}} = (6+6+5+5) \Phi 18 = 22 \Phi 18 = 22 * 2.54 = 55.88 \text{ cm}^2$

Sollecitazioni

Sforzo normale: $N_{TC} = 438.5$ kN (trazione)

Momento flettente: $M_{\text{tot}} = 55.9$ kNm

(viene considerata la quadratura tra il momento flettente con asse verticale e quello con asse orizzontale)

Momento torcente: $M_{\text{TORSIONE}} = 153.2$ kNm

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

Caratteristiche dei materiali				
Coefficiente di omogeneizzazione	n =	15		
Classe cls	R _{ck} =	35	N/mm ²	
Modulo elastico acciaio	E _s =	210'000.0	N/mm ²	
Caratteristiche geometriche della sezione				
Altezza	H =	100	cm	
Larghezza	B =	100	cm	
Area acciaio teso	A _s =	22.86	cm ²	
Copriferro baricentro acciaio teso	c _s =	7.3	cm	
Area acciaio compresso	A' _s =	22.86	cm ²	
Copriferro baricentro acciaio compresso	c' _s =	7.3	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 =	1.8	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	M _{es} =	55.90	kNm	
Sforzo assiale in condizioni di esercizio	N _{es} =	438.45	kN	
Rapporto sforzo normale/momento	r _{es} =	0.0784	cm ⁻¹	
Resistenza media a trazione semplice del cls	f _{ctm} =	2.83	N/mm ²	
Resistenza limite per formazione fessure	σ _f =	2.36	N/mm ²	
Distanza baricentro da lembo compresso	x _g =	50.00	cm	
Modulo di resistenza non fessurato	W _{sr} =	191'675	cm ³	
Momento di formazione delle fessure	M _{ff} =	452.83	kNm	
Trazione nel cls prodotta da M _{es} ed N _{es}	σ _{cl} =	0.70	N/mm ²	< σ _{mat}
Sezione fessurata: apertura fessure				
Momento flettente in condizioni di fessurazione	M =	55.90	kNm	
Sforzo assiale in condizioni di fessurazione	N =	438.45	kN	
Rapporto sforzo normale/momento	r =	0.0784		
Distanza asse neutro da lembo compresso	x _p =	0.00	cm	
Tensione cls	σ _c =	0.000	N/mm ²	
Tensione barra esterna tesa	σ _s =	124.533	N/mm ²	
Momento di fessurazione	M _{sr} =	225.8	kNm	
Tensione nell'acciaio prodotta da M _{sr}	σ _{sr} =	502.95	N/mm ²	
Incremento di tensione da Torsione				
Momento torcente	M _t =	153.20	kNm	
Altezza netta	H ₁ =	85.40	cm	
Base netta	B ₁ =	85.40	cm	
Armatura longitudinale	A _{long} =	55.88	cm ²	
Perimetro netto: per=2*(H1+B1)=	per =	341.60	cm	
Area netta: A1=B1*H1	A1 =	7'293.16	cm ²	
Delta σ _s M _t =	Δσ _{sM} =	64.21	N/mm ²	
Tensione da Flessione+Torsione				
Tensione totale barra esterna tesa	σ _{stot} =	188.74	N/mm ²	
Distanza media fra due fessure attigue				
Distanza media barre	s =	17.1	cm	
Coefficiente k ₂	k ₂ =	0.4		
Tensioni nel calcestruzzo teso	σ ₁ =	0.70	N/mm ²	
	σ ₂ =	0.12	N/mm ²	
Coefficiente k ₃	k ₃ =	0.146		
Larghezza efficace	b _{eff} =	17.1	cm	
Altezza efficace	d _{eff} =	19.9	cm	
Area efficace	A _{ceff} =	339.9	cm ²	
Area armature poste in A _{ceff}	A _s =	2.54	cm ²	
Distanza media fra due fessure attigue	s _{mm} =	30.30	cm	
Deformazione unitaria media				
Coefficiente β ₁	β ₁ =	1.0		
Coefficiente β ₂	β ₂ =	0.5		
Deformazione unitaria media	ε _{sm} =	3.60E-04		
Ampiezza fessura				
	w _k =	0.185	mm	< w _{amm}

Poiché $w_k = 0.185\text{mm} < w_1 = 0.2\text{ mm}$ la verifica a fessurazione risulta soddisfatta.

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Trave di coronamento per le barriere antirumore di H=4.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 100cm

$c = c' = 5 + 1.4 + 1.6/2 = 7.2 \text{ cm}$

$A_{\text{tot Long.}} = (6+6+5+5) \Phi 16 = 22 \Phi 16 = 22 * 2.01 = 44.22 \text{ cm}^2$

Sollecitazioni

Sforzo normale: $N_{TC} = 406.1 \text{ kN}$ (trazione)

Momento flettente: $M_{\text{tot}} = 53.2 \text{ kNm}$

(viene considerata la quadratura tra il momento flettente con asse verticale e quello con asse orizzontale)

Momento torcente: $M_{\text{TORSIONE}} = 82.3 \text{ kNm}$

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

Caratteristiche dei materiali			
Coefficiente di omogeneizzazione	n =	15	
Classe cls	R _{ck} =	35	N/mm ²
Modulo elastico acciaio	E _s =	210'000.0	N/mm ²
Caratteristiche geometriche della sezione			
Altezza	H =	100	cm
Larghezza	B =	100	cm
Area acciaio teso	A _s =	18.09	cm ²
Copriferro baricentro acciaio teso	cs =	7.2	cm
Area acciaio compresso	A' _s =	18.09	cm ²
Copriferro baricentro acciaio compresso	c's =	7.2	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} =	53.20	kNm
Sforzo assiale in condizioni di esercizio	N _{es} =	406.05	kN
Rapporto sforzo normale/momento	res =	0.0763	cm ⁻¹
Resistenza media a trazione semplice del cls	f _{ctm} =	2.83	N/mm ²
Resistenza limite per formazione fessure	σ _t =	2.36	N/mm ²
Distanza baricentro da lembo compresso	x _g =	50.00	cm
Modulo di resistenza non fessurato	W _{sr} =	186'549	cm ³
Momento di formazione delle fessure	M _{ff} =	440.72	kNm
Trazione nel cls prodotta da M _{es} ed N _{es}	σ _{ct} =	0.67	N/mm ² < sigma _t
Sezione fessurata: apertura fessure			
Momento flettente in condizioni di fessurazione	M =	53.20	kNm
Sforzo assiale in condizioni di fessurazione	N =	406.05	kN
Rapporto sforzo normale/momento	r =	0.0763	
Distanza asse neutro da lembo compresso	x _p =	0.00	cm
Tensione cls	σ _c =	0.000	N/mm ²
Tensione barra esterna tesa	σ _s =	146.586	N/mm ²
Momento di fessurazione	M _{sr} =	225.0	kNm
Tensione nell'acciaio prodotta da M _{sr}	σ _{sr} =	619.95	N/mm ²
Incremento di tensione da Torsione			
Momento torcente	M _t =	82.30	kNm
Altezza netta	H ₁ =	85.60	cm
Base netta	B ₁ =	85.60	cm
Armatura longitudinale	A _{long} =	44.22	cm ²
Perimetro netto: per=2*(H1+B1)=	per=	342.40	cm
Area netta: A1=B1*H1	A1=	7'327.36	cm ²
Delta σ _s M _t =	Δσ _{sM} =	43.48	N/mm ²
Tensione da Flessione+Torsione			
Tensione totale barra esterna tesa	σ _{stot} =	190.07	N/mm ²
Distanza media fra due fessure attigue			
Distanza media barre	s =	17.1	cm
Coefficiente k ₂	k ₂ =	0.4	
Tensioni nel calcestruzzo teso	σ ₁ =	0.67	N/mm ²
	σ ₂ =	0.10	N/mm ²
Coefficiente k ₃	k ₃ =	0.144	
Larghezza efficace	b _{eff} =	17.1	cm
Altezza efficace	d _{eff} =	18.4	cm
Area efficace	A _{ceff} =	315.0	cm ²
Area armature poste in A _{ceff}	A _s =	2.01	cm ²
Distanza media fra due fessure attigue	s _{rm} =	30.63	cm
Deformazione unitaria media			
Coefficiente β ₁	β ₁ =	1.0	
Coefficiente β ₂	β ₂ =	0.5	
Deformazione unitaria media	ε _{sm} =	3.62E-04	
Ampiezza fessura			
	w _k =	0.189	mm < w _{amm}

Poiché $w_k = 0.189\text{mm} < w_1 = 0.2\text{ mm}$ la verifica a fessurazione risulta soddisfatta.

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Trave di coronamento per le barriere antirumore di H=3.75m

Caratteristiche geometriche trave

H trave = 100cm

B trave = 90cm

$c = c' = 5 + 1.2 + 1.6/2 = 7.0$ cm

$A_{\text{tot Long.}} = (5+5+5+5) \Phi 16 = 20 \Phi 16 = 20 * 2.01 = 40.20$ cm²

Sollecitazioni

Sforzo normale: $N_{TC} = 220.7$ kN (trazione)

Momento flettente: $M_{\text{tot}} = 47.8$ kNm

(viene considerata la quadratura tra il momento flettente con asse verticale e quello con asse orizzontale)

Momento torcente: $M_{\text{TORSIONE}} = 55.3$ kNm

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

Caratteristiche dei materiali				
Coefficiente di omogeneizzazione	n =	15		
Classe cls	R _{ck} =	30	N/mm ²	
Modulo elastico acciaio	E _s =	210'000.0	N/mm ²	
Caratteristiche geometriche della sezione				
Altezza	H =	100	cm	
Larghezza	B =	90	cm	
Area acciaio teso	A _s =	16.08	cm ²	
Copriferro baricentro acciaio teso	cs =	7.0	cm	
Area acciaio compresso	A' _s =	16.08	cm ²	
Copriferro baricentro acciaio compresso	c's =	7.0	cm	
Ricoprimento barre più esterne tese	c =	6.2	cm	
Ricoprimento barre più interne tese	c+S =	6.2	cm	
Diametro massimo barre tese	Φ =	1.6	cm	
Sezione non fessurata: formazione fessure				
Momento flettente in condizioni di esercizio	M _{es} =	47.80	kNm	
Sforzo assiale in condizioni di esercizio	N _{es} =	220.71	kN	
Rapporto sforzo normale/momento	res =	0.0462	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} =	167'839	cm ³	
Momento di formazione delle fessure	M _{ff} =	357.79	kNm	
Trazione nel cls prodotta da M _{es} ed N _{es}	σ _{ct} =	0.52	N/mm ²	< sigma _t
Sezione fessurata: apertura fessure				
Momento flettente in condizioni di fessurazione	M =	47.80	kNm	
Sforzo assiale in condizioni di fessurazione	N =	220.71	kN	
Rapporto sforzo normale/momento	r =	0.0462		
Distanza asse neutro da lembo compresso	x _p =	0.00	cm	
Tensione cls	σ _c =	0.000	N/mm ²	
Tensione barra esterna tesa	σ _s =	103.194	N/mm ²	
Momento di fessurazione	M _{sr} =	236.3	kNm	
Tensione nell'acciaio prodotta da M _{sr}	σ _{sr} =	510.06	N/mm ²	
Incremento di tensione da Torsione				
Momento torcente	M _t =	55.30	kNm	
Altezza netta	H ₁ =	86.00	cm	
Base netta	B ₁ =	76.00	cm	
Armatura longitudinale	A _{long} =	40.20	cm ²	
Perimetro netto: per=2*(H1+B1)=	per =	324.00	cm	
Area netta: A1=B1*H1	A1 =	6'536.00	cm ²	
Delta σ _s M _t =	Δσ _{sM} =	34.10	N/mm ²	
Tensione da Flessione+Torsione				
Tensione totale barra esterna tesa	σ _{stot} =	137.29	N/mm ²	
Distanza media fra due fessure attigue				
Distanza media barre	s =	21.5	cm	
Coefficiente k ₂	k ₂ =	0.4		
Tensioni nel calcestruzzo teso	σ ₁ =	0.52	N/mm ²	
	σ ₂ =	-0.05	N/mm ²	
Coefficiente k ₃	k ₃ =	0.125		
Larghezza efficace	b _{eff} =	21.5	cm	
Altezza efficace	d _{eff} =	18.2	cm	
Area efficace	A _{ceff} =	391.3	cm ²	
Area armature poste in A _{ceff}	A _s =	2.01	cm ²	
Distanza media fra due fessure attigue	s _{mm} =	32.27	cm	
Deformazione unitaria media				
Coefficiente β ₁	β ₁ =	1.0		
Coefficiente β ₂	β ₂ =	0.5		
Deformazione unitaria media	ε _{sm} =	2.62E-04		
Ampiezza fessura				
	w _k =	0.143	mm	< w _{amm}

Poiché $w_k = 0.143\text{mm} < w_1 = 0.2\text{ mm}$ la verifica a fessurazione risulta soddisfatta.

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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"

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Coordinate nodali e vincoli fissi

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	0	0
26	0.00	-12.50	0	0	0
27	0.00	-13.00	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
25	25	26	0.50
26	26	27	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	0.0000	0.00
6	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
19	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
20	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
21	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
22	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
23	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
24	2	0.4952	0.019514	3.5E7	10000.0000	0.80
25	2	0.4952	0.019514	3.5E7	10000.0000	0.80
26	2	0.4952	0.019514	3.5E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Sezione 2 : diametro =0.80

Carichi applicati alla struttura

Peso proprio

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

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-224.02

Tbp

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descrizione	nodo	Fx	Fy	M
	1	57.58	0.00	0.00

Mtrasp (T250)**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	0.00

2.5 qs**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	3.81	3.81	LL
	2	0.00	0.00	3.81	3.81	LL
	3	0.00	0.00	3.81	3.81	LL
	4	0.00	0.00	3.81	3.81	LL
	5	0.00	0.00	4.92	4.92	LL
	6	0.00	0.00	4.92	4.92	LL
	7	0.00	0.00	4.92	4.92	LL
	8	0.00	0.00	4.92	4.92	LL
	9	0.00	0.00	4.92	4.92	LL
	10	0.00	0.00	4.92	4.92	LL
	11	0.00	0.00	4.92	4.92	LL
	12	0.00	0.00	4.92	4.92	LL
	13	0.00	0.00	4.92	4.92	LL
	14	0.00	0.00	4.92	4.92	LL
	15	0.00	0.00	4.92	4.92	LL
	16	0.00	0.00	4.92	4.92	LL
	17	0.00	0.00	4.92	4.92	LL
	18	0.00	0.00	4.92	4.92	LL
	19	0.00	0.00	4.92	4.92	LL
	20	0.00	0.00	4.92	4.92	LL
	21	0.00	0.00	4.92	4.92	LL
	22	0.00	0.00	4.92	4.92	LL
	23	0.00	0.00	4.92	4.92	LL
	24	0.00	0.00	4.92	4.92	LL

Tsacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

2.8 Mqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

Msacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

Spinta Passiva**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL
	5	0.00	0.00	-49.47	-61.84	LL

Nbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-57.58	0.00

Nppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

2.13 Tppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Mppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Risultati**Condizioni di carico**

Condizione : Peso proprio

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asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
6	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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

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	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
25	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000
26	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	0.00	0.00	0.00	0.0000
	0.50	0.00	0.00	0.00	0.0000

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

Sollecitazioni

asta	x	M	T	N	P
1	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.01	0.00	0.00	0.0000
	0.30	224.01	0.00	0.00	0.0000
	0.40	224.01	0.00	0.00	0.0000
	0.50	224.01	0.00	0.00	0.0000
2	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
3	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
4	0.00	224.01	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
5	0.00	224.02	0.00	0.00	0.0000

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	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
6	0.00	224.02	0.00	0.00	32.6281
	0.10	223.89	-2.54	0.00	31.1021
	0.20	223.51	-4.96	0.00	29.6125
	0.30	222.90	-7.27	0.00	28.1594
	0.40	222.06	-9.46	0.00	26.7425
	0.50	221.01	-11.54	0.00	25.3619
7	0.00	221.01	-11.54	0.00	25.3619
	0.10	219.76	-13.50	0.00	24.0173
	0.20	218.31	-15.37	0.00	22.7085
	0.30	216.69	-17.13	0.00	21.4352
	0.40	214.89	-18.79	0.00	20.1973
	0.50	212.93	-20.35	0.00	18.9944
8	0.00	212.93	-20.35	0.00	18.9944
	0.10	210.82	-21.82	0.00	17.8261
	0.20	208.57	-23.20	0.00	16.6923
	0.30	206.19	-24.49	0.00	15.5924
	0.40	203.68	-25.69	0.00	14.5261
	0.50	201.05	-26.80	0.00	13.4930
9	0.00	201.05	-26.80	0.00	13.4930
	0.10	198.32	-27.84	0.00	12.4927
	0.20	195.49	-28.80	0.00	11.5246
	0.30	192.56	-29.68	0.00	10.5885
	0.40	189.55	-30.49	0.00	9.6837
	0.50	186.47	-31.23	0.00	8.8098
10	0.00	186.47	-31.23	0.00	8.8098
	0.10	183.31	-31.89	0.00	7.9663
	0.20	180.09	-32.50	0.00	7.1526
	0.30	176.81	-33.04	0.00	6.3683
	0.40	173.49	-33.51	0.00	5.6128
	0.50	170.11	-33.93	0.00	4.8856
11	0.00	170.11	-33.93	0.00	4.8856
	0.10	166.70	-34.29	0.00	4.1861
	0.20	163.26	-34.60	0.00	3.5138
	0.30	159.78	-34.86	0.00	2.8680
	0.40	156.29	-35.06	0.00	2.2483
	0.50	152.77	-35.22	0.00	1.6541
12	0.00	152.77	-35.22	0.00	1.6541
	0.10	149.24	-35.32	0.00	1.0848
	0.20	145.71	-35.39	0.00	0.5398
	0.30	142.17	-35.41	0.00	0.0185
	0.40	138.63	-35.39	0.00	-0.4796
	0.50	135.09	-35.34	0.00	-0.9551
13	0.00	135.09	-35.34	0.00	-0.9551
	0.10	131.56	-35.24	0.00	-1.4086
	0.20	128.04	-35.11	0.00	-1.8407
	0.30	124.54	-34.95	0.00	-2.2518
	0.40	121.06	-34.75	0.00	-2.6427
	0.50	117.59	-34.53	0.00	-3.0139
14	0.00	117.59	-34.53	0.00	-3.0139
	0.10	114.15	-34.27	0.00	-3.3659
	0.20	110.74	-33.99	0.00	-3.6993
	0.30	107.35	-33.68	0.00	-4.0147
	0.40	104.00	-33.35	0.00	-4.3126
	0.50	100.69	-32.99	0.00	-4.5935
15	0.00	100.69	-32.99	0.00	-4.5935
	0.10	97.40	-32.62	0.00	-4.8580
	0.20	94.16	-32.22	0.00	-5.1066
	0.30	90.96	-31.80	0.00	-5.3399
	0.40	87.80	-31.37	0.00	-5.5584
	0.50	84.69	-30.92	0.00	-5.7625
16	0.00	84.69	-30.92	0.00	-5.7625
	0.10	81.62	-30.45	0.00	-5.9529
	0.20	78.60	-29.97	0.00	-6.1299
	0.30	75.63	-29.47	0.00	-6.2942
	0.40	72.70	-28.96	0.00	-6.4461
	0.50	69.83	-28.44	0.00	-6.5862
17	0.00	69.83	-28.44	0.00	-6.5862
	0.10	67.02	-27.91	0.00	-6.7149
	0.20	64.25	-27.37	0.00	-6.8327
	0.30	61.54	-26.82	0.00	-6.9400
	0.40	58.89	-26.26	0.00	-7.0372
	0.50	56.29	-25.70	0.00	-7.1249
18	0.00	56.29	-25.70	0.00	-7.1249
	0.10	53.75	-25.13	0.00	-7.2034
	0.20	51.26	-24.55	0.00	-7.2732
	0.30	48.84	-23.97	0.00	-7.3346
	0.40	46.47	-23.38	0.00	-7.3880
	0.50	44.16	-22.79	0.00	-7.4338
19	0.00	44.16	-22.79	0.00	-7.4338
	0.10	41.91	-22.19	0.00	-7.4725
	0.20	39.72	-21.60	0.00	-7.5043
	0.30	37.59	-21.00	0.00	-7.5297
	0.40	35.52	-20.40	0.00	-7.5489
	0.50	33.51	-19.79	0.00	-7.5623
20	0.00	33.51	-19.79	0.00	-7.5623
	0.10	31.57	-19.19	0.00	-7.5703
	0.20	29.68	-18.59	0.00	-7.5731
	0.30	27.85	-17.98	0.00	-7.5711
	0.40	26.08	-17.38	0.00	-7.5646
	0.50	24.37	-16.77	0.00	-7.5538

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21	0.00	24.37	-16.77	0.00	-7.5538			
	0.10	22.72	-16.17	0.00	-7.5390			
	0.20	21.14	-15.57	0.00	-7.5206			
	0.30	19.61	-14.97	0.00	-7.4986			
	0.40	18.14	-14.38	0.00	-7.4735			
	0.50	16.74	-13.78	0.00	-7.4455			
22	0.00	16.74	-13.78	0.00	-7.4455			
	0.10	15.39	-13.19	0.00	-7.4147			
	0.20	14.10	-12.60	0.00	-7.3814			
	0.30	12.87	-12.01	0.00	-7.3458			
	0.40	11.70	-11.43	0.00	-7.3081			
	0.50	10.58	-10.84	0.00	-7.2684			
23	0.00	10.58	-10.84	0.00	-7.2684			
	0.10	9.53	-10.27	0.00	-7.2271			
	0.20	8.53	-9.69	0.00	-7.1842			
	0.30	7.59	-9.12	0.00	-7.1399			
	0.40	6.70	-8.55	0.00	-7.0944			
	0.50	5.88	-7.99	0.00	-7.0478			
24	0.00	5.88	-7.99	0.00	-7.0478			
	0.10	5.11	-7.43	0.00	-7.0003			
	0.20	4.39	-6.87	0.00	-6.9520			
	0.30	3.73	-6.32	0.00	-6.9031			
	0.40	3.13	-5.77	0.00	-6.8537			
	0.50	2.58	-5.22	0.00	-6.8037			
25	0.00	2.58	-5.22	0.00	-6.8037			
	0.10	2.08	-4.68	0.00	-6.7534			
	0.20	1.64	-4.15	0.00	-6.7028			
	0.30	1.25	-3.61	0.00	-6.6520			
	0.40	0.92	-3.09	0.00	-6.6010			
	0.50	0.64	-2.56	0.00	-6.5498			
26	0.00	0.64	-2.56	0.00	-6.5498			
	0.10	0.41	-2.04	0.00	-6.4985			
	0.20	0.23	-1.52	0.00	-6.4472			
	0.30	0.10	-1.01	0.00	-6.3959			
	0.40	0.03	-0.50	0.00	-6.3445			
	0.50	0.00	0.00	0.00	-6.2931			

Condizione : Tbp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	57.57	0.00	0.0000
	0.10	5.76	57.57	0.00	0.0000
	0.20	11.52	57.57	0.00	0.0000
	0.30	17.27	57.57	0.00	0.0000
	0.40	23.03	57.57	0.00	0.0000
	0.50	28.79	57.57	0.00	0.0000
2	0.00	28.79	57.58	0.00	0.0000
	0.10	34.54	57.58	0.00	0.0000
	0.20	40.30	57.58	0.00	0.0000
	0.30	46.06	57.58	0.00	0.0000
	0.40	51.82	57.58	0.00	0.0000
	0.50	57.58	57.58	0.00	0.0000
3	0.00	57.58	57.58	0.00	0.0000
	0.10	63.33	57.58	0.00	0.0000
	0.20	69.09	57.58	0.00	0.0000
	0.30	74.85	57.58	0.00	0.0000
	0.40	80.61	57.58	0.00	0.0000
	0.50	86.36	57.58	0.00	0.0000
4	0.00	86.36	57.58	0.00	0.0000
	0.10	92.12	57.58	0.00	0.0000
	0.20	97.88	57.58	0.00	0.0000
	0.30	103.64	57.58	0.00	0.0000
	0.40	109.39	57.58	0.00	0.0000
	0.50	115.15	57.58	0.00	0.0000
5	0.00	115.15	57.58	0.00	0.0000
	0.10	120.91	57.58	0.00	0.0000
	0.20	126.67	57.58	0.00	0.0000
	0.30	132.42	57.58	0.00	0.0000
	0.40	138.18	57.58	0.00	0.0000
	0.50	143.94	57.58	0.00	0.0000
6	0.00	143.94	57.57	0.00	56.6700
	0.10	149.47	53.13	0.00	54.8511
	0.20	154.57	48.82	0.00	53.0565
	0.30	159.24	44.66	0.00	51.2870
	0.40	163.50	40.64	0.00	49.5435
	0.50	167.37	36.76	0.00	47.8267
7	0.00	167.37	36.76	0.00	47.8267
	0.10	170.86	33.01	0.00	46.1371
	0.20	173.98	29.39	0.00	44.4753
	0.30	176.74	25.91	0.00	42.8419
	0.40	179.17	22.56	0.00	41.2373
	0.50	181.26	19.33	0.00	39.6619
8	0.00	181.26	19.33	0.00	39.6619
	0.10	183.04	16.23	0.00	38.1160
	0.20	184.51	13.25	0.00	36.6000
	0.30	185.69	10.39	0.00	35.1140
	0.40	186.59	7.64	0.00	33.6583
	0.50	187.22	5.02	0.00	32.2329
9	0.00	187.22	5.02	0.00	32.2329
	0.10	187.60	2.50	0.00	30.8381
	0.20	187.73	0.10	0.00	29.4738
	0.30	187.62	-2.20	0.00	28.1402
	0.40	187.29	-4.40	0.00	26.8370
	0.50	186.74	-6.49	0.00	25.5645

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10	0.00	186.74	-6.49	0.00	25.5645			
	0.10	186.00	-8.47	0.00	24.3223			
	0.20	185.05	-10.37	0.00	23.1104			
	0.30	183.92	-12.16	0.00	21.9287			
	0.40	182.62	-13.87	0.00	20.7770			
	0.50	181.15	-15.48	0.00	19.6550			
11	0.00	181.15	-15.48	0.00	19.6550			
	0.10	179.53	-17.00	0.00	18.5626			
	0.20	177.76	-18.44	0.00	17.4994			
	0.30	175.84	-19.80	0.00	16.4651			
	0.40	173.80	-21.07	0.00	15.4596			
	0.50	171.63	-22.26	0.00	14.4823			
12	0.00	171.63	-22.26	0.00	14.4823			
	0.10	169.35	-23.38	0.00	13.5330			
	0.20	166.96	-24.42	0.00	12.6113			
	0.30	164.47	-25.39	0.00	11.7168			
	0.40	161.88	-26.29	0.00	10.8491			
	0.50	159.21	-27.13	0.00	10.0078			
13	0.00	159.21	-27.13	0.00	10.0078			
	0.10	156.46	-27.89	0.00	9.1924			
	0.20	153.64	-28.59	0.00	8.4025			
	0.30	150.74	-29.23	0.00	7.6377			
	0.40	147.79	-29.81	0.00	6.8974			
	0.50	144.78	-30.33	0.00	6.1812			
14	0.00	144.78	-30.33	0.00	6.1812			
	0.10	141.73	-30.80	0.00	5.4886			
	0.20	138.63	-31.21	0.00	4.8191			
	0.30	135.49	-31.57	0.00	4.1721			
	0.40	132.31	-31.88	0.00	3.5473			
	0.50	129.11	-32.13	0.00	2.9440			
15	0.00	129.11	-32.13	0.00	2.9440			
	0.10	125.89	-32.35	0.00	2.3618			
	0.20	122.65	-32.51	0.00	1.8000			
	0.30	119.39	-32.63	0.00	1.2583			
	0.40	116.12	-32.71	0.00	0.7360			
	0.50	112.85	-32.75	0.00	0.2326			
16	0.00	112.85	-32.75	0.00	0.2326			
	0.10	109.57	-32.75	0.00	-0.2523			
	0.20	106.30	-32.71	0.00	-0.7195			
	0.30	103.03	-32.64	0.00	-1.1693			
	0.40	99.77	-32.53	0.00	-1.6023			
	0.50	96.53	-32.38	0.00	-2.0190			
17	0.00	96.53	-32.38	0.00	-2.0190			
	0.10	93.30	-32.20	0.00	-2.4201			
	0.20	90.09	-32.00	0.00	-2.8059			
	0.30	86.90	-31.76	0.00	-3.1770			
	0.40	83.74	-31.49	0.00	-3.5340			
	0.50	80.60	-31.19	0.00	-3.8773			
18	0.00	80.60	-31.19	0.00	-3.8773			
	0.10	77.50	-30.87	0.00	-4.2075			
	0.20	74.43	-30.52	0.00	-4.5251			
	0.30	71.39	-30.15	0.00	-4.8305			
	0.40	68.40	-29.75	0.00	-5.1244			
	0.50	65.44	-29.33	0.00	-5.4070			
19	0.00	65.44	-29.33	0.00	-5.4070			
	0.10	62.53	-28.89	0.00	-5.6790			
	0.20	59.67	-28.43	0.00	-5.9408			
	0.30	56.85	-27.94	0.00	-6.1929			
	0.40	54.08	-27.44	0.00	-6.4357			
	0.50	51.36	-26.92	0.00	-6.6697			
20	0.00	51.36	-26.92	0.00	-6.6697			
	0.10	48.70	-26.37	0.00	-6.8954			
	0.20	46.09	-25.82	0.00	-7.1131			
	0.30	43.53	-25.24	0.00	-7.3232			
	0.40	41.04	-24.65	0.00	-7.5263			
	0.50	38.61	-24.04	0.00	-7.7227			
21	0.00	38.61	-24.04	0.00	-7.7227			
	0.10	36.23	-23.42	0.00	-7.9129			
	0.20	33.92	-22.78	0.00	-8.0971			
	0.30	31.68	-22.12	0.00	-8.2757			
	0.40	29.50	-21.46	0.00	-8.4493			
	0.50	27.39	-20.78	0.00	-8.6180			
22	0.00	27.39	-20.78	0.00	-8.6180			
	0.10	25.34	-20.08	0.00	-8.7822			
	0.20	23.37	-19.37	0.00	-8.9423			
	0.30	21.47	-18.65	0.00	-9.0986			
	0.40	19.64	-17.92	0.00	-9.2514			
	0.50	17.89	-17.18	0.00	-9.4010			
23	0.00	17.89	-17.18	0.00	-9.4010			
	0.10	16.20	-16.42	0.00	-9.5477			
	0.20	14.60	-15.66	0.00	-9.6918			
	0.30	13.07	-14.88	0.00	-9.8334			
	0.40	11.63	-14.09	0.00	-9.9730			
	0.50	10.26	-13.29	0.00	-10.1106			
24	0.00	10.26	-13.29	0.00	-10.1106			
	0.10	8.97	-12.47	0.00	-10.2466			
	0.20	7.76	-11.65	0.00	-10.3814			
	0.30	6.64	-10.82	0.00	-10.5150			
	0.40	5.60	-9.97	0.00	-10.6476			
	0.50	4.65	-9.12	0.00	-10.7794			
25	0.00	4.65	-9.12	0.00	-10.7794			
	0.10	3.78	-8.25	0.00	-10.9105			
	0.20	3.00	-7.38	0.00	-11.0411			
	0.30	2.30	-6.49	0.00	-11.1712			

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.40	1.70	-5.60	0.00	-11.3010
	0.50	1.18	-4.69	0.00	-11.4305
26	0.00	1.18	-4.69	0.00	-11.4305
	0.10	0.76	-3.77	0.00	-11.5599
	0.20	0.43	-2.84	0.00	-11.6891
	0.30	0.19	-1.91	0.00	-11.8183
	0.40	0.05	-0.96	0.00	-11.9475
	0.50	0.00	0.00	0.00	-12.0766

Condizione : qs

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.02	0.38	0.00	0.0000
	0.20	0.08	0.76	0.00	0.0000
	0.30	0.17	1.14	0.00	0.0000
	0.40	0.30	1.52	0.00	0.0000
	0.50	0.48	1.90	0.00	0.0000
2	0.00	0.48	1.90	0.00	0.0000
	0.10	0.69	2.28	0.00	0.0000
	0.20	0.93	2.66	0.00	0.0000
	0.30	1.22	3.04	0.00	0.0000
	0.40	1.54	3.43	0.00	0.0000
	0.50	1.90	3.81	0.00	0.0000
3	0.00	1.90	3.81	0.00	0.0000
	0.10	2.30	4.19	0.00	0.0000
	0.20	2.74	4.57	0.00	0.0000
	0.30	3.22	4.95	0.00	0.0000
	0.40	3.73	5.33	0.00	0.0000
	0.50	4.28	5.71	0.00	0.0000
4	0.00	4.28	5.71	0.00	0.0000
	0.10	4.87	6.09	0.00	0.0000
	0.20	5.50	6.47	0.00	0.0000
	0.30	6.17	6.85	0.00	0.0000
	0.40	6.87	7.23	0.00	0.0000
	0.50	7.61	7.61	0.00	0.0000
5	0.00	7.61	7.61	0.00	0.0000
	0.10	8.40	8.10	0.00	0.0000
	0.20	9.23	8.60	0.00	0.0000
	0.30	10.12	9.09	0.00	0.0000
	0.40	11.05	9.58	0.00	0.0000
	0.50	12.03	10.07	0.00	0.0000
6	0.00	12.03	10.07	0.00	14.7767
	0.10	13.01	9.39	0.00	14.5337
	0.20	13.91	8.73	0.00	14.2928
	0.30	14.75	8.10	0.00	14.0542
	0.40	15.53	7.48	0.00	13.8180
	0.50	16.25	6.87	0.00	13.5843
7	0.00	16.25	6.87	0.00	13.5843
	0.10	16.91	6.29	0.00	13.3533
	0.20	17.51	5.73	0.00	13.1250
	0.30	18.05	5.18	0.00	12.8996
	0.40	18.54	4.65	0.00	12.6771
	0.50	18.98	4.14	0.00	12.4577
8	0.00	18.98	4.14	0.00	12.4577
	0.10	19.37	3.65	0.00	12.2413
	0.20	19.71	3.17	0.00	12.0281
	0.30	20.01	2.71	0.00	11.8181
	0.40	20.26	2.27	0.00	11.6114
	0.50	20.46	1.84	0.00	11.4079
9	0.00	20.46	1.84	0.00	11.4079
	0.10	20.63	1.43	0.00	11.2078
	0.20	20.75	1.04	0.00	11.0111
	0.30	20.83	0.66	0.00	10.8177
	0.40	20.88	0.29	0.00	10.6278
	0.50	20.89	-0.06	0.00	10.4412
10	0.00	20.89	-0.06	0.00	10.4412
	0.10	20.87	-0.39	0.00	10.2580
	0.20	20.82	-0.71	0.00	10.0783
	0.30	20.73	-1.01	0.00	9.9019
	0.40	20.61	-1.31	0.00	9.7289
	0.50	20.47	-1.58	0.00	9.5593
11	0.00	20.47	-1.58	0.00	9.5593
	0.10	20.30	-1.85	0.00	9.3930
	0.20	20.10	-2.10	0.00	9.2300
	0.30	19.88	-2.34	0.00	9.0703
	0.40	19.63	-2.56	0.00	8.9138
	0.50	19.36	-2.78	0.00	8.7605
12	0.00	19.36	-2.78	0.00	8.7605
	0.10	19.08	-2.98	0.00	8.6104
	0.20	18.77	-3.17	0.00	8.4634
	0.30	18.44	-3.34	0.00	8.3194
	0.40	18.10	-3.51	0.00	8.1785
	0.50	17.74	-3.67	0.00	8.0405
13	0.00	17.74	-3.67	0.00	8.0405
	0.10	17.37	-3.81	0.00	7.9054
	0.20	16.98	-3.94	0.00	7.7731
	0.30	16.58	-4.07	0.00	7.6436
	0.40	16.17	-4.18	0.00	7.5168
	0.50	15.74	-4.28	0.00	7.3926
14	0.00	15.74	-4.28	0.00	7.3926
	0.10	15.31	-4.38	0.00	7.2710
	0.20	14.87	-4.46	0.00	7.1519
	0.30	14.42	-4.54	0.00	7.0352

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	0.40	13.96	-4.60	0.00	6.9208
	0.50	13.50	-4.66	0.00	6.8088
15	0.00	13.50	-4.66	0.00	6.8088
	0.10	13.03	-4.70	0.00	6.6989
	0.20	12.56	-4.74	0.00	6.5912
	0.30	12.08	-4.77	0.00	6.4855
	0.40	11.60	-4.79	0.00	6.3817
	0.50	11.12	-4.81	0.00	6.2799
16	0.00	11.12	-4.81	0.00	6.2799
	0.10	10.64	-4.81	0.00	6.1799
	0.20	10.16	-4.81	0.00	6.0816
	0.30	9.68	-4.80	0.00	5.9849
	0.40	9.20	-4.78	0.00	5.8899
	0.50	8.73	-4.76	0.00	5.7963
17	0.00	8.73	-4.76	0.00	5.7963
	0.10	8.25	-4.72	0.00	5.7042
	0.20	7.78	-4.68	0.00	5.6134
	0.30	7.31	-4.64	0.00	5.5239
	0.40	6.85	-4.58	0.00	5.4355
	0.50	6.40	-4.52	0.00	5.3483
18	0.00	6.40	-4.52	0.00	5.3483
	0.10	5.95	-4.45	0.00	5.2621
	0.20	5.51	-4.38	0.00	5.1769
	0.30	5.08	-4.29	0.00	5.0926
	0.40	4.65	-4.21	0.00	5.0092
	0.50	4.23	-4.11	0.00	4.9264
19	0.00	4.23	-4.11	0.00	4.9264
	0.10	3.83	-4.01	0.00	4.8444
	0.20	3.43	-3.90	0.00	4.7630
	0.30	3.05	-3.79	0.00	4.6822
	0.40	2.68	-3.66	0.00	4.6018
	0.50	2.32	-3.54	0.00	4.5219
20	0.00	2.32	-3.54	0.00	4.5219
	0.10	1.97	-3.40	0.00	4.4424
	0.20	1.64	-3.26	0.00	4.3631
	0.30	1.32	-3.12	0.00	4.2842
	0.40	1.01	-2.96	0.00	4.2055
	0.50	0.72	-2.80	0.00	4.1269
21	0.00	0.72	-2.80	0.00	4.1269
	0.10	0.45	-2.64	0.00	4.0484
	0.20	0.20	-2.47	0.00	3.9701
	0.30	-0.04	-2.29	0.00	3.8917
	0.40	-0.26	-2.10	0.00	3.8134
	0.50	-0.46	-1.91	0.00	3.7350
22	0.00	-0.46	-1.91	0.00	3.7350
	0.10	-0.64	-1.72	0.00	3.6565
	0.20	-0.80	-1.51	0.00	3.5779
	0.30	-0.94	-1.30	0.00	3.4992
	0.40	-1.06	-1.09	0.00	3.4204
	0.50	-1.16	-0.87	0.00	3.3414
23	0.00	-1.16	-0.87	0.00	3.3414
	0.10	-1.24	-0.64	0.00	3.2621
	0.20	-1.29	-0.40	0.00	3.1827
	0.30	-1.32	-0.16	0.00	3.1031
	0.40	-1.32	0.08	0.00	3.0233
	0.50	-1.30	0.34	0.00	2.9432
24	0.00	-1.30	0.34	0.00	2.9432
	0.10	-1.25	0.60	0.00	2.8629
	0.20	-1.18	0.86	0.00	2.7825
	0.30	-1.08	1.14	0.00	2.7019
	0.40	-0.95	1.42	0.00	2.6211
	0.50	-0.80	1.70	0.00	2.5402
25	0.00	-0.80	1.70	0.00	2.5402
	0.10	-0.64	1.50	0.00	2.4592
	0.20	-0.50	1.31	0.00	2.3780
	0.30	-0.37	1.12	0.00	2.2969
	0.40	-0.27	0.94	0.00	2.2156
	0.50	-0.19	0.77	0.00	2.1343
26	0.00	-0.19	0.77	0.00	2.1343
	0.10	-0.12	0.60	0.00	2.0530
	0.20	-0.06	0.44	0.00	1.9717
	0.30	-0.03	0.29	0.00	1.8903
	0.40	-0.01	0.14	0.00	1.8090
	0.50	0.00	0.00	0.00	1.7276

Condizione : Tsacpv
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000
	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000
	0.40	6.42	7.14	0.00	0.0000
	0.50	7.14	7.14	0.00	0.0000
3	0.00	7.14	7.14	0.00	0.0000
	0.10	7.85	7.14	0.00	0.0000
	0.20	8.56	7.14	0.00	0.0000
	0.30	9.28	7.14	0.00	0.0000

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	0.40	9.99	7.14	0.00		0.0000		
	0.50	10.70	7.14	0.00		0.0000		
4	0.00	10.70	7.14	0.00		0.0000		
	0.10	11.42	7.14	0.00		0.0000		
	0.20	12.13	7.14	0.00		0.0000		
	0.30	12.85	7.14	0.00		0.0000		
	0.40	13.56	7.14	0.00		0.0000		
	0.50	14.27	7.14	0.00		0.0000		
5	0.00	14.27	7.14	0.00		0.0000		
	0.10	14.99	7.14	0.00		0.0000		
	0.20	15.70	7.14	0.00		0.0000		
	0.30	16.41	7.14	0.00		0.0000		
	0.40	17.13	7.14	0.00		0.0000		
	0.50	17.84	7.14	0.00		0.0000		
6	0.00	17.84	7.14	0.00		7.0243		
	0.10	18.53	6.59	0.00		6.7989		
	0.20	19.16	6.05	0.00		6.5764		
	0.30	19.74	5.54	0.00		6.3571		
	0.40	20.27	5.04	0.00		6.1410		
	0.50	20.75	4.56	0.00		5.9282		
7	0.00	20.75	4.56	0.00		5.9282		
	0.10	21.18	4.09	0.00		5.7188		
	0.20	21.56	3.64	0.00		5.5128		
	0.30	21.91	3.21	0.00		5.3103		
	0.40	22.21	2.80	0.00		5.1114		
	0.50	22.47	2.40	0.00		4.9162		
8	0.00	22.47	2.40	0.00		4.9162		
	0.10	22.69	2.01	0.00		4.7245		
	0.20	22.87	1.64	0.00		4.5366		
	0.30	23.02	1.29	0.00		4.3524		
	0.40	23.13	0.95	0.00		4.1720		
	0.50	23.21	0.62	0.00		3.9953		
9	0.00	23.21	0.62	0.00		3.9953		
	0.10	23.25	0.31	0.00		3.8224		
	0.20	23.27	0.01	0.00		3.6533		
	0.30	23.26	-0.27	0.00		3.4880		
	0.40	23.21	-0.54	0.00		3.3265		
	0.50	23.15	-0.80	0.00		3.1687		
10	0.00	23.15	-0.80	0.00		3.1687		
	0.10	23.05	-1.05	0.00		3.0148		
	0.20	22.94	-1.28	0.00		2.8646		
	0.30	22.80	-1.51	0.00		2.7181		
	0.40	22.64	-1.72	0.00		2.5753		
	0.50	22.45	-1.92	0.00		2.4363		
11	0.00	22.45	-1.92	0.00		2.4363		
	0.10	22.25	-2.11	0.00		2.3009		
	0.20	22.03	-2.29	0.00		2.1691		
	0.30	21.80	-2.45	0.00		2.0409		
	0.40	21.54	-2.61	0.00		1.9162		
	0.50	21.27	-2.76	0.00		1.7951		
12	0.00	21.27	-2.76	0.00		1.7951		
	0.10	20.99	-2.90	0.00		1.6774		
	0.20	20.69	-3.03	0.00		1.5632		
	0.30	20.39	-3.15	0.00		1.4523		
	0.40	20.07	-3.26	0.00		1.3448		
	0.50	19.73	-3.36	0.00		1.2405		
13	0.00	19.73	-3.36	0.00		1.2405		
	0.10	19.39	-3.46	0.00		1.1394		
	0.20	19.04	-3.54	0.00		1.0415		
	0.30	18.68	-3.62	0.00		0.9467		
	0.40	18.32	-3.70	0.00		0.8549		
	0.50	17.95	-3.76	0.00		0.7662		
14	0.00	17.95	-3.76	0.00		0.7662		
	0.10	17.57	-3.82	0.00		0.6803		
	0.20	17.18	-3.87	0.00		0.5973		
	0.30	16.79	-3.91	0.00		0.5171		
	0.40	16.40	-3.95	0.00		0.4397		
	0.50	16.00	-3.98	0.00		0.3649		
15	0.00	16.00	-3.98	0.00		0.3649		
	0.10	15.60	-4.01	0.00		0.2927		
	0.20	15.20	-4.03	0.00		0.2231		
	0.30	14.80	-4.05	0.00		0.1560		
	0.40	14.39	-4.05	0.00		0.0912		
	0.50	13.99	-4.06	0.00		0.0288		
16	0.00	13.99	-4.06	0.00		0.0288		
	0.10	13.58	-4.06	0.00		-0.0313		
	0.20	13.18	-4.05	0.00		-0.0892		
	0.30	12.77	-4.05	0.00		-0.1449		
	0.40	12.37	-4.03	0.00		-0.1986		
	0.50	11.96	-4.01	0.00		-0.2503		
17	0.00	11.96	-4.01	0.00		-0.2503		
	0.10	11.56	-3.99	0.00		-0.3000		
	0.20	11.17	-3.97	0.00		-0.3478		
	0.30	10.77	-3.94	0.00		-0.3938		
	0.40	10.38	-3.90	0.00		-0.4380		
	0.50	9.99	-3.87	0.00		-0.4806		
18	0.00	9.99	-3.87	0.00		-0.4806		
	0.10	9.61	-3.83	0.00		-0.5215		
	0.20	9.23	-3.78	0.00		-0.5609		
	0.30	8.85	-3.74	0.00		-0.5988		
	0.40	8.48	-3.69	0.00		-0.6352		
	0.50	8.11	-3.64	0.00		-0.6702		
19	0.00	8.11	-3.64	0.00		-0.6702		
	0.10	7.75	-3.58	0.00		-0.7039		

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	0.20	7.40	-3.52	0.00	-0.7364
	0.30	7.05	-3.46	0.00	-0.7676
	0.40	6.70	-3.40	0.00	-0.7977
	0.50	6.37	-3.34	0.00	-0.8267
20	0.00	6.37	-3.34	0.00	-0.8267
	0.10	6.04	-3.27	0.00	-0.8547
	0.20	5.71	-3.20	0.00	-0.8817
	0.30	5.40	-3.13	0.00	-0.9077
	0.40	5.09	-3.06	0.00	-0.9329
	0.50	4.79	-2.98	0.00	-0.9572
21	0.00	4.79	-2.98	0.00	-0.9572
	0.10	4.49	-2.90	0.00	-0.9808
	0.20	4.20	-2.82	0.00	-1.0036
	0.30	3.93	-2.74	0.00	-1.0258
	0.40	3.66	-2.66	0.00	-1.0473
	0.50	3.39	-2.58	0.00	-1.0682
22	0.00	3.39	-2.58	0.00	-1.0682
	0.10	3.14	-2.49	0.00	-1.0886
	0.20	2.90	-2.40	0.00	-1.1084
	0.30	2.66	-2.31	0.00	-1.1278
	0.40	2.43	-2.22	0.00	-1.1467
	0.50	2.22	-2.13	0.00	-1.1653
23	0.00	2.22	-2.13	0.00	-1.1653
	0.10	2.01	-2.04	0.00	-1.1835
	0.20	1.81	-1.94	0.00	-1.2013
	0.30	1.62	-1.84	0.00	-1.2189
	0.40	1.44	-1.75	0.00	-1.2362
	0.50	1.27	-1.65	0.00	-1.2532
24	0.00	1.27	-1.65	0.00	-1.2532
	0.10	1.11	-1.55	0.00	-1.2701
	0.20	0.96	-1.44	0.00	-1.2868
	0.30	0.82	-1.34	0.00	-1.3033
	0.40	0.69	-1.24	0.00	-1.3198
	0.50	0.58	-1.13	0.00	-1.3361
25	0.00	0.58	-1.13	0.00	-1.3361
	0.10	0.47	-1.02	0.00	-1.3524
	0.20	0.37	-0.91	0.00	-1.3686
	0.30	0.29	-0.80	0.00	-1.3847
	0.40	0.21	-0.69	0.00	-1.4008
	0.50	0.15	-0.58	0.00	-1.4168
26	0.00	0.15	-0.58	0.00	-1.4168
	0.10	0.09	-0.47	0.00	-1.4329
	0.20	0.05	-0.35	0.00	-1.4489
	0.30	0.02	-0.24	0.00	-1.4649
	0.40	0.01	-0.12	0.00	-1.4809
	0.50	0.00	0.00	0.00	-1.4969

Condizione : Tqpv

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000
2	0.00	7.13	14.27	0.00	0.0000
	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.84	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.12	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.41	14.27	0.00	0.0000
4	0.00	21.41	14.27	0.00	0.0000
	0.10	22.83	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.11	14.27	0.00	0.0000
	0.50	28.54	14.27	0.00	0.0000
5	0.00	28.54	14.27	0.00	0.0000
	0.10	29.97	14.27	0.00	0.0000
	0.20	31.39	14.27	0.00	0.0000
	0.30	32.82	14.27	0.00	0.0000
	0.40	34.25	14.27	0.00	0.0000
	0.50	35.68	14.27	0.00	0.0000
6	0.00	35.68	14.27	0.00	14.0457
	0.10	37.05	13.17	0.00	13.5949
	0.20	38.31	12.10	0.00	13.1501
	0.30	39.47	11.07	0.00	12.7115
	0.40	40.52	10.07	0.00	12.2794
	0.50	41.48	9.11	0.00	11.8539
7	0.00	41.48	9.11	0.00	11.8539
	0.10	42.35	8.18	0.00	11.4351
	0.20	43.12	7.29	0.00	11.0232
	0.30	43.81	6.42	0.00	10.6184
	0.40	44.41	5.59	0.00	10.2207
	0.50	44.93	4.79	0.00	9.8302
8	0.00	44.93	4.79	0.00	9.8302
	0.10	45.37	4.02	0.00	9.4471

GENERAL CONTRACTOR



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GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.20	45.73	3.28	0.00	9.0713
	0.30	46.02	2.57	0.00	8.7030
	0.40	46.25	1.89	0.00	8.3422
	0.50	46.40	1.24	0.00	7.9890
9	0.00	46.40	1.24	0.00	7.9890
	0.10	46.50	0.62	0.00	7.6432
	0.20	46.53	0.02	0.00	7.3051
	0.30	46.50	-0.55	0.00	6.9746
	0.40	46.42	-1.09	0.00	6.6516
	0.50	46.28	-1.61	0.00	6.3362
10	0.00	46.28	-1.61	0.00	6.3362
	0.10	46.10	-2.10	0.00	6.0283
	0.20	45.87	-2.57	0.00	5.7279
	0.30	45.59	-3.01	0.00	5.4351
	0.40	45.26	-3.44	0.00	5.1496
	0.50	44.90	-3.84	0.00	4.8715
11	0.00	44.90	-3.84	0.00	4.8715
	0.10	44.50	-4.21	0.00	4.6007
	0.20	44.06	-4.57	0.00	4.3372
	0.30	43.58	-4.91	0.00	4.0809
	0.40	43.08	-5.22	0.00	3.8317
	0.50	42.54	-5.52	0.00	3.5894
12	0.00	42.54	-5.52	0.00	3.5894
	0.10	41.97	-5.79	0.00	3.3542
	0.20	41.38	-6.05	0.00	3.1257
	0.30	40.76	-6.29	0.00	2.9040
	0.40	40.12	-6.52	0.00	2.6890
	0.50	39.46	-6.72	0.00	2.4804
13	0.00	39.46	-6.72	0.00	2.4804
	0.10	38.78	-6.91	0.00	2.2783
	0.20	38.08	-7.09	0.00	2.0826
	0.30	37.36	-7.25	0.00	1.8930
	0.40	36.63	-7.39	0.00	1.7095
	0.50	35.88	-7.52	0.00	1.5320
14	0.00	35.88	-7.52	0.00	1.5320
	0.10	35.13	-7.63	0.00	1.3603
	0.20	34.36	-7.74	0.00	1.1944
	0.30	33.58	-7.82	0.00	1.0341
	0.40	32.79	-7.90	0.00	0.8792
	0.50	32.00	-7.96	0.00	0.7297
15	0.00	32.00	-7.96	0.00	0.7297
	0.10	31.20	-8.02	0.00	0.5854
	0.20	30.40	-8.06	0.00	0.4461
	0.30	29.59	-8.09	0.00	0.3119
	0.40	28.78	-8.11	0.00	0.1824
	0.50	27.97	-8.12	0.00	0.0577
16	0.00	27.97	-8.12	0.00	0.0577
	0.10	27.16	-8.12	0.00	-0.0625
	0.20	26.35	-8.11	0.00	-0.1783
	0.30	25.54	-8.09	0.00	-0.2898
	0.40	24.73	-8.06	0.00	-0.3971
	0.50	23.92	-8.03	0.00	-0.5004
17	0.00	23.92	-8.03	0.00	-0.5004
	0.10	23.12	-7.98	0.00	-0.5998
	0.20	22.33	-7.93	0.00	-0.6954
	0.30	21.54	-7.87	0.00	-0.7874
	0.40	20.75	-7.80	0.00	-0.8759
	0.50	19.98	-7.73	0.00	-0.9610
18	0.00	19.98	-7.73	0.00	-0.9610
	0.10	19.21	-7.65	0.00	-1.0428
	0.20	18.45	-7.57	0.00	-1.1216
	0.30	17.69	-7.47	0.00	-1.1973
	0.40	16.95	-7.37	0.00	-1.2701
	0.50	16.22	-7.27	0.00	-1.3401
19	0.00	16.22	-7.27	0.00	-1.3401
	0.10	15.50	-7.16	0.00	-1.4075
	0.20	14.79	-7.05	0.00	-1.4724
	0.30	14.09	-6.93	0.00	-1.5349
	0.40	13.40	-6.80	0.00	-1.5951
	0.50	12.73	-6.67	0.00	-1.6531
20	0.00	12.73	-6.67	0.00	-1.6531
	0.10	12.07	-6.54	0.00	-1.7090
	0.20	11.42	-6.40	0.00	-1.7630
	0.30	10.79	-6.26	0.00	-1.8151
	0.40	10.17	-6.11	0.00	-1.8654
	0.50	9.57	-5.96	0.00	-1.9141
21	0.00	9.57	-5.96	0.00	-1.9141
	0.10	8.98	-5.80	0.00	-1.9612
	0.20	8.41	-5.65	0.00	-2.0069
	0.30	7.85	-5.48	0.00	-2.0511
	0.40	7.31	-5.32	0.00	-2.0942
	0.50	6.79	-5.15	0.00	-2.1360
22	0.00	6.79	-5.15	0.00	-2.1360
	0.10	6.28	-4.98	0.00	-2.1767
	0.20	5.79	-4.80	0.00	-2.2164
	0.30	5.32	-4.62	0.00	-2.2551
	0.40	4.87	-4.44	0.00	-2.2930
	0.50	4.43	-4.26	0.00	-2.3300
23	0.00	4.43	-4.26	0.00	-2.3300
	0.10	4.02	-4.07	0.00	-2.3664
	0.20	3.62	-3.88	0.00	-2.4021
	0.30	3.24	-3.69	0.00	-2.4372
	0.40	2.88	-3.49	0.00	-2.4718
	0.50	2.54	-3.29	0.00	-2.5059

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24	0.00	2.54	-3.29	0.00		-2.5059		
	0.10	2.22	-3.09	0.00		-2.5396		
	0.20	1.92	-2.89	0.00		-2.5730		
	0.30	1.65	-2.68	0.00		-2.6061		
	0.40	1.39	-2.47	0.00		-2.6390		
	0.50	1.15	-2.26	0.00		-2.6717		
25	0.00	1.15	-2.26	0.00		-2.6717		
	0.10	0.94	-2.05	0.00		-2.7042		
	0.20	0.74	-1.83	0.00		-2.7365		
	0.30	0.57	-1.61	0.00		-2.7688		
	0.40	0.42	-1.39	0.00		-2.8010		
	0.50	0.29	-1.16	0.00		-2.8331		
26	0.00	0.29	-1.16	0.00		-2.8331		
	0.10	0.19	-0.93	0.00		-2.8651		
	0.20	0.11	-0.70	0.00		-2.8972		
	0.30	0.05	-0.47	0.00		-2.9292		
	0.40	0.01	-0.24	0.00		-2.9612		
	0.50	0.00	0.00	0.00		-2.9932		

Condizione : Mgpv
Sollecitazioni

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
6	0.00	7.14	0.00	0.00	1.0394
	0.10	7.13	-0.08	0.00	0.9908
	0.20	7.12	-0.16	0.00	0.9433
	0.30	7.10	-0.23	0.00	0.8970
	0.40	7.07	-0.30	0.00	0.8519
	0.50	7.04	-0.37	0.00	0.8079
7	0.00	7.04	-0.37	0.00	0.8079
	0.10	7.00	-0.43	0.00	0.7651
	0.20	6.95	-0.49	0.00	0.7234
	0.30	6.90	-0.55	0.00	0.6828
	0.40	6.85	-0.60	0.00	0.6434
	0.50	6.78	-0.65	0.00	0.6051
8	0.00	6.78	-0.65	0.00	0.6051
	0.10	6.72	-0.70	0.00	0.5679
	0.20	6.64	-0.74	0.00	0.5317
	0.30	6.57	-0.78	0.00	0.4967
	0.40	6.49	-0.82	0.00	0.4627
	0.50	6.40	-0.85	0.00	0.4298
9	0.00	6.40	-0.85	0.00	0.4298
	0.10	6.32	-0.89	0.00	0.3980
	0.20	6.23	-0.92	0.00	0.3671
	0.30	6.13	-0.95	0.00	0.3373
	0.40	6.04	-0.97	0.00	0.3085
	0.50	5.94	-0.99	0.00	0.2806
10	0.00	5.94	-0.99	0.00	0.2806
	0.10	5.84	-1.02	0.00	0.2538
	0.20	5.74	-1.04	0.00	0.2278
	0.30	5.63	-1.05	0.00	0.2029
	0.40	5.53	-1.07	0.00	0.1788
	0.50	5.42	-1.08	0.00	0.1556
11	0.00	5.42	-1.08	0.00	0.1556
	0.10	5.31	-1.09	0.00	0.1333
	0.20	5.20	-1.10	0.00	0.1119
	0.30	5.09	-1.11	0.00	0.0914
	0.40	4.98	-1.12	0.00	0.0716
	0.50	4.87	-1.12	0.00	0.0527
12	0.00	4.87	-1.12	0.00	0.0527
	0.10	4.75	-1.13	0.00	0.0346
	0.20	4.64	-1.13	0.00	0.0172
	0.30	4.53	-1.13	0.00	0.0006
	0.40	4.42	-1.13	0.00	-0.0153
	0.50	4.30	-1.13	0.00	-0.0304

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13	0.00	4.30	-1.13	0.00		-0.0304		
	0.10	4.19	-1.12	0.00		-0.0449		
	0.20	4.08	-1.12	0.00		-0.0586		
	0.30	3.97	-1.11	0.00		-0.0717		
	0.40	3.86	-1.11	0.00		-0.0842		
	0.50	3.75	-1.10	0.00		-0.0960		
14	0.00	3.75	-1.10	0.00		-0.0960		
	0.10	3.64	-1.09	0.00		-0.1072		
	0.20	3.53	-1.08	0.00		-0.1178		
	0.30	3.42	-1.07	0.00		-0.1279		
	0.40	3.31	-1.06	0.00		-0.1374		
	0.50	3.21	-1.05	0.00		-0.1463		
15	0.00	3.21	-1.05	0.00		-0.1463		
	0.10	3.10	-1.04	0.00		-0.1548		
	0.20	3.00	-1.03	0.00		-0.1627		
	0.30	2.90	-1.01	0.00		-0.1701		
	0.40	2.80	-1.00	0.00		-0.1771		
	0.50	2.70	-0.98	0.00		-0.1836		
16	0.00	2.70	-0.98	0.00		-0.1836		
	0.10	2.60	-0.97	0.00		-0.1896		
	0.20	2.50	-0.95	0.00		-0.1953		
	0.30	2.41	-0.94	0.00		-0.2005		
	0.40	2.32	-0.92	0.00		-0.2053		
	0.50	2.22	-0.91	0.00		-0.2098		
17	0.00	2.22	-0.91	0.00		-0.2098		
	0.10	2.13	-0.89	0.00		-0.2139		
	0.20	2.05	-0.87	0.00		-0.2177		
	0.30	1.96	-0.85	0.00		-0.2211		
	0.40	1.88	-0.84	0.00		-0.2242		
	0.50	1.79	-0.82	0.00		-0.2270		
18	0.00	1.79	-0.82	0.00		-0.2270		
	0.10	1.71	-0.80	0.00		-0.2295		
	0.20	1.63	-0.78	0.00		-0.2317		
	0.30	1.56	-0.76	0.00		-0.2336		
	0.40	1.48	-0.74	0.00		-0.2353		
	0.50	1.41	-0.73	0.00		-0.2368		
19	0.00	1.41	-0.73	0.00		-0.2368		
	0.10	1.34	-0.71	0.00		-0.2380		
	0.20	1.27	-0.69	0.00		-0.2391		
	0.30	1.20	-0.67	0.00		-0.2399		
	0.40	1.13	-0.65	0.00		-0.2405		
	0.50	1.07	-0.63	0.00		-0.2409		
20	0.00	1.07	-0.63	0.00		-0.2409		
	0.10	1.01	-0.61	0.00		-0.2412		
	0.20	0.95	-0.59	0.00		-0.2412		
	0.30	0.89	-0.57	0.00		-0.2412		
	0.40	0.83	-0.55	0.00		-0.2410		
	0.50	0.78	-0.53	0.00		-0.2406		
21	0.00	0.78	-0.53	0.00		-0.2406		
	0.10	0.72	-0.52	0.00		-0.2402		
	0.20	0.67	-0.50	0.00		-0.2396		
	0.30	0.62	-0.48	0.00		-0.2389		
	0.40	0.58	-0.46	0.00		-0.2381		
	0.50	0.53	-0.44	0.00		-0.2372		
22	0.00	0.53	-0.44	0.00		-0.2372		
	0.10	0.49	-0.42	0.00		-0.2362		
	0.20	0.45	-0.40	0.00		-0.2351		
	0.30	0.41	-0.38	0.00		-0.2340		
	0.40	0.37	-0.36	0.00		-0.2328		
	0.50	0.34	-0.35	0.00		-0.2315		
23	0.00	0.34	-0.35	0.00		-0.2315		
	0.10	0.30	-0.33	0.00		-0.2302		
	0.20	0.27	-0.31	0.00		-0.2289		
	0.30	0.24	-0.29	0.00		-0.2274		
	0.40	0.21	-0.27	0.00		-0.2260		
	0.50	0.19	-0.25	0.00		-0.2245		
24	0.00	0.19	-0.25	0.00		-0.2245		
	0.10	0.16	-0.24	0.00		-0.2230		
	0.20	0.14	-0.22	0.00		-0.2215		
	0.30	0.12	-0.20	0.00		-0.2199		
	0.40	0.10	-0.18	0.00		-0.2183		
	0.50	0.08	-0.17	0.00		-0.2167		
25	0.00	0.08	-0.17	0.00		-0.2167		
	0.10	0.07	-0.15	0.00		-0.2151		
	0.20	0.05	-0.13	0.00		-0.2135		
	0.30	0.04	-0.12	0.00		-0.2119		
	0.40	0.03	-0.10	0.00		-0.2103		
	0.50	0.02	-0.08	0.00		-0.2086		
26	0.00	0.02	-0.08	0.00		-0.2086		
	0.10	0.01	-0.07	0.00		-0.2070		
	0.20	0.01	-0.05	0.00		-0.2054		
	0.30	0.00	-0.03	0.00		-0.2037		
	0.40	0.00	-0.02	0.00		-0.2021		
	0.50	0.00	0.00	0.00		-0.2005		

Condizione : Msacpv

Sollecitazioni

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000

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2	0.00	2.38	0.00	0.00	0.0000			
	0.10	2.38	0.00	0.00	0.0000			
	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
3	0.00	2.38	0.00	0.00	0.0000			
	0.10	2.38	0.00	0.00	0.0000			
	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
4	0.00	2.38	0.00	0.00	0.0000			
	0.10	2.38	0.00	0.00	0.0000			
	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
5	0.00	2.38	0.00	0.00	0.0000			
	0.10	2.38	0.00	0.00	0.0000			
	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
6	0.00	2.38	0.00	0.00	0.3465			
	0.10	2.38	-0.03	0.00	0.3303			
	0.20	2.37	-0.05	0.00	0.3145			
	0.30	2.37	-0.08	0.00	0.2990			
	0.40	2.36	-0.10	0.00	0.2840			
	0.50	2.35	-0.12	0.00	0.2693			
7	0.00	2.35	-0.12	0.00	0.2693			
	0.10	2.33	-0.14	0.00	0.2550			
	0.20	2.32	-0.16	0.00	0.2411			
	0.30	2.30	-0.18	0.00	0.2276			
	0.40	2.28	-0.20	0.00	0.2145			
	0.50	2.26	-0.22	0.00	0.2017			
8	0.00	2.26	-0.22	0.00	0.2017			
	0.10	2.24	-0.23	0.00	0.1893			
	0.20	2.21	-0.25	0.00	0.1773			
	0.30	2.19	-0.26	0.00	0.1656			
	0.40	2.16	-0.27	0.00	0.1543			
	0.50	2.13	-0.28	0.00	0.1433			
9	0.00	2.13	-0.28	0.00	0.1433			
	0.10	2.11	-0.30	0.00	0.1327			
	0.20	2.08	-0.31	0.00	0.1224			
	0.30	2.04	-0.32	0.00	0.1124			
	0.40	2.01	-0.32	0.00	0.1028			
	0.50	1.98	-0.33	0.00	0.0936			
10	0.00	1.98	-0.33	0.00	0.0936			
	0.10	1.95	-0.34	0.00	0.0846			
	0.20	1.91	-0.35	0.00	0.0760			
	0.30	1.88	-0.35	0.00	0.0676			
	0.40	1.84	-0.36	0.00	0.0596			
	0.50	1.81	-0.36	0.00	0.0519			
11	0.00	1.81	-0.36	0.00	0.0519			
	0.10	1.77	-0.36	0.00	0.0445			
	0.20	1.73	-0.37	0.00	0.0373			
	0.30	1.70	-0.37	0.00	0.0305			
	0.40	1.66	-0.37	0.00	0.0239			
	0.50	1.62	-0.37	0.00	0.0176			
12	0.00	1.62	-0.37	0.00	0.0176			
	0.10	1.58	-0.38	0.00	0.0115			
	0.20	1.55	-0.38	0.00	0.0057			
	0.30	1.51	-0.38	0.00	0.0002			
	0.40	1.47	-0.38	0.00	-0.0051			
	0.50	1.43	-0.38	0.00	-0.0101			
13	0.00	1.43	-0.38	0.00	-0.0101			
	0.10	1.40	-0.37	0.00	-0.0150			
	0.20	1.36	-0.37	0.00	-0.0195			
	0.30	1.32	-0.37	0.00	-0.0239			
	0.40	1.29	-0.37	0.00	-0.0281			
	0.50	1.25	-0.37	0.00	-0.0320			
14	0.00	1.25	-0.37	0.00	-0.0320			
	0.10	1.21	-0.36	0.00	-0.0357			
	0.20	1.18	-0.36	0.00	-0.0393			
	0.30	1.14	-0.36	0.00	-0.0426			
	0.40	1.10	-0.35	0.00	-0.0458			
	0.50	1.07	-0.35	0.00	-0.0488			
15	0.00	1.07	-0.35	0.00	-0.0488			
	0.10	1.03	-0.35	0.00	-0.0516			
	0.20	1.00	-0.34	0.00	-0.0542			
	0.30	0.97	-0.34	0.00	-0.0567			
	0.40	0.93	-0.33	0.00	-0.0590			
	0.50	0.90	-0.33	0.00	-0.0612			
16	0.00	0.90	-0.33	0.00	-0.0612			
	0.10	0.87	-0.32	0.00	-0.0632			
	0.20	0.83	-0.32	0.00	-0.0651			
	0.30	0.80	-0.31	0.00	-0.0668			
	0.40	0.77	-0.31	0.00	-0.0685			
	0.50	0.74	-0.30	0.00	-0.0699			
17	0.00	0.74	-0.30	0.00	-0.0699			
	0.10	0.71	-0.30	0.00	-0.0713			
	0.20	0.68	-0.29	0.00	-0.0726			
	0.30	0.65	-0.28	0.00	-0.0737			
	0.40	0.63	-0.28	0.00	-0.0747			

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	0.50	0.60	-0.27	0.00		-0.0757		
18	0.00	0.60	-0.27	0.00		-0.0757		
	0.10	0.57	-0.27	0.00		-0.0765		
	0.20	0.54	-0.26	0.00		-0.0772		
	0.30	0.52	-0.25	0.00		-0.0779		
	0.40	0.49	-0.25	0.00		-0.0785		
	0.50	0.47	-0.24	0.00		-0.0789		
19	0.00	0.47	-0.24	0.00		-0.0789		
	0.10	0.45	-0.24	0.00		-0.0793		
	0.20	0.42	-0.23	0.00		-0.0797		
	0.30	0.40	-0.22	0.00		-0.0800		
	0.40	0.38	-0.22	0.00		-0.0802		
	0.50	0.36	-0.21	0.00		-0.0803		
20	0.00	0.36	-0.21	0.00		-0.0803		
	0.10	0.34	-0.20	0.00		-0.0804		
	0.20	0.32	-0.20	0.00		-0.0804		
	0.30	0.30	-0.19	0.00		-0.0804		
	0.40	0.28	-0.18	0.00		-0.0803		
	0.50	0.26	-0.18	0.00		-0.0802		
21	0.00	0.26	-0.18	0.00		-0.0802		
	0.10	0.24	-0.17	0.00		-0.0801		
	0.20	0.22	-0.17	0.00		-0.0799		
	0.30	0.21	-0.16	0.00		-0.0796		
	0.40	0.19	-0.15	0.00		-0.0794		
	0.50	0.18	-0.15	0.00		-0.0791		
22	0.00	0.18	-0.15	0.00		-0.0791		
	0.10	0.16	-0.14	0.00		-0.0787		
	0.20	0.15	-0.13	0.00		-0.0784		
	0.30	0.14	-0.13	0.00		-0.0780		
	0.40	0.12	-0.12	0.00		-0.0776		
	0.50	0.11	-0.12	0.00		-0.0772		
23	0.00	0.11	-0.12	0.00		-0.0772		
	0.10	0.10	-0.11	0.00		-0.0767		
	0.20	0.09	-0.10	0.00		-0.0763		
	0.30	0.08	-0.10	0.00		-0.0758		
	0.40	0.07	-0.09	0.00		-0.0753		
	0.50	0.06	-0.08	0.00		-0.0748		
24	0.00	0.06	-0.08	0.00		-0.0748		
	0.10	0.05	-0.08	0.00		-0.0743		
	0.20	0.05	-0.07	0.00		-0.0738		
	0.30	0.04	-0.07	0.00		-0.0733		
	0.40	0.03	-0.06	0.00		-0.0728		
	0.50	0.03	-0.06	0.00		-0.0722		
25	0.00	0.03	-0.06	0.00		-0.0722		
	0.10	0.02	-0.05	0.00		-0.0717		
	0.20	0.02	-0.04	0.00		-0.0712		
	0.30	0.01	-0.04	0.00		-0.0706		
	0.40	0.01	-0.03	0.00		-0.0701		
	0.50	0.01	-0.03	0.00		-0.0696		
26	0.00	0.01	-0.03	0.00		-0.0696		
	0.10	0.00	-0.02	0.00		-0.0690		
	0.20	0.00	-0.02	0.00		-0.0685		
	0.30	0.00	-0.01	0.00		-0.0679		
	0.40	0.00	-0.01	0.00		-0.0674		
	0.50	0.00	0.00	0.00		-0.0668		

Condizione : Spinta Passiva

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.17	-3.53	0.00	0.0000
	0.20	-0.72	-7.40	0.00	0.0000
	0.30	-1.66	-11.60	0.00	0.0000
	0.40	-3.05	-16.14	0.00	0.0000
	0.50	-4.90	-21.02	0.00	0.0000
4	0.00	-4.90	-21.02	0.00	0.0000
	0.10	-7.26	-26.23	0.00	0.0000
	0.20	-10.16	-31.78	0.00	0.0000
	0.30	-13.63	-37.66	0.00	0.0000
	0.40	-17.71	-43.88	0.00	0.0000
	0.50	-22.42	-50.44	0.00	0.0000
5	0.00	-22.42	-50.44	0.00	0.0000
	0.10	-27.71	-55.51	0.00	0.0000
	0.20	-33.53	-60.83	0.00	0.0000
	0.30	-39.89	-66.40	0.00	0.0000
	0.40	-46.82	-72.21	0.00	0.0000
	0.50	-54.34	-78.27	0.00	0.0000
6	0.00	-54.34	-78.27	0.00	-56.4540
	0.10	-61.94	-73.83	0.00	-54.9440
	0.20	-69.11	-69.50	0.00	-53.4441
	0.30	-75.85	-65.30	0.00	-51.9555
	0.40	-82.17	-61.21	0.00	-50.4792

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	0.50	-88.09	-57.24	0.00		-49.0163		
7	0.00	-88.09	-57.24	0.00		-49.0163		
	0.10	-93.63	-53.39	0.00		-47.5678		
	0.20	-98.78	-49.65	0.00		-46.1345		
	0.30	-103.56	-46.03	0.00		-44.7173		
	0.40	-107.99	-42.52	0.00		-43.3170		
	0.50	-112.07	-39.12	0.00		-41.9342		
8	0.00	-112.07	-39.12	0.00		-41.9342		
	0.10	-115.81	-35.83	0.00		-40.5698		
	0.20	-119.24	-32.65	0.00		-39.2241		
	0.30	-122.35	-29.57	0.00		-37.8980		
	0.40	-125.15	-26.60	0.00		-36.5917		
	0.50	-127.67	-23.73	0.00		-35.3058		
9	0.00	-127.67	-23.73	0.00		-35.3058		
	0.10	-129.90	-20.96	0.00		-34.0408		
	0.20	-131.87	-18.30	0.00		-32.7969		
	0.30	-133.57	-15.73	0.00		-31.5745		
	0.40	-135.02	-13.26	0.00		-30.3738		
	0.50	-136.22	-10.88	0.00		-29.1952		
10	0.00	-136.22	-10.88	0.00		-29.1952		
	0.10	-137.20	-8.60	0.00		-28.0387		
	0.20	-137.95	-6.41	0.00		-26.9046		
	0.30	-138.48	-4.31	0.00		-25.7930		
	0.40	-138.81	-2.29	0.00		-24.7039		
	0.50	-138.94	-0.37	0.00		-23.6375		
11	0.00	-138.94	-0.37	0.00		-23.6375		
	0.10	-138.89	1.48	0.00		-22.5937		
	0.20	-138.65	3.24	0.00		-21.5725		
	0.30	-138.24	4.92	0.00		-20.5739		
	0.40	-137.67	6.52	0.00		-19.5979		
	0.50	-136.94	8.05	0.00		-18.6442		
12	0.00	-136.94	8.05	0.00		-18.6442		
	0.10	-136.06	9.50	0.00		-17.7129		
	0.20	-135.04	10.87	0.00		-16.8038		
	0.30	-133.89	12.18	0.00		-15.9166		
	0.40	-132.61	13.41	0.00		-15.0513		
	0.50	-131.21	14.58	0.00		-14.2076		
13	0.00	-131.21	14.58	0.00		-14.2076		
	0.10	-129.69	15.68	0.00		-13.3853		
	0.20	-128.07	16.72	0.00		-12.5841		
	0.30	-126.35	17.69	0.00		-11.8037		
	0.40	-124.54	18.60	0.00		-11.0440		
	0.50	-122.63	19.45	0.00		-10.3045		
14	0.00	-122.63	19.45	0.00		-10.3045		
	0.10	-120.65	20.25	0.00		-9.5851		
	0.20	-118.59	20.98	0.00		-8.8852		
	0.30	-116.45	21.66	0.00		-8.2048		
	0.40	-114.26	22.29	0.00		-7.5432		
	0.50	-112.00	22.87	0.00		-6.9003		
15	0.00	-112.00	22.87	0.00		-6.9003		
	0.10	-109.68	23.39	0.00		-6.2757		
	0.20	-107.32	23.87	0.00		-5.6689		
	0.30	-104.91	24.30	0.00		-5.0796		
	0.40	-102.46	24.68	0.00		-4.5075		
	0.50	-99.98	25.02	0.00		-3.9520		
16	0.00	-99.98	25.02	0.00		-3.9520		
	0.10	-97.46	25.31	0.00		-3.4128		
	0.20	-94.92	25.56	0.00		-2.8894		
	0.30	-92.35	25.77	0.00		-2.3816		
	0.40	-89.76	25.94	0.00		-1.8888		
	0.50	-87.16	26.08	0.00		-1.4106		
17	0.00	-87.16	26.08	0.00		-1.4106		
	0.10	-84.55	26.17	0.00		-0.9466		
	0.20	-81.93	26.23	0.00		-0.4964		
	0.30	-79.30	26.25	0.00		-0.0596		
	0.40	-76.68	26.24	0.00		0.3643		
	0.50	-74.06	26.19	0.00		0.7758		
18	0.00	-74.06	26.19	0.00		0.7758		
	0.10	-71.44	26.11	0.00		1.1751		
	0.20	-68.84	26.00	0.00		1.5628		
	0.30	-66.24	25.86	0.00		1.9393		
	0.40	-63.66	25.69	0.00		2.3050		
	0.50	-61.10	25.50	0.00		2.6604		
19	0.00	-61.10	25.50	0.00		2.6604		
	0.10	-58.57	25.27	0.00		3.0057		
	0.20	-56.05	25.02	0.00		3.3416		
	0.30	-53.56	24.74	0.00		3.6683		
	0.40	-51.10	24.43	0.00		3.9862		
	0.50	-48.68	24.10	0.00		4.2959		
20	0.00	-48.68	24.10	0.00		4.2959		
	0.10	-46.29	23.75	0.00		4.5976		
	0.20	-43.93	23.37	0.00		4.8917		
	0.30	-41.61	22.97	0.00		5.1787		
	0.40	-39.34	22.54	0.00		5.4590		
	0.50	-37.10	22.10	0.00		5.7328		
21	0.00	-37.10	22.10	0.00		5.7328		
	0.10	-34.92	21.63	0.00		6.0005		
	0.20	-32.78	21.14	0.00		6.2626		
	0.30	-30.69	20.63	0.00		6.5193		
	0.40	-28.65	20.10	0.00		6.7711		
	0.50	-26.67	19.55	0.00		7.0181		
22	0.00	-26.67	19.55	0.00		7.0181		
	0.10	-24.75	18.98	0.00		7.2608		
	0.20	-22.88	18.39	0.00		7.4995		

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	0.30	-21.07	17.78	0.00	7.7345
	0.40	-19.32	17.16	0.00	7.9660
	0.50	-17.64	16.51	0.00	8.1944
23	0.00	-17.64	16.51	0.00	8.1944
	0.10	-16.02	15.85	0.00	8.4198
	0.20	-14.47	15.17	0.00	8.6427
	0.30	-12.99	14.47	0.00	8.8632
	0.40	-11.57	13.75	0.00	9.0816
	0.50	-10.24	13.02	0.00	9.2982
24	0.00	-10.24	13.02	0.00	9.2982
	0.10	-8.97	12.27	0.00	9.5131
	0.20	-7.78	11.50	0.00	9.7267
	0.30	-6.67	10.72	0.00	9.9392
	0.40	-5.64	9.92	0.00	10.1507
	0.50	-4.69	9.10	0.00	10.3613
25	0.00	-4.69	9.10	0.00	10.3613
	0.10	-3.82	8.26	0.00	10.5713
	0.20	-3.04	7.41	0.00	10.7808
	0.30	-2.34	6.54	0.00	10.9897
	0.40	-1.73	5.66	0.00	11.1984
	0.50	-1.21	4.76	0.00	11.4067
26	0.00	-1.21	4.76	0.00	11.4067
	0.10	-0.78	3.84	0.00	11.6149
	0.20	-0.44	2.90	0.00	11.8230
	0.30	-0.20	1.95	0.00	12.0311
	0.40	-0.05	0.98	0.00	12.2390
	0.50	0.00	0.00	0.00	12.4470

Condizione : Nbp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
2	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
3	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
4	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
5	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
6	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
7	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
8	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
9	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
10	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
11	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
12	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
13	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
14	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
15	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
16	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
17	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
18	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
19	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
20	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
21	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
22	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
23	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
24	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
25	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
26	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000

Condizione : Nppm

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
2	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
3	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
4	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
5	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
6	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
7	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
8	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
9	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
10	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
11	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
12	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
13	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
14	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
15	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
16	0.00	0.00	0.00	-6.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
17	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
18	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
19	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
20	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
21	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
22	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
23	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
24	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
25	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
26	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

Condizione : Tppm

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000
	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000
2	0.00	1.50	3.00	0.00	0.0000
	0.10	1.80	3.00	0.00	0.0000
	0.20	2.10	3.00	0.00	0.0000
	0.30	2.40	3.00	0.00	0.0000
	0.40	2.70	3.00	0.00	0.0000
	0.50	3.00	3.00	0.00	0.0000
3	0.00	3.00	3.00	0.00	0.0000
	0.10	3.30	3.00	0.00	0.0000
	0.20	3.60	3.00	0.00	0.0000
	0.30	3.90	3.00	0.00	0.0000
	0.40	4.20	3.00	0.00	0.0000
	0.50	4.50	3.00	0.00	0.0000
4	0.00	4.50	3.00	0.00	0.0000
	0.10	4.80	3.00	0.00	0.0000
	0.20	5.10	3.00	0.00	0.0000
	0.30	5.40	3.00	0.00	0.0000
	0.40	5.70	3.00	0.00	0.0000
	0.50	6.00	3.00	0.00	0.0000
5	0.00	6.00	3.00	0.00	0.0000

GENERAL CONTRACTOR



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	0.10	6.30	3.00	0.00	0.0000
	0.20	6.60	3.00	0.00	0.0000
	0.30	6.90	3.00	0.00	0.0000
	0.40	7.20	3.00	0.00	0.0000
	0.50	7.50	3.00	0.00	0.0000
6	0.00	7.50	3.00	0.00	2.9528
	0.10	7.79	2.77	0.00	2.8581
	0.20	8.05	2.54	0.00	2.7646
	0.30	8.30	2.33	0.00	2.6724
	0.40	8.52	2.12	0.00	2.5815
	0.50	8.72	1.92	0.00	2.4921
7	0.00	8.72	1.92	0.00	2.4921
	0.10	8.90	1.72	0.00	2.4040
	0.20	9.07	1.53	0.00	2.3174
	0.30	9.21	1.35	0.00	2.2323
	0.40	9.34	1.18	0.00	2.1487
	0.50	9.44	1.01	0.00	2.0666
8	0.00	9.44	1.01	0.00	2.0666
	0.10	9.54	0.85	0.00	1.9861
	0.20	9.61	0.69	0.00	1.9071
	0.30	9.68	0.54	0.00	1.8296
	0.40	9.72	0.40	0.00	1.7538
	0.50	9.76	0.26	0.00	1.6795
9	0.00	9.76	0.26	0.00	1.6795
	0.10	9.77	0.13	0.00	1.6068
	0.20	9.78	0.00	0.00	1.5358
	0.30	9.78	-0.11	0.00	1.4663
	0.40	9.76	-0.23	0.00	1.3984
	0.50	9.73	-0.34	0.00	1.3321
10	0.00	9.73	-0.34	0.00	1.3321
	0.10	9.69	-0.44	0.00	1.2673
	0.20	9.64	-0.54	0.00	1.2042
	0.30	9.58	-0.63	0.00	1.1426
	0.40	9.52	-0.72	0.00	1.0826
	0.50	9.44	-0.81	0.00	1.0241
11	0.00	9.44	-0.81	0.00	1.0241
	0.10	9.35	-0.89	0.00	0.9672
	0.20	9.26	-0.96	0.00	0.9118
	0.30	9.16	-1.03	0.00	0.8579
	0.40	9.06	-1.10	0.00	0.8055
	0.50	8.94	-1.16	0.00	0.7546
12	0.00	8.94	-1.16	0.00	0.7546
	0.10	8.82	-1.22	0.00	0.7051
	0.20	8.70	-1.27	0.00	0.6571
	0.30	8.57	-1.32	0.00	0.6105
	0.40	8.44	-1.37	0.00	0.5653
	0.50	8.30	-1.41	0.00	0.5215
13	0.00	8.30	-1.41	0.00	0.5215
	0.10	8.15	-1.45	0.00	0.4790
	0.20	8.01	-1.49	0.00	0.4378
	0.30	7.85	-1.52	0.00	0.3980
	0.40	7.70	-1.55	0.00	0.3594
	0.50	7.54	-1.58	0.00	0.3221
14	0.00	7.54	-1.58	0.00	0.3221
	0.10	7.38	-1.60	0.00	0.2860
	0.20	7.22	-1.63	0.00	0.2511
	0.30	7.06	-1.64	0.00	0.2174
	0.40	6.89	-1.66	0.00	0.1848
	0.50	6.73	-1.67	0.00	0.1534
15	0.00	6.73	-1.67	0.00	0.1534
	0.10	6.56	-1.69	0.00	0.1231
	0.20	6.39	-1.69	0.00	0.0938
	0.30	6.22	-1.70	0.00	0.0656
	0.40	6.05	-1.70	0.00	0.0384
	0.50	5.88	-1.71	0.00	0.0121
16	0.00	5.88	-1.71	0.00	0.0121
	0.10	5.71	-1.71	0.00	-0.0131
	0.20	5.54	-1.70	0.00	-0.0375
	0.30	5.37	-1.70	0.00	-0.0609
	0.40	5.20	-1.69	0.00	-0.0835
	0.50	5.03	-1.69	0.00	-0.1052
17	0.00	5.03	-1.69	0.00	-0.1052
	0.10	4.86	-1.68	0.00	-0.1261
	0.20	4.69	-1.67	0.00	-0.1462
	0.30	4.53	-1.65	0.00	-0.1655
	0.40	4.36	-1.64	0.00	-0.1841
	0.50	4.20	-1.63	0.00	-0.2020
18	0.00	4.20	-1.63	0.00	-0.2020
	0.10	4.04	-1.61	0.00	-0.2192
	0.20	3.88	-1.59	0.00	-0.2358
	0.30	3.72	-1.57	0.00	-0.2517
	0.40	3.56	-1.55	0.00	-0.2670
	0.50	3.41	-1.53	0.00	-0.2817
19	0.00	3.41	-1.53	0.00	-0.2817
	0.10	3.26	-1.51	0.00	-0.2959
	0.20	3.11	-1.48	0.00	-0.3096
	0.30	2.96	-1.46	0.00	-0.3227
	0.40	2.82	-1.43	0.00	-0.3353
	0.50	2.68	-1.40	0.00	-0.3475
20	0.00	2.68	-1.40	0.00	-0.3475
	0.10	2.54	-1.37	0.00	-0.3593
	0.20	2.40	-1.35	0.00	-0.3706
	0.30	2.27	-1.32	0.00	-0.3816
	0.40	2.14	-1.28	0.00	-0.3922
	0.50	2.01	-1.25	0.00	-0.4024

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21	0.00	2.01	-1.25	0.00	-0.4024			
	0.10	1.89	-1.22	0.00	-0.4123			
	0.20	1.77	-1.19	0.00	-0.4219			
	0.30	1.65	-1.15	0.00	-0.4312			
	0.40	1.54	-1.12	0.00	-0.4403			
	0.50	1.43	-1.08	0.00	-0.4490			
22	0.00	1.43	-1.08	0.00	-0.4490			
	0.10	1.32	-1.05	0.00	-0.4576			
	0.20	1.22	-1.01	0.00	-0.4659			
	0.30	1.12	-0.97	0.00	-0.4741			
	0.40	1.02	-0.93	0.00	-0.4821			
	0.50	0.93	-0.90	0.00	-0.4898			
23	0.00	0.93	-0.90	0.00	-0.4898			
	0.10	0.84	-0.86	0.00	-0.4975			
	0.20	0.76	-0.82	0.00	-0.5050			
	0.30	0.68	-0.78	0.00	-0.5124			
	0.40	0.61	-0.73	0.00	-0.5197			
	0.50	0.53	-0.69	0.00	-0.5268			
24	0.00	0.53	-0.69	0.00	-0.5268			
	0.10	0.47	-0.65	0.00	-0.5339			
	0.20	0.40	-0.61	0.00	-0.5409			
	0.30	0.35	-0.56	0.00	-0.5479			
	0.40	0.29	-0.52	0.00	-0.5548			
	0.50	0.24	-0.48	0.00	-0.5617			
25	0.00	0.24	-0.48	0.00	-0.5617			
	0.10	0.20	-0.43	0.00	-0.5685			
	0.20	0.16	-0.38	0.00	-0.5753			
	0.30	0.12	-0.34	0.00	-0.5821			
	0.40	0.09	-0.29	0.00	-0.5888			
	0.50	0.06	-0.24	0.00	-0.5956			
26	0.00	0.06	-0.24	0.00	-0.5956			
	0.10	0.04	-0.20	0.00	-0.6023			
	0.20	0.02	-0.15	0.00	-0.6091			
	0.30	0.01	-0.10	0.00	-0.6158			
	0.40	0.00	-0.05	0.00	-0.6225			
	0.50	0.00	0.00	0.00	-0.6293			

Condizione : Mppm
Sollecitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
3	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
4	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
5	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
6	0.00	8.30	0.00	0.00	1.2089
	0.10	8.30	-0.09	0.00	1.1524
	0.20	8.28	-0.18	0.00	1.0972
	0.30	8.26	-0.27	0.00	1.0433
	0.40	8.23	-0.35	0.00	0.9908
	0.50	8.19	-0.43	0.00	0.9397
7	0.00	8.19	-0.43	0.00	0.9397
	0.10	8.14	-0.50	0.00	0.8899
	0.20	8.09	-0.57	0.00	0.8414
	0.30	8.03	-0.63	0.00	0.7942
	0.40	7.96	-0.70	0.00	0.7483
	0.50	7.89	-0.75	0.00	0.7038
8	0.00	7.89	-0.75	0.00	0.7038
	0.10	7.81	-0.81	0.00	0.6605
	0.20	7.73	-0.86	0.00	0.6185
	0.30	7.64	-0.91	0.00	0.5777
	0.40	7.55	-0.95	0.00	0.5382
	0.50	7.45	-0.99	0.00	0.4999
9	0.00	7.45	-0.99	0.00	0.4999
	0.10	7.35	-1.03	0.00	0.4629
	0.20	7.24	-1.07	0.00	0.4270
	0.30	7.13	-1.10	0.00	0.3923
	0.40	7.02	-1.13	0.00	0.3588
	0.50	6.91	-1.16	0.00	0.3264

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10	0.00	6.91	-1.16	0.00	0.3264			
	0.10	6.79	-1.18	0.00	0.2952			
	0.20	6.67	-1.20	0.00	0.2650			
	0.30	6.55	-1.22	0.00	0.2360			
	0.40	6.43	-1.24	0.00	0.2080			
	0.50	6.30	-1.26	0.00	0.1810			
11	0.00	6.30	-1.26	0.00	0.1810			
	0.10	6.18	-1.27	0.00	0.1551			
	0.20	6.05	-1.28	0.00	0.1302			
	0.30	5.92	-1.29	0.00	0.1063			
	0.40	5.79	-1.30	0.00	0.0833			
	0.50	5.66	-1.30	0.00	0.0613			
12	0.00	5.66	-1.30	0.00	0.0613			
	0.10	5.53	-1.31	0.00	0.0402			
	0.20	5.40	-1.31	0.00	0.0200			
	0.30	5.27	-1.31	0.00	0.0007			
	0.40	5.14	-1.31	0.00	-0.0178			
	0.50	5.01	-1.31	0.00	-0.0354			
13	0.00	5.01	-1.31	0.00	-0.0354			
	0.10	4.87	-1.31	0.00	-0.0522			
	0.20	4.74	-1.30	0.00	-0.0682			
	0.30	4.61	-1.29	0.00	-0.0834			
	0.40	4.49	-1.29	0.00	-0.0979			
	0.50	4.36	-1.28	0.00	-0.1117			
14	0.00	4.36	-1.28	0.00	-0.1117			
	0.10	4.23	-1.27	0.00	-0.1247			
	0.20	4.10	-1.26	0.00	-0.1371			
	0.30	3.98	-1.25	0.00	-0.1487			
	0.40	3.85	-1.24	0.00	-0.1598			
	0.50	3.73	-1.22	0.00	-0.1702			
15	0.00	3.73	-1.22	0.00	-0.1702			
	0.10	3.61	-1.21	0.00	-0.1800			
	0.20	3.49	-1.19	0.00	-0.1892			
	0.30	3.37	-1.18	0.00	-0.1978			
	0.40	3.25	-1.16	0.00	-0.2059			
	0.50	3.14	-1.15	0.00	-0.2135			
16	0.00	3.14	-1.15	0.00	-0.2135			
	0.10	3.02	-1.13	0.00	-0.2206			
	0.20	2.91	-1.11	0.00	-0.2271			
	0.30	2.80	-1.09	0.00	-0.2332			
	0.40	2.69	-1.07	0.00	-0.2388			
	0.50	2.59	-1.05	0.00	-0.2440			
17	0.00	2.59	-1.05	0.00	-0.2440			
	0.10	2.48	-1.03	0.00	-0.2488			
	0.20	2.38	-1.01	0.00	-0.2532			
	0.30	2.28	-0.99	0.00	-0.2571			
	0.40	2.18	-0.97	0.00	-0.2607			
	0.50	2.09	-0.95	0.00	-0.2640			
18	0.00	2.09	-0.95	0.00	-0.2640			
	0.10	1.99	-0.93	0.00	-0.2669			
	0.20	1.90	-0.91	0.00	-0.2695			
	0.30	1.81	-0.89	0.00	-0.2718			
	0.40	1.72	-0.87	0.00	-0.2737			
	0.50	1.64	-0.84	0.00	-0.2754			
19	0.00	1.64	-0.84	0.00	-0.2754			
	0.10	1.55	-0.82	0.00	-0.2769			
	0.20	1.47	-0.80	0.00	-0.2780			
	0.30	1.39	-0.78	0.00	-0.2790			
	0.40	1.32	-0.76	0.00	-0.2797			
	0.50	1.24	-0.73	0.00	-0.2802			
20	0.00	1.24	-0.73	0.00	-0.2802			
	0.10	1.17	-0.71	0.00	-0.2805			
	0.20	1.10	-0.69	0.00	-0.2806			
	0.30	1.03	-0.67	0.00	-0.2805			
	0.40	0.97	-0.64	0.00	-0.2803			
	0.50	0.90	-0.62	0.00	-0.2799			
21	0.00	0.90	-0.62	0.00	-0.2799			
	0.10	0.84	-0.60	0.00	-0.2793			
	0.20	0.78	-0.58	0.00	-0.2786			
	0.30	0.73	-0.55	0.00	-0.2778			
	0.40	0.67	-0.53	0.00	-0.2769			
	0.50	0.62	-0.51	0.00	-0.2759			
22	0.00	0.62	-0.51	0.00	-0.2759			
	0.10	0.57	-0.49	0.00	-0.2747			
	0.20	0.52	-0.47	0.00	-0.2735			
	0.30	0.48	-0.44	0.00	-0.2722			
	0.40	0.43	-0.42	0.00	-0.2708			
	0.50	0.39	-0.40	0.00	-0.2693			
23	0.00	0.39	-0.40	0.00	-0.2693			
	0.10	0.35	-0.38	0.00	-0.2678			
	0.20	0.32	-0.36	0.00	-0.2662			
	0.30	0.28	-0.34	0.00	-0.2645			
	0.40	0.25	-0.32	0.00	-0.2629			
	0.50	0.22	-0.30	0.00	-0.2611			
24	0.00	0.22	-0.30	0.00	-0.2611			
	0.10	0.19	-0.28	0.00	-0.2594			
	0.20	0.16	-0.25	0.00	-0.2576			
	0.30	0.14	-0.23	0.00	-0.2558			
	0.40	0.12	-0.21	0.00	-0.2539			
	0.50	0.10	-0.19	0.00	-0.2521			
25	0.00	0.10	-0.19	0.00	-0.2521			
	0.10	0.08	-0.17	0.00	-0.2502			
	0.20	0.06	-0.15	0.00	-0.2483			
	0.30	0.05	-0.13	0.00	-0.2465			

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	0.40	0.03	-0.11	0.00	-0.2446
	0.50	0.02	-0.09	0.00	-0.2427
26	0.00	0.02	-0.09	0.00	-0.2427
	0.10	0.02	-0.08	0.00	-0.2408
	0.20	0.01	-0.06	0.00	-0.2389
	0.30	0.00	-0.04	0.00	-0.2370
	0.40	0.00	-0.02	0.00	-0.2351
	0.50	0.00	0.00	0.00	-0.2332

Combinazioni di carico

combinazione Peso proprio..Mbp=Mb+Tb*(H+s). Tbp qs Tsacpv..Tqpv Mqpv Msacpv.Spinta Pass...Nbp Nppm Tppm Mppm
 SLU 1.35 1.50 1.50 1.50 1.35 1.50 1.50 1.35 1.00 1.50 1.50 1.50 1.50
 SLE RARA 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sollecitazioni

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	362.39	121.90	-95.36	0.0000
	0.10	374.61	122.47	-95.36	0.0000
	0.20	386.88	123.04	-95.36	0.0000
	0.30	399.22	123.61	-95.36	0.0000
	0.40	411.61	124.19	-95.36	0.0000
	0.50	424.05	124.76	-95.36	0.0000
2	0.00	424.05	124.76	-95.36	0.0000
	0.10	436.56	125.33	-95.36	0.0000
	0.20	449.12	125.90	-95.36	0.0000
	0.30	461.74	126.47	-95.36	0.0000
	0.40	474.41	127.04	-95.36	0.0000
	0.50	487.14	127.61	-95.36	0.0000
3	0.00	487.14	127.61	-95.36	0.0000
	0.10	499.76	124.65	-95.36	0.0000
	0.20	512.06	121.35	-95.36	0.0000
	0.30	524.02	117.72	-95.36	0.0000
	0.40	535.60	113.75	-95.36	0.0000
	0.50	546.76	109.45	-95.36	0.0000
4	0.00	546.76	109.45	-95.36	0.0000
	0.10	557.47	104.81	-95.36	0.0000
	0.20	567.71	99.83	-95.36	0.0000
	0.30	577.43	94.51	-95.36	0.0000
	0.40	586.60	88.86	-95.36	0.0000
	0.50	595.19	82.88	-95.36	0.0000
5	0.00	595.19	82.88	-95.36	0.0000
	0.10	603.26	78.54	-95.36	0.0000
	0.20	610.89	73.96	-95.36	0.0000
	0.30	618.05	69.14	-95.36	0.0000
	0.40	624.71	64.06	-95.36	0.0000
	0.50	630.85	58.74	-95.36	0.0000
6	0.00	630.85	58.74	-95.36	138.4791
	0.10	636.22	48.63	-95.36	133.3046
	0.20	640.59	38.94	-95.36	128.2339
	0.30	644.02	29.65	-95.36	123.2675
	0.40	646.54	20.74	-95.36	118.4060
	0.50	648.18	12.23	-95.36	113.6499
7	0.00	648.18	12.23	-95.36	113.6499
	0.10	648.99	4.08	-95.36	108.9994
	0.20	649.01	-3.69	-95.36	104.4547
	0.30	648.27	-11.11	-95.36	100.0157
	0.40	646.80	-18.18	-95.36	95.6823
	0.50	644.64	-24.90	-95.36	91.4543
8	0.00	644.64	-24.90	-95.36	91.4543
	0.10	641.83	-31.30	-95.36	87.3314
	0.20	638.39	-37.37	-95.36	83.3130
	0.30	634.37	-43.12	-95.36	79.3987
	0.40	629.78	-48.56	-95.36	75.5877
	0.50	624.66	-53.71	-95.36	71.8794
9	0.00	624.66	-53.71	-95.36	71.8794
	0.10	619.05	-58.56	-95.36	68.2728
	0.20	612.96	-63.13	-95.36	64.7671
	0.30	606.43	-67.42	-95.36	61.3613
	0.40	599.49	-71.45	-95.36	58.0543
	0.50	592.15	-75.21	-95.36	54.8450
10	0.00	592.15	-75.21	-95.36	54.8450
	0.10	584.45	-78.72	-95.36	51.7322
	0.20	576.41	-81.99	-95.36	48.7146
	0.30	568.06	-85.02	-95.36	45.7909
	0.40	559.42	-87.83	-95.36	42.9598
	0.50	550.50	-90.41	-95.36	40.2199
11	0.00	550.50	-90.41	-95.36	40.2199
	0.10	541.34	-92.77	-95.36	37.5696
	0.20	531.96	-94.93	-95.36	35.0076
	0.30	522.36	-96.88	-95.36	32.5322
	0.40	512.59	-98.65	-95.36	30.1420
	0.50	502.64	-100.22	-95.36	27.8353
12	0.00	502.64	-100.22	-95.36	27.8353
	0.10	492.55	-101.62	-95.36	25.6105
	0.20	482.32	-102.83	-95.36	23.4660
	0.30	471.99	-103.89	-95.36	21.4001
	0.40	461.55	-104.78	-95.36	19.4110
	0.50	451.04	-105.51	-95.36	17.4972
13	0.00	451.04	-105.51	-95.36	17.4972
	0.10	440.45	-106.10	-95.36	15.6569
	0.20	429.82	-106.54	-95.36	13.8884
	0.30	419.15	-106.84	-95.36	12.1899
	0.40	408.46	-107.01	-95.36	10.5597

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	0.50	397.75	-107.05	-95.36	8.9960			
14	0.00	397.75	-107.05	-95.36	8.9960			
	0.10	387.05	-106.97	-95.36	7.4972			
	0.20	376.36	-106.77	-95.36	6.0615			
	0.30	365.70	-106.46	-95.36	4.6871			
	0.40	355.07	-106.05	-95.36	3.3722			
	0.50	344.50	-105.53	-95.36	2.1153			
15	0.00	344.50	-105.53	-95.36	2.1153			
	0.10	333.97	-104.91	-95.36	0.9144			
	0.20	323.52	-104.20	-95.36	-0.2320			
	0.30	313.14	-103.40	-95.36	-1.3256			
	0.40	302.84	-102.52	-95.36	-2.3683			
	0.50	292.63	-101.55	-95.36	-3.3616			
16	0.00	292.63	-101.55	-95.36	-3.3616			
	0.10	282.53	-100.51	-95.36	-4.3072			
	0.20	272.54	-99.39	-95.36	-5.2068			
	0.30	262.66	-98.20	-95.36	-6.0619			
	0.40	252.90	-96.95	-95.36	-6.8743			
	0.50	243.27	-95.63	-95.36	-7.6454			
17	0.00	243.27	-95.63	-95.36	-7.6454			
	0.10	233.77	-94.25	-95.36	-8.3769			
	0.20	224.42	-92.82	-95.36	-9.0703			
	0.30	215.21	-91.33	-95.36	-9.7271			
	0.40	206.15	-89.80	-95.36	-10.3489			
	0.50	197.25	-88.21	-95.36	-10.9371			
18	0.00	197.25	-88.21	-95.36	-10.9371			
	0.10	188.51	-86.58	-95.36	-11.4931			
	0.20	179.94	-84.90	-95.36	-12.0184			
	0.30	171.54	-83.18	-95.36	-12.5143			
	0.40	163.30	-81.43	-95.36	-12.9824			
	0.50	155.25	-79.64	-95.36	-13.4238			
19	0.00	155.25	-79.64	-95.36	-13.4238			
	0.10	147.38	-77.81	-95.36	-13.8399			
	0.20	139.69	-75.96	-95.36	-14.2319			
	0.30	132.19	-74.07	-95.36	-14.6013			
	0.40	124.88	-72.15	-95.36	-14.9490			
	0.50	117.76	-70.21	-95.36	-15.2765			
20	0.00	117.76	-70.21	-95.36	-15.2765			
	0.10	110.83	-68.24	-95.36	-15.5847			
	0.20	104.11	-66.25	-95.36	-15.8748			
	0.30	97.59	-64.23	-95.36	-16.1480			
	0.40	91.26	-62.20	-95.36	-16.4053			
	0.50	85.15	-60.14	-95.36	-16.6477			
21	0.00	85.15	-60.14	-95.36	-16.6477			
	0.10	79.24	-58.07	-95.36	-16.8763			
	0.20	73.53	-55.97	-95.36	-17.0919			
	0.30	68.04	-53.87	-95.36	-17.2955			
	0.40	62.76	-51.74	-95.36	-17.4881			
	0.50	57.69	-49.60	-95.36	-17.6704			
22	0.00	57.69	-49.60	-95.36	-17.6704			
	0.10	52.84	-47.45	-95.36	-17.8433			
	0.20	48.21	-45.28	-95.36	-18.0076			
	0.30	43.79	-43.10	-95.36	-18.1641			
	0.40	39.59	-40.91	-95.36	-18.3134			
	0.50	35.61	-38.70	-95.36	-18.4562			
23	0.00	35.61	-38.70	-95.36	-18.4562			
	0.10	31.85	-36.49	-95.36	-18.5933			
	0.20	28.31	-34.26	-95.36	-18.7251			
	0.30	24.99	-32.02	-95.36	-18.8524			
	0.40	21.90	-29.78	-95.36	-18.9755			
	0.50	19.04	-27.52	-95.36	-19.0951			
24	0.00	19.04	-27.52	-95.36	-19.0951			
	0.10	16.40	-25.26	-95.36	-19.2117			
	0.20	13.99	-22.98	-95.36	-19.3260			
	0.30	11.80	-20.70	-95.36	-19.4381			
	0.40	9.85	-18.41	-95.36	-19.5486			
	0.50	8.12	-16.10	-95.36	-19.6576			
25	0.00	8.12	-16.10	-95.36	-19.6576			
	0.10	6.59	-14.53	-95.36	-19.7654			
	0.20	5.22	-12.95	-95.36	-19.8722			
	0.30	4.00	-11.36	-95.36	-19.9783			
	0.40	2.94	-9.76	-95.36	-20.0838			
	0.50	2.05	-8.16	-95.36	-20.1889			
26	0.00	2.05	-8.16	-95.36	-20.1889			
	0.10	1.31	-6.54	-95.36	-20.2936			
	0.20	0.74	-4.92	-95.36	-20.3982			
	0.30	0.33	-3.29	-95.36	-20.5026			
	0.40	0.08	-1.65	-95.36	-20.6070			
	0.50	0.00	0.00	-95.36	-20.7114			

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1	0.00	241.83	81.98	-63.57	0.0000
	0.10	250.05	82.36	-63.57	0.0000
	0.20	258.30	82.74	-63.57	0.0000
	0.30	266.60	83.12	-63.57	0.0000
	0.40	274.93	83.50	-63.57	0.0000
	0.50	283.30	83.88	-63.57	0.0000
2	0.00	283.30	83.88	-63.57	0.0000
	0.10	291.70	84.27	-63.57	0.0000
	0.20	300.15	84.65	-63.57	0.0000
	0.30	308.63	85.03	-63.57	0.0000
	0.40	317.15	85.41	-63.57	0.0000
	0.50	325.71	85.79	-63.57	0.0000

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3	0.00	325.71	85.79	-63.57	0.0000			
	0.10	334.14	82.64	-63.57	0.0000			
	0.20	342.23	79.15	-63.57	0.0000			
	0.30	349.96	75.33	-63.57	0.0000			
	0.40	357.28	71.17	-63.57	0.0000			
	0.50	364.18	66.67	-63.57	0.0000			
4	0.00	364.18	66.67	-63.58	0.0000			
	0.10	370.61	61.84	-63.58	0.0000			
	0.20	376.54	56.67	-63.58	0.0000			
	0.30	381.93	51.17	-63.58	0.0000			
	0.40	386.76	45.33	-63.58	0.0000			
	0.50	390.99	39.15	-63.58	0.0000			
5	0.00	390.99	39.15	-63.58	0.0000			
	0.10	394.67	34.57	-63.58	0.0000			
	0.20	397.89	29.75	-63.58	0.0000			
	0.30	400.62	24.67	-63.58	0.0000			
	0.40	402.82	19.35	-63.58	0.0000			
	0.50	404.48	13.78	-63.58	0.0000			
6	0.00	404.48	13.78	-63.58	74.2385			
	0.10	405.59	8.47	-63.58	71.2680			
	0.20	406.18	3.39	-63.58	68.3636			
	0.30	406.27	-1.46	-63.58	65.5254			
	0.40	405.90	-6.08	-63.58	62.7535			
	0.50	405.06	-10.49	-63.58	60.0476			
7	0.00	405.06	-10.49	-63.58	60.0476			
	0.10	403.80	-14.68	-63.58	57.4077			
	0.20	402.14	-18.67	-63.58	54.8337			
	0.30	400.08	-22.45	-63.58	52.3252			
	0.40	397.65	-26.03	-63.58	49.8818			
	0.50	394.88	-29.43	-63.58	47.5033			
8	0.00	394.88	-29.43	-63.58	47.5033			
	0.10	391.77	-32.63	-63.58	45.1891			
	0.20	388.36	-35.65	-63.58	42.9387			
	0.30	384.65	-38.50	-63.58	40.7516			
	0.40	380.66	-41.17	-63.58	38.6272			
	0.50	376.42	-43.68	-63.58	36.5648			
9	0.00	376.42	-43.68	-63.57	36.5648			
	0.10	371.93	-46.03	-63.57	34.5638			
	0.20	367.22	-48.21	-63.57	32.6234			
	0.30	362.30	-50.25	-63.57	30.7428			
	0.40	357.17	-52.14	-63.57	28.9212			
	0.50	351.87	-53.88	-63.57	27.1578			
10	0.00	351.87	-53.88	-63.57	27.1578			
	0.10	346.40	-55.49	-63.57	25.4518			
	0.20	340.78	-56.96	-63.57	23.8022			
	0.30	335.01	-58.31	-63.57	22.2082			
	0.40	329.12	-59.52	-63.57	20.6687			
	0.50	323.11	-60.62	-63.57	19.1829			
11	0.00	323.11	-60.62	-63.57	19.1829			
	0.10	317.00	-61.60	-63.57	17.7497			
	0.20	310.80	-62.47	-63.57	16.3682			
	0.30	304.51	-63.23	-63.57	15.0373			
	0.40	298.15	-63.89	-63.57	13.7561			
	0.50	291.74	-64.44	-63.57	12.5234			
12	0.00	291.74	-64.44	-63.57	12.5234			
	0.10	285.27	-64.90	-63.57	11.3383			
	0.20	278.76	-65.27	-63.57	10.1996			
	0.30	272.22	-65.55	-63.57	9.1064			
	0.40	265.65	-65.74	-63.57	8.0575			
	0.50	259.07	-65.85	-63.57	7.0520			
13	0.00	259.07	-65.85	-63.58	7.0520			
	0.10	252.48	-65.89	-63.58	6.0886			
	0.20	245.90	-65.84	-63.58	5.1664			
	0.30	239.32	-65.73	-63.58	4.2843			
	0.40	232.75	-65.54	-63.58	3.4411			
	0.50	226.21	-65.30	-63.58	2.6359			
14	0.00	226.21	-65.30	-63.58	2.6359			
	0.10	219.70	-64.98	-63.58	1.8676			
	0.20	213.22	-64.61	-63.58	1.1350			
	0.30	206.78	-64.18	-63.58	0.4372			
	0.40	200.38	-63.70	-63.58	-0.2269			
	0.50	194.04	-63.16	-63.58	-0.8583			
15	0.00	194.04	-63.16	-63.58	-0.8583			
	0.10	187.75	-62.58	-63.58	-1.4582			
	0.20	181.52	-61.95	-63.58	-2.0274			
	0.30	175.36	-61.27	-63.58	-2.5670			
	0.40	169.27	-60.56	-63.58	-3.0781			
	0.50	163.25	-59.80	-63.58	-3.5616			
16	0.00	163.25	-59.80	-63.57	-3.5616			
	0.10	157.31	-59.01	-63.57	-4.0185			
	0.20	151.45	-58.18	-63.57	-4.4498			
	0.30	145.68	-57.31	-63.57	-4.8563			
	0.40	139.99	-56.42	-63.57	-5.2392			
	0.50	134.40	-55.49	-63.57	-5.5992			
17	0.00	134.40	-55.49	-63.57	-5.5992			
	0.10	128.89	-54.54	-63.57	-5.9373			
	0.20	123.49	-53.56	-63.57	-6.2544			
	0.30	118.18	-52.56	-63.57	-6.5514			
	0.40	112.98	-51.54	-63.57	-6.8291			
	0.50	107.88	-50.49	-63.57	-7.0884			
18	0.00	107.88	-50.49	-63.58	-7.0884			
	0.10	102.88	-49.42	-63.58	-7.3302			
	0.20	97.99	-48.34	-63.58	-7.5551			
	0.30	93.21	-47.23	-63.58	-7.7641			

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	0.40	88.55	-46.12	-63.58	-7.9579
	0.50	83.99	-44.98	-63.58	-8.1373
19	0.00	83.99	-44.98	-63.57	-8.1373
	0.10	79.55	-43.83	-63.57	-8.3030
	0.20	75.22	-42.67	-63.57	-8.4557
	0.30	71.01	-41.50	-63.57	-8.5962
	0.40	66.92	-40.32	-63.57	-8.7251
	0.50	62.95	-39.13	-63.57	-8.8430
20	0.00	62.95	-39.13	-63.57	-8.8430
	0.10	59.10	-37.93	-63.57	-8.9508
	0.20	55.37	-36.72	-63.57	-9.0489
	0.30	51.76	-35.50	-63.57	-9.1379
	0.40	48.27	-34.28	-63.57	-9.2186
	0.50	44.90	-33.05	-63.57	-9.2913
21	0.00	44.90	-33.05	-63.58	-9.2913
	0.10	41.66	-31.81	-63.58	-9.3568
	0.20	38.54	-30.57	-63.58	-9.4154
	0.30	35.54	-29.32	-63.58	-9.4678
	0.40	32.67	-28.08	-63.58	-9.5144
	0.50	29.93	-26.82	-63.58	-9.5556
22	0.00	29.93	-26.82	-63.57	-9.5556
	0.10	27.31	-25.57	-63.57	-9.5920
	0.20	24.82	-24.31	-63.57	-9.6239
	0.30	22.45	-23.05	-63.57	-9.6518
	0.40	20.21	-21.79	-63.57	-9.6760
	0.50	18.09	-20.52	-63.57	-9.6969
23	0.00	18.09	-20.52	-63.57	-9.6969
	0.10	16.10	-19.26	-63.57	-9.7149
	0.20	14.24	-17.99	-63.57	-9.7303
	0.30	12.50	-16.72	-63.57	-9.7433
	0.40	10.90	-15.45	-63.57	-9.7543
	0.50	9.41	-14.18	-63.57	-9.7635
24	0.00	9.41	-14.18	-63.58	-9.7635
	0.10	8.06	-12.91	-63.58	-9.7712
	0.20	6.83	-11.64	-63.58	-9.7778
	0.30	5.73	-10.37	-63.58	-9.7834
	0.40	4.76	-9.09	-63.58	-9.7881
	0.50	3.91	-7.82	-63.58	-9.7921
25	0.00	3.91	-7.82	-63.58	-9.7921
	0.10	3.17	-7.04	-63.58	-9.7956
	0.20	2.50	-6.26	-63.58	-9.7985
	0.30	1.92	-5.48	-63.58	-9.8012
	0.40	1.41	-4.70	-63.58	-9.8035
	0.50	0.98	-3.91	-63.58	-9.8056
26	0.00	0.98	-3.91	-63.58	-9.8056
	0.10	0.63	-3.13	-63.58	-9.8076
	0.20	0.35	-2.35	-63.58	-9.8095
	0.30	0.16	-1.57	-63.58	-9.8114
	0.40	0.04	-0.78	-63.58	-9.8132
	0.50	0.00	0.00	-63.58	-9.8150

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Progetto
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11Codifica Documento
E E2 CL BA 000 1 001Rev.
AFoglio
171 di 313**Geometria struttura****Coordinate nodali e vincoli fissi**

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	0	0
26	0.00	-12.50	0	0	0
27	0.00	-13.00	0	1	0

Caratteristiche delle aste**Elemento strutturale:**

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
25	25	26	0.50
26	26	27	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
6	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
19	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
20	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
21	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
22	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
23	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
24	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
25	2	0.4952	0.019514	3.5E7	10000.0000	0.80
26	2	0.4952	0.019514	3.5E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Sezione 2 : diametro =0.80

Carichi applicati alla struttura**RITIRO+AT****Spostamenti imposti :**

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

Spinta Passiva**Carichi distribuiti :**

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descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-16.81	LL
	2	0.00	0.00	-16.81	-33.63	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

Risultati**Condizioni di carico****Condizione : RITIRO+AT****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	-238.53	76.85	0.00	0.0000
	0.25	-219.31	76.85	0.00	0.0000
	0.50	-200.10	76.85	0.00	0.0000
2	0.00	-200.10	76.85	0.00	0.0000
	0.25	-180.89	76.85	0.00	0.0000
	0.50	-161.68	76.85	0.00	0.0000
3	0.00	-161.68	76.85	0.00	0.0000
	0.25	-142.46	76.85	0.00	0.0000
	0.50	-123.25	76.85	0.00	0.0000
4	0.00	-123.25	76.85	0.00	0.0000
	0.25	-104.04	76.85	0.00	0.0000
	0.50	-84.83	76.85	0.00	0.0000
5	0.00	-84.83	76.85	0.00	34.8959
	0.25	-66.47	70.02	0.00	33.5386
	0.50	-49.79	63.48	0.00	32.1134
6	0.00	-49.79	63.48	0.00	32.1134
	0.25	-34.71	57.22	0.00	30.6374
	0.50	-21.16	51.26	0.00	29.1259
7	0.00	-21.16	51.26	0.00	29.1259
	0.25	-9.06	45.60	0.00	27.5928
	0.50	1.67	40.25	0.00	26.0503
8	0.00	1.67	40.25	0.00	26.0503
	0.25	11.10	35.21	0.00	24.5094
	0.50	19.30	30.48	0.00	22.9797
9	0.00	19.30	30.48	0.00	22.9797
	0.25	26.36	26.04	0.00	21.4695
	0.50	32.35	21.91	0.00	19.9861
10	0.00	32.35	21.91	0.00	19.9861
	0.25	37.34	18.07	0.00	18.5356
	0.50	41.41	14.51	0.00	17.1230
11	0.00	41.41	14.51	0.00	17.1230
	0.25	44.62	11.24	0.00	15.7525
	0.50	47.05	8.23	0.00	14.4274
12	0.00	47.05	8.23	0.00	14.4274
	0.25	48.75	5.48	0.00	13.1502
	0.50	49.81	2.98	0.00	11.9225
13	0.00	49.81	2.98	0.00	11.9225
	0.25	50.26	0.72	0.00	10.7456
	0.50	50.19	-1.31	0.00	9.6197
14	0.00	50.19	-1.31	0.00	9.6197
	0.25	49.63	-3.12	0.00	8.5450
	0.50	48.64	-4.72	0.00	7.5207
15	0.00	48.64	-4.72	0.00	7.5207
	0.25	47.28	-6.12	0.00	6.5460
	0.50	45.60	-7.34	0.00	5.6193
16	0.00	45.60	-7.34	0.00	5.6193
	0.25	43.63	-8.37	0.00	4.7391
	0.50	41.43	-9.23	0.00	3.9034
17	0.00	41.43	-9.23	0.00	3.9034
	0.25	39.03	-9.93	0.00	3.1097
	0.50	36.47	-10.47	0.00	2.3559
18	0.00	36.47	-10.47	0.00	2.3559
	0.25	33.80	-10.87	0.00	1.6391
	0.50	31.05	-11.13	0.00	0.9568
19	0.00	31.05	-11.13	0.00	0.9568
	0.25	28.25	-11.25	0.00	0.3061
	0.50	25.43	-11.25	0.00	-0.3158
20	0.00	25.43	-11.25	0.00	-0.3158
	0.25	22.63	-11.13	0.00	-0.9119
	0.50	19.88	-10.89	0.00	-1.4848
21	0.00	19.88	-10.89	0.00	-1.4848
	0.25	17.20	-10.54	0.00	-2.0375
	0.50	14.62	-10.08	0.00	-2.5727
22	0.00	14.62	-10.08	0.00	-2.5727
	0.25	12.17	-9.51	0.00	-3.0930
	0.50	9.87	-8.85	0.00	-3.6009
23	0.00	9.87	-8.85	0.00	-3.6009
	0.25	7.75	-8.08	0.00	-4.0988
	0.50	5.84	-7.21	0.00	-4.5887
24	0.00	5.84	-7.21	0.00	-4.5887

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.25	4.15	-6.25	0.00	-5.0727
	0.50	2.72	-5.19	0.00	-5.5524
25	0.00	2.72	-5.19	0.00	-5.5524
	0.25	1.57	-4.03	0.00	-6.0294
	0.50	0.71	-2.78	0.00	-6.5050
26	0.00	0.71	-2.78	0.00	-6.5050
	0.25	0.18	-1.44	0.00	-6.9799
	0.50	0.00	0.00	0.00	-7.4546

Condizione : Spinta Passiva
Sollecitazioni

asta	x	M	T	N	P
1	0.00	129.89	0.00	0.00	0.0000
	0.25	129.80	-1.05	0.00	0.0000
	0.50	129.19	-4.20	0.00	0.0000
2	0.00	129.19	-4.20	0.00	0.0000
	0.25	127.53	-9.46	0.00	0.0000
	0.50	124.29	-16.81	0.00	0.0000
3	0.00	124.29	-16.81	0.00	0.0000
	0.25	118.95	-26.27	0.00	0.0000
	0.50	110.98	-37.83	0.00	0.0000
4	0.00	110.98	-37.83	0.00	0.0000
	0.25	99.85	-51.49	0.00	0.0000
	0.50	85.06	-67.26	0.00	0.0000
5	0.00	85.06	-67.25	0.00	-28.9766
	0.25	68.96	-61.58	0.00	-27.9691
	0.50	54.25	-56.10	0.00	-26.8912
6	0.00	54.25	-56.10	0.00	-26.8912
	0.25	40.89	-50.85	0.00	-25.7580
	0.50	28.81	-45.83	0.00	-24.5830
7	0.00	28.81	-45.83	0.00	-24.5830
	0.25	17.95	-41.05	0.00	-23.3786
	0.50	8.26	-36.51	0.00	-22.1558
8	0.00	8.26	-36.51	0.00	-22.1558
	0.25	-0.32	-32.21	0.00	-20.9245
	0.50	-7.87	-28.16	0.00	-19.6934
9	0.00	-7.87	-28.16	0.00	-19.6934
	0.25	-14.43	-24.36	0.00	-18.4703
	0.50	-20.06	-20.79	0.00	-17.2617
10	0.00	-20.06	-20.79	0.00	-17.2617
	0.25	-24.84	-17.47	0.00	-16.0736
	0.50	-28.82	-14.38	0.00	-14.9106
11	0.00	-28.82	-14.38	0.00	-14.9106
	0.25	-32.05	-11.52	0.00	-13.7770
	0.50	-34.60	-8.88	0.00	-12.6759
12	0.00	-34.60	-8.88	0.00	-12.6759
	0.25	-36.51	-6.46	0.00	-11.6100
	0.50	-37.84	-4.25	0.00	-10.5813
13	0.00	-37.84	-4.25	0.00	-10.5813
	0.25	-38.65	-2.24	0.00	-9.5910
	0.50	-38.98	-0.42	0.00	-8.6401
14	0.00	-38.98	-0.42	0.00	-8.6401
	0.25	-38.88	1.21	0.00	-7.7289
	0.50	-38.39	2.67	0.00	-6.8572
15	0.00	-38.39	2.67	0.00	-6.8572
	0.25	-37.56	3.95	0.00	-6.0245
	0.50	-36.43	5.07	0.00	-5.2301
16	0.00	-36.43	5.07	0.00	-5.2301
	0.25	-35.04	6.04	0.00	-4.4728
	0.50	-33.42	6.86	0.00	-3.7511
17	0.00	-33.42	6.86	0.00	-3.7511
	0.25	-31.62	7.54	0.00	-3.0635
	0.50	-29.66	8.08	0.00	-2.4080
18	0.00	-29.66	8.08	0.00	-2.4080
	0.25	-27.59	8.50	0.00	-1.7828
	0.50	-25.42	8.79	0.00	-1.1856
19	0.00	-25.42	8.79	0.00	-1.1856
	0.25	-23.20	8.97	0.00	-0.6143
	0.50	-20.95	9.04	0.00	-0.0667
20	0.00	-20.95	9.04	0.00	-0.0667
	0.25	-18.69	9.00	0.00	0.4596
	0.50	-16.45	8.86	0.00	0.9669
21	0.00	-16.45	8.86	0.00	0.9669
	0.25	-14.27	8.62	0.00	1.4574
	0.50	-12.15	8.28	0.00	1.9334
22	0.00	-12.15	8.28	0.00	1.9334
	0.25	-10.14	7.85	0.00	2.3970
	0.50	-8.24	7.32	0.00	2.8503
23	0.00	-8.24	7.32	0.00	2.8503
	0.25	-6.48	6.71	0.00	3.2951
	0.50	-4.89	6.01	0.00	3.7334
24	0.00	-4.89	6.01	0.00	3.7334
	0.25	-3.48	5.22	0.00	4.1666

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	0.50	-2.29	4.35	0.00	4.5963
25	0.00	-2.29	4.35	0.00	4.5963
	0.25	-1.32	3.39	0.00	5.0237
	0.50	-0.60	2.34	0.00	5.4499
26	0.00	-0.60	2.34	0.00	5.4499
	0.25	-0.15	1.21	0.00	5.8756
	0.50	0.00	0.00	0.00	6.3010

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLU	1.50	1.00
FESSURA	1.00	1.00

Sollecitazioni**Combinazione : SLU**

asta	x	M	T	N	P
1	0.00	-227.90	115.28	0.00	0.0000
	0.25	-199.17	114.22	0.00	0.0000
	0.50	-170.96	111.07	0.00	0.0000
2	0.00	-170.96	111.07	0.00	0.0000
	0.25	-143.81	105.82	0.00	0.0000
	0.50	-118.23	98.46	0.00	0.0000
3	0.00	-118.23	98.46	0.00	0.0000
	0.25	-94.75	89.00	0.00	0.0000
	0.50	-73.90	77.45	0.00	0.0000
4	0.00	-73.90	77.45	0.00	0.0000
	0.25	-56.20	63.78	0.00	0.0000
	0.50	-42.18	48.02	0.00	0.0000
5	0.00	-42.18	48.02	0.00	23.3672
	0.25	-30.75	43.46	0.00	22.3388
	0.50	-20.44	39.11	0.00	21.2789
6	0.00	-20.44	39.11	0.00	21.2789
	0.25	-11.18	34.98	0.00	20.1981
	0.50	-2.93	31.06	0.00	19.1059
7	0.00	-2.93	31.06	0.00	19.1059
	0.25	4.37	27.35	0.00	18.0106
	0.50	10.77	23.87	0.00	16.9196
8	0.00	10.77	23.87	0.00	16.9196
	0.25	16.32	20.60	0.00	15.8396
	0.50	21.09	17.55	0.00	14.7761
9	0.00	21.09	17.55	0.00	14.7761
	0.25	25.11	14.71	0.00	13.7340
	0.50	28.46	12.07	0.00	12.7175
10	0.00	28.46	12.07	0.00	12.7175
	0.25	31.17	9.63	0.00	11.7298
	0.50	33.29	7.39	0.00	10.7739
11	0.00	33.29	7.39	0.00	10.7739
	0.25	34.88	5.34	0.00	9.8518
	0.50	35.97	3.46	0.00	8.9652
12	0.00	35.97	3.46	0.00	8.9652
	0.25	36.62	1.76	0.00	8.1152
	0.50	36.87	0.22	0.00	7.3025
13	0.00	36.87	0.22	0.00	7.3025
	0.25	36.75	-1.16	0.00	6.5273
	0.50	36.30	-2.39	0.00	5.7895
14	0.00	36.30	-2.39	0.00	5.7895
	0.25	35.56	-3.47	0.00	5.0886
	0.50	34.57	-4.42	0.00	4.4239
15	0.00	34.57	-4.42	0.00	4.4239
	0.25	33.37	-5.24	0.00	3.7944
	0.50	31.97	-5.93	0.00	3.1989
16	0.00	31.97	-5.93	0.00	3.1989
	0.25	30.41	-6.52	0.00	2.6359
	0.50	28.72	-6.99	0.00	2.1039
17	0.00	28.72	-6.99	0.00	2.1039
	0.25	26.92	-7.36	0.00	1.6011
	0.50	25.05	-7.63	0.00	1.1258
18	0.00	25.05	-7.63	0.00	1.1258
	0.25	23.12	-7.81	0.00	0.6759
	0.50	21.15	-7.90	0.00	0.2496
19	0.00	21.15	-7.90	0.00	0.2496
	0.25	19.17	-7.91	0.00	-0.1552
	0.50	17.20	-7.84	0.00	-0.5404
20	0.00	17.20	-7.84	0.00	-0.5404
	0.25	15.26	-7.69	0.00	-0.9081
	0.50	13.36	-7.48	0.00	-1.2603
21	0.00	13.36	-7.48	0.00	-1.2603
	0.25	11.53	-7.19	0.00	-1.5989
	0.50	9.77	-6.84	0.00	-1.9257
22	0.00	9.77	-6.84	0.00	-1.9257
	0.25	8.11	-6.42	0.00	-2.2426
	0.50	6.56	-5.95	0.00	-2.5511
23	0.00	6.56	-5.95	0.00	-2.5511

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	0.25	5.14	-5.41	0.00				-2.8530
	0.50	3.87	-4.81	0.00				-3.1497
24	0.00	3.87	-4.81	0.00				-3.1497
	0.25	2.74	-4.15	0.00				-3.4424
	0.50	1.79	-3.44	0.00				-3.7322
25	0.00	1.79	-3.44	0.00				-3.7322
	0.25	1.03	-2.66	0.00				-4.0204
	0.50	0.47	-1.83	0.00				-4.3075
26	0.00	0.47	-1.83	0.00				-4.3075
	0.25	0.12	-0.94	0.00				-4.5942
	0.50	0.00	0.00	0.00				-4.8808

Combinazione : FESSURA

asta	x	M	T	N	P
1	0.00	-108.64	76.85	0.00	0.0000
	0.25	-89.51	75.80	0.00	0.0000
	0.50	-70.91	72.65	0.00	0.0000
2	0.00	-70.91	72.65	0.00	0.0000
	0.25	-53.36	67.39	0.00	0.0000
	0.50	-37.39	60.04	0.00	0.0000
3	0.00	-37.39	60.04	0.00	0.0000
	0.25	-23.52	50.58	0.00	0.0000
	0.50	-12.28	39.02	0.00	0.0000
4	0.00	-12.28	39.02	0.00	0.0000
	0.25	-4.18	25.36	0.00	0.0000
	0.50	0.23	9.60	0.00	0.0000
5	0.00	0.23	9.60	0.00	5.9193
	0.25	2.48	8.45	0.00	5.5695
	0.50	4.46	7.37	0.00	5.2222
6	0.00	4.46	7.37	0.00	5.2222
	0.25	6.18	6.37	0.00	4.8794
	0.50	7.65	5.43	0.00	4.5429
7	0.00	7.65	5.43	0.00	4.5429
	0.25	8.89	4.55	0.00	4.2142
	0.50	9.93	3.75	0.00	3.8945
8	0.00	9.93	3.75	0.00	3.8945
	0.25	10.77	3.00	0.00	3.5849
	0.50	11.44	2.31	0.00	3.2863
9	0.00	11.44	2.31	0.00	3.2863
	0.25	11.93	1.69	0.00	2.9993
	0.50	12.28	1.12	0.00	2.7244
10	0.00	12.28	1.12	0.00	2.7244
	0.25	12.50	0.60	0.00	2.4620
	0.50	12.59	0.13	0.00	2.2124
11	0.00	12.59	0.13	0.00	2.2124
	0.25	12.57	-0.28	0.00	1.9755
	0.50	12.45	-0.65	0.00	1.7515
12	0.00	12.45	-0.65	0.00	1.7515
	0.25	12.24	-0.98	0.00	1.5401
	0.50	11.96	-1.27	0.00	1.3412
13	0.00	11.96	-1.27	0.00	1.3412
	0.25	11.61	-1.52	0.00	1.1545
	0.50	11.21	-1.73	0.00	0.9796
14	0.00	11.21	-1.73	0.00	0.9796
	0.25	10.75	-1.91	0.00	0.8161
	0.50	10.25	-2.06	0.00	0.6636
15	0.00	10.25	-2.06	0.00	0.6636
	0.25	9.72	-2.18	0.00	0.5214
	0.50	9.17	-2.27	0.00	0.3892
16	0.00	9.17	-2.27	0.00	0.3892
	0.25	8.59	-2.33	0.00	0.2664
	0.50	8.01	-2.37	0.00	0.1522
17	0.00	8.01	-2.37	0.00	0.1522
	0.25	7.41	-2.39	0.00	0.0463
	0.50	6.81	-2.39	0.00	-0.0521
18	0.00	6.81	-2.39	0.00	-0.0521
	0.25	6.21	-2.37	0.00	-0.1436
	0.50	5.63	-2.33	0.00	-0.2288
19	0.00	5.63	-2.33	0.00	-0.2288
	0.25	5.05	-2.28	0.00	-0.3082
	0.50	4.49	-2.21	0.00	-0.3825
20	0.00	4.49	-2.21	0.00	-0.3825
	0.25	3.94	-2.13	0.00	-0.4522
	0.50	3.42	-2.03	0.00	-0.5179
21	0.00	3.42	-2.03	0.00	-0.5179
	0.25	2.93	-1.92	0.00	-0.5801
	0.50	2.46	-1.80	0.00	-0.6393
22	0.00	2.46	-1.80	0.00	-0.6393
	0.25	2.03	-1.67	0.00	-0.6960
	0.50	1.63	-1.52	0.00	-0.7507
23	0.00	1.63	-1.52	0.00	-0.7507
	0.25	1.27	-1.37	0.00	-0.8036
	0.50	0.95	-1.20	0.00	-0.8553

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24	0.00	0.95	-1.20	0.00	-0.8553			
	0.25	0.67	-1.03	0.00	-0.9060			
	0.50	0.43	-0.84	0.00	-0.9561			
25	0.00	0.43	-0.84	0.00	-0.9561			
	0.25	0.25	-0.65	0.00	-1.0057			
	0.50	0.11	-0.44	0.00	-1.0550			
26	0.00	0.11	-0.44	0.00	-1.0550			
	0.25	0.03	-0.23	0.00	-1.1043			
	0.50	0.00	0.00	0.00	-1.1535			

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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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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	1	0

Caratteristiche delle aste**Elemento strutturale :**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
6	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura**Nppm****Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

Tppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Mppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Mbp=Mb+Tb*(H+s)**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-122.02

Tbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	35.63	0.00	0.00

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179 di 313**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.	riferim.
	1	0.00	0.00	3.81	3.81	LL
	2	0.00	0.00	3.81	3.81	LL
	3	0.00	0.00	3.81	3.81	LL
	4	0.00	0.00	3.81	3.81	LL
	5	0.00	0.00	4.92	4.92	LL
	6	0.00	0.00	4.92	4.92	LL
	7	0.00	0.00	4.92	4.92	LL
	8	0.00	0.00	4.92	4.92	LL
	9	0.00	0.00	4.92	4.92	LL
	10	0.00	0.00	4.92	4.92	LL
	11	0.00	0.00	4.92	4.92	LL
	12	0.00	0.00	4.92	4.92	LL
	13	0.00	0.00	4.92	4.92	LL
	14	0.00	0.00	4.92	4.92	LL
	15	0.00	0.00	4.92	4.92	LL
	16	0.00	0.00	4.92	4.92	LL
	17	0.00	0.00	4.92	4.92	LL
	18	0.00	0.00	4.92	4.92	LL

Tsacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

Mqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

Msacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

Nbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-54.83	0.00

Risultati**Condizioni di carico****Condizione : Nppm****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
2	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
3	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
4	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000

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	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
5	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
6	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
7	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
8	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
9	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
10	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
11	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
12	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
13	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
14	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
15	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
16	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
17	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
18	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

Condizione : Tppm
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000

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	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000
2	0.00	1.50	3.00	0.00	0.0000
	0.10	1.80	3.00	0.00	0.0000
	0.20	2.10	3.00	0.00	0.0000
	0.30	2.40	3.00	0.00	0.0000
	0.40	2.70	3.00	0.00	0.0000
	0.50	3.00	3.00	0.00	0.0000
3	0.00	3.00	3.00	0.00	0.0000
	0.10	3.30	3.00	0.00	0.0000
	0.20	3.60	3.00	0.00	0.0000
	0.30	3.90	3.00	0.00	0.0000
	0.40	4.20	3.00	0.00	0.0000
	0.50	4.50	3.00	0.00	0.0000
4	0.00	4.50	3.00	0.00	0.0000
	0.10	4.80	3.00	0.00	0.0000
	0.20	5.10	3.00	0.00	0.0000
	0.30	5.40	3.00	0.00	0.0000
	0.40	5.70	3.00	0.00	0.0000
	0.50	6.00	3.00	0.00	0.0000
5	0.00	6.00	3.00	0.00	3.4616
	0.10	6.29	2.73	0.00	3.3531
	0.20	6.55	2.46	0.00	3.2455
	0.30	6.78	2.21	0.00	3.1391
	0.40	6.99	1.96	0.00	3.0337
	0.50	7.17	1.73	0.00	2.9295
6	0.00	7.17	1.73	0.00	2.9295
	0.10	7.33	1.50	0.00	2.8264
	0.20	7.47	1.28	0.00	2.7246
	0.30	7.59	1.06	0.00	2.6239
	0.40	7.68	0.86	0.00	2.5245
	0.50	7.76	0.66	0.00	2.4264
7	0.00	7.76	0.66	0.00	2.4264
	0.10	7.82	0.47	0.00	2.3295
	0.20	7.85	0.29	0.00	2.2339
	0.30	7.87	0.11	0.00	2.1395
	0.40	7.88	-0.05	0.00	2.0465
	0.50	7.86	-0.21	0.00	1.9547
8	0.00	7.86	-0.21	0.00	1.9547
	0.10	7.84	-0.37	0.00	1.8642
	0.20	7.79	-0.51	0.00	1.7750
	0.30	7.73	-0.65	0.00	1.6871
	0.40	7.66	-0.78	0.00	1.6004
	0.50	7.58	-0.90	0.00	1.5150
9	0.00	7.58	-0.90	0.00	1.5150
	0.10	7.48	-1.02	0.00	1.4308
	0.20	7.37	-1.13	0.00	1.3478
	0.30	7.25	-1.24	0.00	1.2660
	0.40	7.13	-1.33	0.00	1.1854
	0.50	6.99	-1.43	0.00	1.1060
10	0.00	6.99	-1.43	0.00	1.1060
	0.10	6.84	-1.51	0.00	1.0277
	0.20	6.69	-1.59	0.00	0.9505
	0.30	6.52	-1.66	0.00	0.8744
	0.40	6.35	-1.73	0.00	0.7994
	0.50	6.18	-1.79	0.00	0.7254
11	0.00	6.18	-1.79	0.00	0.7254
	0.10	6.00	-1.85	0.00	0.6524
	0.20	5.81	-1.89	0.00	0.5804
	0.30	5.62	-1.94	0.00	0.5093
	0.40	5.42	-1.98	0.00	0.4392
	0.50	5.22	-2.01	0.00	0.3699
12	0.00	5.22	-2.01	0.00	0.3699
	0.10	5.02	-2.04	0.00	0.3015
	0.20	4.81	-2.06	0.00	0.2339
	0.30	4.61	-2.07	0.00	0.1671
	0.40	4.40	-2.08	0.00	0.1010
	0.50	4.19	-2.09	0.00	0.0357
13	0.00	4.19	-2.09	0.00	0.0357
	0.10	3.98	-2.09	0.00	-0.0290
	0.20	3.77	-2.08	0.00	-0.0930
	0.30	3.57	-2.07	0.00	-0.1564
	0.40	3.36	-2.06	0.00	-0.2192
	0.50	3.15	-2.04	0.00	-0.2815
14	0.00	3.15	-2.04	0.00	-0.2815
	0.10	2.95	-2.01	0.00	-0.3432
	0.20	2.75	-1.98	0.00	-0.4045
	0.30	2.56	-1.95	0.00	-0.4653
	0.40	2.36	-1.91	0.00	-0.5257
	0.50	2.17	-1.87	0.00	-0.5858
15	0.00	2.17	-1.87	0.00	-0.5858
	0.10	1.99	-1.82	0.00	-0.6454
	0.20	1.81	-1.76	0.00	-0.7048
	0.30	1.64	-1.70	0.00	-0.7638
	0.40	1.47	-1.64	0.00	-0.8226
	0.50	1.31	-1.57	0.00	-0.8812
16	0.00	1.31	-1.57	0.00	-0.8812
	0.10	1.16	-1.50	0.00	-0.9395
	0.20	1.01	-1.42	0.00	-0.9976
	0.30	0.87	-1.34	0.00	-1.0556
	0.40	0.74	-1.25	0.00	-1.1135
	0.50	0.62	-1.16	0.00	-1.1712
17	0.00	0.62	-1.16	0.00	-1.1712

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	0.10	0.51	-1.07	0.00	-1.2288
	0.20	0.41	-0.97	0.00	-1.2863
	0.30	0.31	-0.86	0.00	-1.3438
	0.40	0.23	-0.75	0.00	-1.4012
	0.50	0.16	-0.64	0.00	-1.4586
18	0.00	0.16	-0.64	0.00	-1.4586
	0.10	0.11	-0.52	0.00	-1.5159
	0.20	0.06	-0.40	0.00	-1.5732
	0.30	0.03	-0.27	0.00	-1.6306
	0.40	0.01	-0.14	0.00	-1.6879
	0.50	0.00	0.00	0.00	-1.7452

Condizione : Mppm
Sollecitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
3	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
4	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
5	0.00	8.30	0.00	0.00	1.6062
	0.10	8.29	-0.13	0.00	1.5363
	0.20	8.28	-0.25	0.00	1.4678
	0.30	8.24	-0.36	0.00	1.4006
	0.40	8.20	-0.47	0.00	1.3348
	0.50	8.15	-0.57	0.00	1.2703
6	0.00	8.15	-0.57	0.00	1.2703
	0.10	8.09	-0.67	0.00	1.2071
	0.20	8.02	-0.77	0.00	1.1453
	0.30	7.94	-0.85	0.00	1.0847
	0.40	7.85	-0.94	0.00	1.0255
	0.50	7.75	-1.02	0.00	0.9675
7	0.00	7.75	-1.02	0.00	0.9675
	0.10	7.64	-1.09	0.00	0.9108
	0.20	7.53	-1.16	0.00	0.8554
	0.30	7.41	-1.23	0.00	0.8011
	0.40	7.28	-1.29	0.00	0.7481
	0.50	7.15	-1.35	0.00	0.6963
8	0.00	7.15	-1.35	0.00	0.6963
	0.10	7.01	-1.40	0.00	0.6456
	0.20	6.87	-1.45	0.00	0.5961
	0.30	6.72	-1.50	0.00	0.5477
	0.40	6.57	-1.54	0.00	0.5004
	0.50	6.42	-1.58	0.00	0.4541
9	0.00	6.42	-1.58	0.00	0.4541
	0.10	6.26	-1.61	0.00	0.4089
	0.20	6.09	-1.64	0.00	0.3647
	0.30	5.93	-1.67	0.00	0.3216
	0.40	5.76	-1.69	0.00	0.2793
	0.50	5.59	-1.71	0.00	0.2381
10	0.00	5.59	-1.71	0.00	0.2381
	0.10	5.42	-1.73	0.00	0.1977
	0.20	5.24	-1.75	0.00	0.1582
	0.30	5.07	-1.76	0.00	0.1196
	0.40	4.89	-1.77	0.00	0.0818
	0.50	4.72	-1.77	0.00	0.0448
11	0.00	4.72	-1.77	0.00	0.0448
	0.10	4.54	-1.77	0.00	0.0085
	0.20	4.36	-1.77	0.00	-0.0270
	0.30	4.18	-1.77	0.00	-0.0618
	0.40	4.01	-1.76	0.00	-0.0959
	0.50	3.83	-1.75	0.00	-0.1293
12	0.00	3.83	-1.75	0.00	-0.1293
	0.10	3.66	-1.74	0.00	-0.1621
	0.20	3.48	-1.73	0.00	-0.1944
	0.30	3.31	-1.71	0.00	-0.2260
	0.40	3.14	-1.69	0.00	-0.2572
	0.50	2.97	-1.67	0.00	-0.2878
13	0.00	2.97	-1.67	0.00	-0.2878
	0.10	2.81	-1.64	0.00	-0.3179
	0.20	2.65	-1.62	0.00	-0.3476
	0.30	2.49	-1.59	0.00	-0.3768
	0.40	2.33	-1.56	0.00	-0.4057
	0.50	2.17	-1.52	0.00	-0.4341
14	0.00	2.17	-1.52	0.00	-0.4341

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	0.10	2.02	-1.49	0.00	-0.4622
	0.20	1.88	-1.45	0.00	-0.4900
	0.30	1.73	-1.41	0.00	-0.5174
	0.40	1.59	-1.37	0.00	-0.5446
	0.50	1.46	-1.32	0.00	-0.5715
15	0.00	1.46	-1.32	0.00	-0.5715
	0.10	1.33	-1.28	0.00	-0.5982
	0.20	1.20	-1.23	0.00	-0.6247
	0.30	1.08	-1.18	0.00	-0.6510
	0.40	0.97	-1.12	0.00	-0.6771
	0.50	0.86	-1.07	0.00	-0.7030
16	0.00	0.86	-1.07	0.00	-0.7030
	0.10	0.75	-1.01	0.00	-0.7288
	0.20	0.66	-0.95	0.00	-0.7545
	0.30	0.56	-0.89	0.00	-0.7800
	0.40	0.48	-0.83	0.00	-0.8055
	0.50	0.40	-0.76	0.00	-0.8309
17	0.00	0.40	-0.76	0.00	-0.8309
	0.10	0.33	-0.70	0.00	-0.8562
	0.20	0.26	-0.63	0.00	-0.8815
	0.30	0.20	-0.56	0.00	-0.9068
	0.40	0.15	-0.48	0.00	-0.9320
	0.50	0.10	-0.41	0.00	-0.9571
18	0.00	0.10	-0.41	0.00	-0.9571
	0.10	0.07	-0.33	0.00	-0.9823
	0.20	0.04	-0.25	0.00	-1.0074
	0.30	0.02	-0.17	0.00	-1.0326
	0.40	0.00	-0.09	0.00	-1.0577
	0.50	0.00	0.00	0.00	-1.0829

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

Sollecitazioni

asta	x	M	T	N	P
1	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
2	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
3	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
4	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
5	0.00	122.02	0.00	0.00	23.6119
	0.10	121.92	-1.84	0.00	22.5848
	0.20	121.65	-3.60	0.00	21.5775
	0.30	121.21	-5.29	0.00	20.5900
	0.40	120.60	-6.89	0.00	19.6223
	0.50	119.83	-8.42	0.00	18.6743
6	0.00	119.83	-8.42	0.00	18.6743
	0.10	118.91	-9.87	0.00	17.7457
	0.20	117.86	-11.25	0.00	16.8366
	0.30	116.67	-12.56	0.00	15.9466
	0.40	115.35	-13.79	0.00	15.0756
	0.50	113.91	-14.96	0.00	14.2235
7	0.00	113.91	-14.96	0.00	14.2235
	0.10	112.36	-16.06	0.00	13.3899
	0.20	110.70	-17.10	0.00	12.5746
	0.30	108.94	-18.07	0.00	11.7774
	0.40	107.09	-18.98	0.00	10.9979
	0.50	105.15	-19.83	0.00	10.2358
8	0.00	105.15	-19.83	0.00	10.2358
	0.10	103.13	-20.61	0.00	9.4909
	0.20	101.03	-21.34	0.00	8.7628
	0.30	98.86	-22.01	0.00	8.0511
	0.40	96.63	-22.63	0.00	7.3556
	0.50	94.34	-23.19	0.00	6.6758
9	0.00	94.34	-23.19	0.00	6.6758
	0.10	91.99	-23.69	0.00	6.0114
	0.20	89.60	-24.14	0.00	5.3619
	0.30	87.16	-24.55	0.00	4.7271
	0.40	84.69	-24.90	0.00	4.1065
	0.50	82.19	-25.20	0.00	3.4996
10	0.00	82.19	-25.20	0.00	3.4996
	0.10	79.65	-25.46	0.00	2.9062
	0.20	77.10	-25.67	0.00	2.3258
	0.30	74.52	-25.83	0.00	1.7579
	0.40	71.93	-25.95	0.00	1.2021
	0.50	69.33	-26.02	0.00	0.6581
11	0.00	69.33	-26.02	0.00	0.6581

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	0.10	66.73	-26.05	0.00	0.1253
	0.20	64.12	-26.04	0.00	-0.3965
	0.30	61.52	-25.99	0.00	-0.9079
	0.40	58.93	-25.90	0.00	-1.4093
	0.50	56.34	-25.77	0.00	-1.9011
12	0.00	56.34	-25.77	0.00	-1.9011
	0.10	53.78	-25.59	0.00	-2.3837
	0.20	51.23	-25.38	0.00	-2.8575
	0.30	48.70	-25.14	0.00	-3.3230
	0.40	46.20	-24.85	0.00	-3.7806
	0.50	43.73	-24.54	0.00	-4.2306
13	0.00	43.73	-24.54	0.00	-4.2306
	0.10	41.29	-24.18	0.00	-4.6735
	0.20	38.89	-23.79	0.00	-5.1097
	0.30	36.54	-23.37	0.00	-5.5395
	0.40	34.22	-22.91	0.00	-5.9634
	0.50	31.96	-22.41	0.00	-6.3817
14	0.00	31.96	-22.41	0.00	-6.3817
	0.10	29.74	-21.89	0.00	-6.7947
	0.20	27.58	-21.33	0.00	-7.2030
	0.30	25.48	-20.74	0.00	-7.6067
	0.40	23.43	-20.12	0.00	-8.0063
	0.50	21.45	-19.46	0.00	-8.4021
15	0.00	21.45	-19.46	0.00	-8.4021
	0.10	19.54	-18.78	0.00	-8.7944
	0.20	17.70	-18.06	0.00	-9.1835
	0.30	15.93	-17.31	0.00	-9.5697
	0.40	14.24	-16.53	0.00	-9.9533
	0.50	12.63	-15.72	0.00	-10.3346
16	0.00	12.63	-15.72	0.00	-10.3346
	0.10	11.10	-14.88	0.00	-10.7138
	0.20	9.65	-14.01	0.00	-11.0912
	0.30	8.29	-13.11	0.00	-11.4671
	0.40	7.03	-12.18	0.00	-11.8416
	0.50	5.86	-11.22	0.00	-12.2149
17	0.00	5.86	-11.22	0.00	-12.2149
	0.10	4.78	-10.23	0.00	-12.5873
	0.20	3.81	-9.22	0.00	-12.9589
	0.30	2.94	-8.17	0.00	-13.3299
	0.40	2.18	-7.09	0.00	-13.7004
	0.50	1.53	-5.98	0.00	-14.0705
18	0.00	1.53	-5.98	0.00	-14.0705
	0.10	0.98	-4.84	0.00	-14.4404
	0.20	0.56	-3.68	0.00	-14.8102
	0.30	0.25	-2.48	0.00	-15.1798
	0.40	0.06	-1.26	0.00	-15.5494
	0.50	0.00	0.00	0.00	-15.9190

Condizione : Tbp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	35.63	0.00	0.0000
	0.10	3.56	35.63	0.00	0.0000
	0.20	7.13	35.63	0.00	0.0000
	0.30	10.69	35.63	0.00	0.0000
	0.40	14.25	35.63	0.00	0.0000
	0.50	17.81	35.63	0.00	0.0000
2	0.00	17.81	35.63	0.00	0.0000
	0.10	21.37	35.63	0.00	0.0000
	0.20	24.94	35.63	0.00	0.0000
	0.30	28.50	35.63	0.00	0.0000
	0.40	32.06	35.63	0.00	0.0000
	0.50	35.62	35.63	0.00	0.0000
3	0.00	35.63	35.62	0.00	0.0000
	0.10	39.19	35.62	0.00	0.0000
	0.20	42.75	35.62	0.00	0.0000
	0.30	46.31	35.62	0.00	0.0000
	0.40	49.87	35.62	0.00	0.0000
	0.50	53.44	35.62	0.00	0.0000
4	0.00	53.44	35.63	0.00	0.0000
	0.10	57.00	35.63	0.00	0.0000
	0.20	60.56	35.63	0.00	0.0000
	0.30	64.13	35.63	0.00	0.0000
	0.40	67.69	35.63	0.00	0.0000
	0.50	71.25	35.63	0.00	0.0000
5	0.00	71.25	35.63	0.00	41.1069
	0.10	74.65	32.40	0.00	39.8178
	0.20	77.73	29.27	0.00	38.5409
	0.30	80.51	26.25	0.00	37.2766
	0.40	82.99	23.32	0.00	36.0254
	0.50	85.18	20.50	0.00	34.7878
6	0.00	85.18	20.50	0.00	34.7878
	0.10	87.09	17.77	0.00	33.5640
	0.20	88.73	15.14	0.00	32.3545
	0.30	90.12	12.61	0.00	31.1593
	0.40	91.26	10.17	0.00	29.9789
	0.50	92.16	7.83	0.00	28.8133
7	0.00	92.16	7.83	0.00	28.8133
	0.10	92.83	5.57	0.00	27.6628
	0.20	93.28	3.41	0.00	26.5273
	0.30	93.51	1.34	0.00	25.4071
	0.40	93.55	-0.64	0.00	24.3021
	0.50	93.39	-2.54	0.00	23.2124
8	0.00	93.39	-2.54	0.00	23.2124

GENERAL CONTRACTOR



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	0.10	93.04	-4.35	0.00	22.1378
	0.20	92.52	-6.07	0.00	21.0784
	0.30	91.83	-7.71	0.00	20.0341
	0.40	90.98	-9.27	0.00	19.0048
	0.50	89.98	-10.74	0.00	17.9903
9	0.00	89.98	-10.74	0.00	17.9903
	0.10	88.84	-12.14	0.00	16.9904
	0.20	87.56	-13.45	0.00	16.0050
	0.30	86.15	-14.69	0.00	15.0339
	0.40	84.62	-15.85	0.00	14.0768
	0.50	82.98	-16.94	0.00	13.1335
10	0.00	82.98	-16.94	0.00	13.1335
	0.10	81.24	-17.95	0.00	12.2037
	0.20	79.39	-18.88	0.00	11.2872
	0.30	77.46	-19.75	0.00	10.3836
	0.40	75.45	-20.54	0.00	9.4926
	0.50	73.36	-21.26	0.00	8.6139
11	0.00	73.36	-21.26	0.00	8.6139
	0.10	71.20	-21.92	0.00	7.7472
	0.20	68.97	-22.50	0.00	6.8921
	0.30	66.70	-23.02	0.00	6.0482
	0.40	64.37	-23.47	0.00	5.2152
	0.50	62.01	-23.85	0.00	4.3926
12	0.00	62.01	-23.85	0.00	4.3926
	0.10	59.61	-24.17	0.00	3.5802
	0.20	57.18	-24.42	0.00	2.7775
	0.30	54.72	-24.61	0.00	1.9841
	0.40	52.26	-24.74	0.00	1.1996
	0.50	49.78	-24.80	0.00	0.4236
13	0.00	49.78	-24.80	0.00	0.4236
	0.10	47.30	-24.81	0.00	-0.3442
	0.20	44.82	-24.75	0.00	-1.1044
	0.30	42.35	-24.63	0.00	-1.8572
	0.40	39.90	-24.45	0.00	-2.6032
	0.50	37.46	-24.21	0.00	-3.3426
14	0.00	37.46	-24.21	0.00	-3.3426
	0.10	35.05	-23.92	0.00	-4.0760
	0.20	32.68	-23.56	0.00	-4.8036
	0.30	30.34	-23.15	0.00	-5.5259
	0.40	28.05	-22.68	0.00	-6.2433
	0.50	25.81	-22.16	0.00	-6.9560
15	0.00	25.81	-22.16	0.00	-6.9560
	0.10	23.62	-21.57	0.00	-7.6646
	0.20	21.50	-20.93	0.00	-8.3693
	0.30	19.44	-20.24	0.00	-9.0706
	0.40	17.45	-19.49	0.00	-9.7686
	0.50	15.54	-18.68	0.00	-10.4638
16	0.00	15.54	-18.68	0.00	-10.4638
	0.10	13.72	-17.82	0.00	-11.1565
	0.20	11.98	-16.90	0.00	-11.8469
	0.30	10.34	-15.93	0.00	-12.5354
	0.40	8.80	-14.90	0.00	-13.2222
	0.50	7.36	-13.82	0.00	-13.9076
17	0.00	7.36	-13.82	0.00	-13.9076
	0.10	6.04	-12.68	0.00	-14.5918
	0.20	4.83	-11.49	0.00	-15.2749
	0.30	3.74	-10.24	0.00	-15.9573
	0.40	2.78	-8.94	0.00	-16.6391
	0.50	1.95	-7.59	0.00	-17.3204
18	0.00	1.95	-7.59	0.00	-17.3204
	0.10	1.26	-6.18	0.00	-18.0014
	0.20	0.72	-4.72	0.00	-18.6822
	0.30	0.32	-3.20	0.00	-19.3629
	0.40	0.08	-1.63	0.00	-20.0435
	0.50	0.00	0.00	0.00	-20.7241

Condizione : qs

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.02	0.38	0.00	0.0000
	0.20	0.08	0.76	0.00	0.0000
	0.30	0.17	1.14	0.00	0.0000
	0.40	0.30	1.52	0.00	0.0000
	0.50	0.48	1.90	0.00	0.0000
2	0.00	0.48	1.90	0.00	0.0000
	0.10	0.69	2.28	0.00	0.0000
	0.20	0.93	2.66	0.00	0.0000
	0.30	1.22	3.04	0.00	0.0000
	0.40	1.54	3.43	0.00	0.0000
	0.50	1.90	3.81	0.00	0.0000
3	0.00	1.90	3.81	0.00	0.0000
	0.10	2.30	4.19	0.00	0.0000
	0.20	2.74	4.57	0.00	0.0000
	0.30	3.22	4.95	0.00	0.0000
	0.40	3.73	5.33	0.00	0.0000
	0.50	4.28	5.71	0.00	0.0000
4	0.00	4.28	5.71	0.00	0.0000
	0.10	4.87	6.09	0.00	0.0000
	0.20	5.50	6.47	0.00	0.0000
	0.30	6.17	6.85	0.00	0.0000
	0.40	6.87	7.23	0.00	0.0000
	0.50	7.61	7.61	0.00	0.0000
5	0.00	7.61	7.61	0.00	13.4728

GENERAL CONTRACTOR



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	0.10	8.34	7.04	0.00	13.2615
	0.20	9.02	6.48	0.00	13.0515
	0.30	9.64	5.94	0.00	12.8429
	0.40	10.21	5.41	0.00	12.6359
	0.50	10.72	4.91	0.00	12.4306
6	0.00	10.72	4.91	0.00	12.4306
	0.10	11.19	4.41	0.00	12.2271
	0.20	11.61	3.94	0.00	12.0253
	0.30	11.98	3.48	0.00	11.8255
	0.40	12.30	3.03	0.00	11.6276
	0.50	12.59	2.61	0.00	11.4317
7	0.00	12.59	2.61	0.00	11.4317
	0.10	12.83	2.19	0.00	11.2379
	0.20	13.02	1.80	0.00	11.0461
	0.30	13.18	1.41	0.00	10.8565
	0.40	13.31	1.05	0.00	10.6690
	0.50	13.39	0.69	0.00	10.4837
8	0.00	13.39	0.69	0.00	10.4837
	0.10	13.45	0.36	0.00	10.3006
	0.20	13.47	0.03	0.00	10.1196
	0.30	13.45	-0.27	0.00	9.9409
	0.40	13.41	-0.57	0.00	9.7643
	0.50	13.34	-0.85	0.00	9.5900
9	0.00	13.34	-0.85	0.00	9.5900
	0.10	13.24	-1.12	0.00	9.4178
	0.20	13.12	-1.37	0.00	9.2477
	0.30	12.97	-1.61	0.00	9.0798
	0.40	12.80	-1.83	0.00	8.9140
	0.50	12.60	-2.05	0.00	8.7503
10	0.00	12.60	-2.05	0.00	8.7503
	0.10	12.39	-2.25	0.00	8.5887
	0.20	12.15	-2.43	0.00	8.4291
	0.30	11.90	-2.61	0.00	8.2714
	0.40	11.63	-2.77	0.00	8.1157
	0.50	11.35	-2.92	0.00	7.9619
11	0.00	11.35	-2.92	0.00	7.9619
	0.10	11.05	-3.06	0.00	7.8099
	0.20	10.74	-3.18	0.00	7.6598
	0.30	10.41	-3.30	0.00	7.5114
	0.40	10.08	-3.40	0.00	7.3646
	0.50	9.73	-3.49	0.00	7.2196
12	0.00	9.73	-3.49	0.00	7.2196
	0.10	9.38	-3.57	0.00	7.0761
	0.20	9.02	-3.63	0.00	6.9341
	0.30	8.65	-3.69	0.00	6.7936
	0.40	8.28	-3.74	0.00	6.6545
	0.50	7.91	-3.77	0.00	6.5168
13	0.00	7.91	-3.77	0.00	6.5168
	0.10	7.53	-3.79	0.00	6.3804
	0.20	7.15	-3.80	0.00	6.2452
	0.30	6.77	-3.80	0.00	6.1111
	0.40	6.39	-3.80	0.00	5.9782
	0.50	6.01	-3.78	0.00	5.8462
14	0.00	6.01	-3.78	0.00	5.8462
	0.10	5.63	-3.75	0.00	5.7153
	0.20	5.26	-3.70	0.00	5.5853
	0.30	4.89	-3.65	0.00	5.4562
	0.40	4.53	-3.59	0.00	5.3278
	0.50	4.18	-3.52	0.00	5.2002
15	0.00	4.18	-3.52	0.00	5.2002
	0.10	3.83	-3.44	0.00	5.0733
	0.20	3.49	-3.35	0.00	4.9470
	0.30	3.16	-3.24	0.00	4.8212
	0.40	2.84	-3.13	0.00	4.6960
	0.50	2.53	-3.01	0.00	4.5712
16	0.00	2.53	-3.01	0.00	4.5712
	0.10	2.24	-2.88	0.00	4.4469
	0.20	1.96	-2.74	0.00	4.3229
	0.30	1.69	-2.58	0.00	4.1992
	0.40	1.44	-2.42	0.00	4.0758
	0.50	1.21	-2.25	0.00	3.9527
17	0.00	1.21	-2.25	0.00	3.9527
	0.10	0.99	-2.07	0.00	3.8297
	0.20	0.79	-1.88	0.00	3.7069
	0.30	0.62	-1.68	0.00	3.5843
	0.40	0.46	-1.47	0.00	3.4617
	0.50	0.32	-1.25	0.00	3.3392
18	0.00	0.32	-1.25	0.00	3.3392
	0.10	0.21	-1.02	0.00	3.2168
	0.20	0.12	-0.78	0.00	3.0944
	0.30	0.05	-0.53	0.00	2.9720
	0.40	0.01	-0.27	0.00	2.8496
	0.50	0.00	0.00	0.00	2.7272

Condizione : Tsacpv

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000
	0.40	6.42	7.14	0.00	0.0000
	0.50	7.14	7.14	0.00	0.0000
3	0.00	7.14	7.14	0.00	0.0000
	0.10	7.85	7.14	0.00	0.0000
	0.20	8.56	7.14	0.00	0.0000
	0.30	9.28	7.14	0.00	0.0000
	0.40	9.99	7.14	0.00	0.0000
	0.50	10.70	7.14	0.00	0.0000
4	0.00	10.70	7.14	0.00	0.0000
	0.10	11.42	7.14	0.00	0.0000
	0.20	12.13	7.14	0.00	0.0000
	0.30	12.85	7.14	0.00	0.0000
	0.40	13.56	7.14	0.00	0.0000
	0.50	14.27	7.14	0.00	0.0000
5	0.00	14.27	7.14	0.00	8.2346
	0.10	14.95	6.49	0.00	7.9764
	0.20	15.57	5.86	0.00	7.7206
	0.30	16.13	5.26	0.00	7.4674
	0.40	16.62	4.67	0.00	7.2167
	0.50	17.06	4.11	0.00	6.9688
6	0.00	17.06	4.11	0.00	6.9688
	0.10	17.45	3.56	0.00	6.7236
	0.20	17.78	3.03	0.00	6.4813
	0.30	18.05	2.53	0.00	6.2419
	0.40	18.28	2.04	0.00	6.0055
	0.50	18.46	1.57	0.00	5.7720
7	0.00	18.46	1.57	0.00	5.7720
	0.10	18.60	1.12	0.00	5.5415
	0.20	18.69	0.68	0.00	5.3140
	0.30	18.73	0.27	0.00	5.0896
	0.40	18.74	-0.13	0.00	4.8683
	0.50	18.71	-0.51	0.00	4.6500
8	0.00	18.71	-0.51	0.00	4.6500
	0.10	18.64	-0.87	0.00	4.4347
	0.20	18.53	-1.22	0.00	4.2225
	0.30	18.40	-1.54	0.00	4.0133
	0.40	18.23	-1.86	0.00	3.8071
	0.50	18.03	-2.15	0.00	3.6039
9	0.00	18.03	-2.15	0.00	3.6039
	0.10	17.80	-2.43	0.00	3.4036
	0.20	17.54	-2.69	0.00	3.2062
	0.30	17.26	-2.94	0.00	3.0116
	0.40	16.95	-3.18	0.00	2.8199
	0.50	16.62	-3.39	0.00	2.6309
10	0.00	16.62	-3.39	0.00	2.6309
	0.10	16.27	-3.60	0.00	2.4447
	0.20	15.90	-3.78	0.00	2.2611
	0.30	15.52	-3.96	0.00	2.0801
	0.40	15.11	-4.12	0.00	1.9016
	0.50	14.69	-4.26	0.00	1.7256
11	0.00	14.69	-4.26	0.00	1.7256
	0.10	14.26	-4.39	0.00	1.5519
	0.20	13.82	-4.51	0.00	1.3806
	0.30	13.36	-4.61	0.00	1.2116
	0.40	12.90	-4.70	0.00	1.0447
	0.50	12.42	-4.78	0.00	0.8799
12	0.00	12.42	-4.78	0.00	0.8799
	0.10	11.94	-4.84	0.00	0.7172
	0.20	11.45	-4.89	0.00	0.5564
	0.30	10.96	-4.93	0.00	0.3975
	0.40	10.47	-4.96	0.00	0.2403
	0.50	9.97	-4.97	0.00	0.0849
13	0.00	9.97	-4.97	0.00	0.0849
	0.10	9.47	-4.97	0.00	-0.0690
	0.20	8.98	-4.96	0.00	-0.2212
	0.30	8.48	-4.93	0.00	-0.3720
	0.40	7.99	-4.90	0.00	-0.5215
	0.50	7.50	-4.85	0.00	-0.6696
14	0.00	7.50	-4.85	0.00	-0.6696
	0.10	7.02	-4.79	0.00	-0.8165
	0.20	6.55	-4.72	0.00	-0.9623
	0.30	6.08	-4.64	0.00	-1.1070
	0.40	5.62	-4.54	0.00	-1.2507
	0.50	5.17	-4.44	0.00	-1.3935
15	0.00	5.17	-4.44	0.00	-1.3935
	0.10	4.73	-4.32	0.00	-1.5354
	0.20	4.31	-4.19	0.00	-1.6766
	0.30	3.89	-4.05	0.00	-1.8170
	0.40	3.50	-3.90	0.00	-1.9569
	0.50	3.11	-3.74	0.00	-2.0961
16	0.00	3.11	-3.74	0.00	-2.0961
	0.10	2.75	-3.57	0.00	-2.2349
	0.20	2.40	-3.39	0.00	-2.3732
	0.30	2.07	-3.19	0.00	-2.5111
	0.40	1.76	-2.98	0.00	-2.6487
	0.50	1.47	-2.77	0.00	-2.7860
17	0.00	1.47	-2.77	0.00	-2.7860
	0.10	1.21	-2.54	0.00	-2.9231
	0.20	0.97	-2.30	0.00	-3.0599
	0.30	0.75	-2.05	0.00	-3.1966
	0.40	0.56	-1.79	0.00	-3.3332
	0.50	0.39	-1.52	0.00	-3.4697

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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18	0.00	0.39	-1.52	0.00	-3.4697
	0.10	0.25	-1.24	0.00	-3.6061
	0.20	0.14	-0.94	0.00	-3.7425
	0.30	0.06	-0.64	0.00	-3.8788
	0.40	0.02	-0.33	0.00	-4.0152
	0.50	0.00	0.00	0.00	-4.1515

Condizione : Tqpy
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000
2	0.00	7.13	14.27	0.00	0.0000
	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.84	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.12	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.41	14.27	0.00	0.0000
4	0.00	21.40	14.27	0.00	0.0000
	0.10	22.83	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.11	14.27	0.00	0.0000
	0.50	28.54	14.27	0.00	0.0000
5	0.00	28.54	14.27	0.00	16.4658
	0.10	29.90	12.98	0.00	15.9495
	0.20	31.14	11.73	0.00	15.4380
	0.30	32.25	10.51	0.00	14.9316
	0.40	33.24	9.34	0.00	14.4304
	0.50	34.12	8.21	0.00	13.9346
6	0.00	34.12	8.21	0.00	13.9346
	0.10	34.88	7.12	0.00	13.4445
	0.20	35.54	6.07	0.00	12.9599
	0.30	36.10	5.05	0.00	12.4812
	0.40	36.55	4.07	0.00	12.0084
	0.50	36.92	3.14	0.00	11.5415
7	0.00	36.92	3.14	0.00	11.5415
	0.10	37.18	2.23	0.00	11.0806
	0.20	37.36	1.37	0.00	10.6258
	0.30	37.46	0.54	0.00	10.1771
	0.40	37.47	-0.26	0.00	9.7345
	0.50	37.41	-1.02	0.00	9.2980
8	0.00	37.41	-1.02	0.00	9.2980
	0.10	37.27	-1.74	0.00	8.8676
	0.20	37.06	-2.43	0.00	8.4432
	0.30	36.78	-3.09	0.00	8.0249
	0.40	36.44	-3.71	0.00	7.6126
	0.50	36.04	-4.30	0.00	7.2062
9	0.00	36.04	-4.30	0.00	7.2062
	0.10	35.58	-4.86	0.00	6.8057
	0.20	35.07	-5.39	0.00	6.4110
	0.30	34.51	-5.88	0.00	6.0220
	0.40	33.90	-6.35	0.00	5.6386
	0.50	33.24	-6.78	0.00	5.2608
10	0.00	33.24	-6.78	0.00	5.2608
	0.10	32.54	-7.19	0.00	4.8884
	0.20	31.80	-7.56	0.00	4.5212
	0.30	31.03	-7.91	0.00	4.1593
	0.40	30.22	-8.23	0.00	3.8024
	0.50	29.38	-8.52	0.00	3.4504
11	0.00	29.38	-8.52	0.00	3.4504
	0.10	28.52	-8.78	0.00	3.1032
	0.20	27.63	-9.01	0.00	2.7607
	0.30	26.72	-9.22	0.00	2.4227
	0.40	25.79	-9.40	0.00	2.0890
	0.50	24.84	-9.55	0.00	1.7595
12	0.00	24.84	-9.55	0.00	1.7595
	0.10	23.88	-9.68	0.00	1.4341
	0.20	22.90	-9.78	0.00	1.1125
	0.30	21.92	-9.86	0.00	0.7947
	0.40	20.93	-9.91	0.00	0.4805
	0.50	19.94	-9.93	0.00	0.1697
13	0.00	19.94	-9.93	0.00	0.1697
	0.10	18.95	-9.94	0.00	-0.1379
	0.20	17.95	-9.91	0.00	-0.4424
	0.30	16.96	-9.87	0.00	-0.7439
	0.40	15.98	-9.79	0.00	-1.0427
	0.50	15.01	-9.70	0.00	-1.3389
14	0.00	15.01	-9.70	0.00	-1.3389
	0.10	14.04	-9.58	0.00	-1.6327
	0.20	13.09	-9.44	0.00	-1.9241
	0.30	12.15	-9.27	0.00	-2.2135
	0.40	11.24	-9.09	0.00	-2.5008
	0.50	10.34	-8.87	0.00	-2.7863

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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15	0.00	10.34	-8.87	0.00	-2.7863
	0.10	9.46	-8.64	0.00	-3.0701
	0.20	8.61	-8.38	0.00	-3.3524
	0.30	7.79	-8.11	0.00	-3.6333
	0.40	6.99	-7.81	0.00	-3.9129
	0.50	6.23	-7.48	0.00	-4.1914
16	0.00	6.23	-7.48	0.00	-4.1914
	0.10	5.49	-7.14	0.00	-4.4689
	0.20	4.80	-6.77	0.00	-4.7454
	0.30	4.14	-6.38	0.00	-5.0212
	0.40	3.52	-5.97	0.00	-5.2963
	0.50	2.95	-5.53	0.00	-5.5708
17	0.00	2.95	-5.53	0.00	-5.5708
	0.10	2.42	-5.08	0.00	-5.8449
	0.20	1.93	-4.60	0.00	-6.1185
	0.30	1.50	-4.10	0.00	-6.3919
	0.40	1.11	-3.58	0.00	-6.6650
	0.50	0.78	-3.04	0.00	-6.9379
18	0.00	0.78	-3.04	0.00	-6.9379
	0.10	0.51	-2.47	0.00	-7.2107
	0.20	0.29	-1.89	0.00	-7.4834
	0.30	0.13	-1.28	0.00	-7.7560
	0.40	0.03	-0.65	0.00	-8.0287
	0.50	0.00	0.00	0.00	-8.3013

Condizione : Mapv
Sollecitazioni

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	1.3809
	0.10	7.13	-0.11	0.00	1.3209
	0.20	7.11	-0.21	0.00	1.2619
	0.30	7.09	-0.31	0.00	1.2042
	0.40	7.05	-0.40	0.00	1.1476
	0.50	7.01	-0.49	0.00	1.0921
6	0.00	7.01	-0.49	0.00	1.0921
	0.10	6.95	-0.58	0.00	1.0378
	0.20	6.89	-0.66	0.00	0.9847
	0.30	6.82	-0.73	0.00	0.9326
	0.40	6.75	-0.81	0.00	0.8817
	0.50	6.66	-0.88	0.00	0.8318
7	0.00	6.66	-0.88	0.00	0.8318
	0.10	6.57	-0.94	0.00	0.7831
	0.20	6.47	-1.00	0.00	0.7354
	0.30	6.37	-1.06	0.00	0.6888
	0.40	6.26	-1.11	0.00	0.6432
	0.50	6.15	-1.16	0.00	0.5986
8	0.00	6.15	-1.16	0.00	0.5986
	0.10	6.03	-1.21	0.00	0.5551
	0.20	5.91	-1.25	0.00	0.5125
	0.30	5.78	-1.29	0.00	0.4709
	0.40	5.65	-1.32	0.00	0.4302
	0.50	5.52	-1.36	0.00	0.3904
9	0.00	5.52	-1.36	0.00	0.3904
	0.10	5.38	-1.39	0.00	0.3516
	0.20	5.24	-1.41	0.00	0.3136
	0.30	5.10	-1.44	0.00	0.2765
	0.40	4.95	-1.46	0.00	0.2402
	0.50	4.81	-1.47	0.00	0.2047
10	0.00	4.81	-1.47	0.00	0.2047
	0.10	4.66	-1.49	0.00	0.1700
	0.20	4.51	-1.50	0.00	0.1360
	0.30	4.36	-1.51	0.00	0.1028
	0.40	4.21	-1.52	0.00	0.0703
	0.50	4.05	-1.52	0.00	0.0385
11	0.00	4.05	-1.52	0.00	0.0385
	0.10	3.90	-1.52	0.00	0.0073
	0.20	3.75	-1.52	0.00	-0.0232
	0.30	3.60	-1.52	0.00	-0.0531
	0.40	3.45	-1.51	0.00	-0.0824
	0.50	3.30	-1.51	0.00	-0.1112

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GRUPPO FERROVIE DELLO STATO ITALIANE

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12	0.00	3.30	-1.51	0.00	-0.1112			
	0.10	3.14	-1.50	0.00	-0.1394			
	0.20	3.00	-1.48	0.00	-0.1671			
	0.30	2.85	-1.47	0.00	-0.1943			
	0.40	2.70	-1.45	0.00	-0.2211			
	0.50	2.56	-1.43	0.00	-0.2474			
13	0.00	2.56	-1.43	0.00	-0.2474			
	0.10	2.42	-1.41	0.00	-0.2733			
	0.20	2.27	-1.39	0.00	-0.2988			
	0.30	2.14	-1.37	0.00	-0.3240			
	0.40	2.00	-1.34	0.00	-0.3488			
	0.50	1.87	-1.31	0.00	-0.3732			
14	0.00	1.87	-1.31	0.00	-0.3732			
	0.10	1.74	-1.28	0.00	-0.3974			
	0.20	1.61	-1.25	0.00	-0.4213			
	0.30	1.49	-1.21	0.00	-0.4449			
	0.40	1.37	-1.18	0.00	-0.4682			
	0.50	1.25	-1.14	0.00	-0.4914			
15	0.00	1.25	-1.14	0.00	-0.4914			
	0.10	1.14	-1.10	0.00	-0.5143			
	0.20	1.04	-1.06	0.00	-0.5371			
	0.30	0.93	-1.01	0.00	-0.5597			
	0.40	0.83	-0.97	0.00	-0.5821			
	0.50	0.74	-0.92	0.00	-0.6044			
16	0.00	0.74	-0.92	0.00	-0.6044			
	0.10	0.65	-0.87	0.00	-0.6266			
	0.20	0.56	-0.82	0.00	-0.6487			
	0.30	0.49	-0.77	0.00	-0.6706			
	0.40	0.41	-0.71	0.00	-0.6925			
	0.50	0.34	-0.66	0.00	-0.7144			
17	0.00	0.34	-0.66	0.00	-0.7144			
	0.10	0.28	-0.60	0.00	-0.7362			
	0.20	0.22	-0.54	0.00	-0.7579			
	0.30	0.17	-0.48	0.00	-0.7796			
	0.40	0.13	-0.41	0.00	-0.8013			
	0.50	0.09	-0.35	0.00	-0.8229			
18	0.00	0.09	-0.35	0.00	-0.8229			
	0.10	0.06	-0.28	0.00	-0.8445			
	0.20	0.03	-0.22	0.00	-0.8662			
	0.30	0.01	-0.15	0.00	-0.8878			
	0.40	0.00	-0.07	0.00	-0.9094			
	0.50	0.00	0.00	0.00	-0.9310			

Condizione : Msacpv**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
2	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
3	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
4	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
5	0.00	2.38	0.00	0.00	0.4603
	0.10	2.38	-0.04	0.00	0.4403
	0.20	2.37	-0.07	0.00	0.4207
	0.30	2.36	-0.10	0.00	0.4014
	0.40	2.35	-0.13	0.00	0.3826
	0.50	2.34	-0.16	0.00	0.3641
6	0.00	2.34	-0.16	0.00	0.3641
	0.10	2.32	-0.19	0.00	0.3460
	0.20	2.30	-0.22	0.00	0.3282
	0.30	2.27	-0.24	0.00	0.3109
	0.40	2.25	-0.27	0.00	0.2939
	0.50	2.22	-0.29	0.00	0.2773
7	0.00	2.22	-0.29	0.00	0.2773
	0.10	2.19	-0.31	0.00	0.2610
	0.20	2.16	-0.33	0.00	0.2452
	0.30	2.12	-0.35	0.00	0.2296
	0.40	2.09	-0.37	0.00	0.2144
	0.50	2.05	-0.39	0.00	0.1996
8	0.00	2.05	-0.39	0.00	0.1996
	0.10	2.01	-0.40	0.00	0.1850
	0.20	1.97	-0.42	0.00	0.1708
	0.30	1.93	-0.43	0.00	0.1570
	0.40	1.88	-0.44	0.00	0.1434
	0.50	1.84	-0.45	0.00	0.1302

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9	0.00	1.84	-0.45	0.00	0.1302			
	0.10	1.79	-0.46	0.00	0.1172			
	0.20	1.75	-0.47	0.00	0.1045			
	0.30	1.70	-0.48	0.00	0.0922			
	0.40	1.65	-0.49	0.00	0.0801			
	0.50	1.60	-0.49	0.00	0.0682			
10	0.00	1.60	-0.49	0.00	0.0682			
	0.10	1.55	-0.50	0.00	0.0567			
	0.20	1.50	-0.50	0.00	0.0453			
	0.30	1.45	-0.50	0.00	0.0343			
	0.40	1.40	-0.51	0.00	0.0234			
	0.50	1.35	-0.51	0.00	0.0128			
11	0.00	1.35	-0.51	0.00	0.0128			
	0.10	1.30	-0.51	0.00	0.0024			
	0.20	1.25	-0.51	0.00	-0.0077			
	0.30	1.20	-0.51	0.00	-0.0177			
	0.40	1.15	-0.50	0.00	-0.0275			
	0.50	1.10	-0.50	0.00	-0.0371			
12	0.00	1.10	-0.50	0.00	-0.0371			
	0.10	1.05	-0.50	0.00	-0.0465			
	0.20	1.00	-0.49	0.00	-0.0557			
	0.30	0.95	-0.49	0.00	-0.0648			
	0.40	0.90	-0.48	0.00	-0.0737			
	0.50	0.85	-0.48	0.00	-0.0825			
13	0.00	0.85	-0.48	0.00	-0.0825			
	0.10	0.81	-0.47	0.00	-0.0911			
	0.20	0.76	-0.46	0.00	-0.0996			
	0.30	0.71	-0.46	0.00	-0.1080			
	0.40	0.67	-0.45	0.00	-0.1163			
	0.50	0.62	-0.44	0.00	-0.1244			
14	0.00	0.62	-0.44	0.00	-0.1244			
	0.10	0.58	-0.43	0.00	-0.1325			
	0.20	0.54	-0.42	0.00	-0.1404			
	0.30	0.50	-0.40	0.00	-0.1483			
	0.40	0.46	-0.39	0.00	-0.1561			
	0.50	0.42	-0.38	0.00	-0.1638			
15	0.00	0.42	-0.38	0.00	-0.1638			
	0.10	0.38	-0.37	0.00	-0.1715			
	0.20	0.35	-0.35	0.00	-0.1790			
	0.30	0.31	-0.34	0.00	-0.1866			
	0.40	0.28	-0.32	0.00	-0.1940			
	0.50	0.25	-0.31	0.00	-0.2015			
16	0.00	0.25	-0.31	0.00	-0.2015			
	0.10	0.22	-0.29	0.00	-0.2089			
	0.20	0.19	-0.27	0.00	-0.2162			
	0.30	0.16	-0.26	0.00	-0.2236			
	0.40	0.14	-0.24	0.00	-0.2309			
	0.50	0.11	-0.22	0.00	-0.2381			
17	0.00	0.11	-0.22	0.00	-0.2381			
	0.10	0.09	-0.20	0.00	-0.2454			
	0.20	0.07	-0.18	0.00	-0.2526			
	0.30	0.06	-0.16	0.00	-0.2599			
	0.40	0.04	-0.14	0.00	-0.2671			
	0.50	0.03	-0.12	0.00	-0.2743			
18	0.00	0.03	-0.12	0.00	-0.2743			
	0.10	0.02	-0.09	0.00	-0.2815			
	0.20	0.01	-0.07	0.00	-0.2887			
	0.30	0.00	-0.05	0.00	-0.2959			
	0.40	0.00	-0.02	0.00	-0.3031			
	0.50	0.00	0.00	0.00	-0.3104			

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.17	-3.53	0.00	0.0000
	0.20	-0.72	-7.40	0.00	0.0000
	0.30	-1.66	-11.60	0.00	0.0000
	0.40	-3.05	-16.14	0.00	0.0000
	0.50	-4.90	-21.02	0.00	0.0000
4	0.00	-4.90	-21.02	0.00	0.0000
	0.10	-7.26	-26.23	0.00	0.0000
	0.20	-10.16	-31.78	0.00	0.0000
	0.30	-13.63	-37.66	0.00	0.0000
	0.40	-17.71	-43.88	0.00	0.0000
	0.50	-22.42	-50.44	0.00	0.0000
5	0.00	-22.42	-50.44	0.00	-43.0201
	0.10	-27.29	-47.06	0.00	-41.8553
	0.20	-31.83	-43.76	0.00	-40.6951
	0.30	-36.05	-40.56	0.00	-39.5400
	0.40	-39.95	-37.46	0.00	-38.3907
	0.50	-43.54	-34.44	0.00	-37.2480

GENERAL CONTRACTOR



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6	0.00	-43.54	-34.44	0.00	-37.2480
	0.10	-46.84	-31.51	0.00	-36.1124
	0.20	-49.85	-28.68	0.00	-34.9844
	0.30	-52.58	-25.93	0.00	-33.8645
	0.40	-55.04	-23.27	0.00	-32.7531
	0.50	-57.24	-20.70	0.00	-31.6508
7	0.00	-57.24	-20.70	0.00	-31.6508
	0.10	-59.18	-18.22	0.00	-30.5578
	0.20	-60.88	-15.83	0.00	-29.4744
	0.30	-62.35	-13.52	0.00	-28.4009
	0.40	-63.59	-11.30	0.00	-27.3376
	0.50	-64.61	-9.16	0.00	-26.2846
8	0.00	-64.61	-9.16	0.00	-26.2846
	0.10	-65.42	-7.10	0.00	-25.2422
	0.20	-66.04	-5.13	0.00	-24.2104
	0.30	-66.45	-3.24	0.00	-23.1894
	0.40	-66.69	-1.43	0.00	-22.1792
	0.50	-66.74	0.30	0.00	-21.1799
9	0.00	-66.74	0.30	0.00	-21.1799
	0.10	-66.63	1.95	0.00	-20.1914
	0.20	-66.35	3.52	0.00	-19.2138
	0.30	-65.93	5.02	0.00	-18.2470
	0.40	-65.35	6.43	0.00	-17.2910
	0.50	-64.64	7.77	0.00	-16.3456
10	0.00	-64.64	7.77	0.00	-16.3456
	0.10	-63.80	9.04	0.00	-15.4107
	0.20	-62.84	10.23	0.00	-14.4863
	0.30	-61.76	11.35	0.00	-13.5720
	0.40	-60.57	12.40	0.00	-12.6678
	0.50	-59.28	13.37	0.00	-11.7735
11	0.00	-59.28	13.37	0.00	-11.7735
	0.10	-57.90	14.28	0.00	-10.8889
	0.20	-56.43	15.11	0.00	-10.0137
	0.30	-54.88	15.88	0.00	-9.1477
	0.40	-53.25	16.57	0.00	-8.2906
	0.50	-51.56	17.20	0.00	-7.4422
12	0.00	-51.56	17.20	0.00	-7.4422
	0.10	-49.82	17.76	0.00	-6.6022
	0.20	-48.01	18.25	0.00	-5.7703
	0.30	-46.17	18.68	0.00	-4.9463
	0.40	-44.28	19.04	0.00	-4.1297
	0.50	-42.36	19.34	0.00	-3.3204
13	0.00	-42.36	19.34	0.00	-3.3204
	0.10	-40.41	19.57	0.00	-2.5180
	0.20	-38.45	19.74	0.00	-1.7222
	0.30	-36.47	19.85	0.00	-0.9326
	0.40	-34.48	19.89	0.00	-0.1490
	0.50	-32.49	19.87	0.00	0.6290
14	0.00	-32.49	19.87	0.00	0.6290
	0.10	-30.51	19.79	0.00	1.4017
	0.20	-28.54	19.65	0.00	2.1694
	0.30	-26.58	19.44	0.00	2.9325
	0.40	-24.65	19.18	0.00	3.6913
	0.50	-22.75	18.86	0.00	4.4460
15	0.00	-22.75	18.86	0.00	4.4460
	0.10	-20.88	18.47	0.00	5.1971
	0.20	-19.05	18.03	0.00	5.9447
	0.30	-17.28	17.52	0.00	6.6892
	0.40	-15.55	16.96	0.00	7.4309
	0.50	-13.89	16.34	0.00	8.1701
16	0.00	-13.89	16.34	0.00	8.1701
	0.10	-12.29	15.66	0.00	8.9070
	0.20	-10.76	14.92	0.00	9.6419
	0.30	-9.31	14.12	0.00	10.3750
	0.40	-7.94	13.26	0.00	11.1067
	0.50	-6.66	12.35	0.00	11.8370
17	0.00	-6.66	12.35	0.00	11.8370
	0.10	-5.47	11.37	0.00	12.5662
	0.20	-4.38	10.34	0.00	13.2946
	0.30	-3.40	9.25	0.00	14.0222
	0.40	-2.54	8.10	0.00	14.7493
	0.50	-1.78	6.90	0.00	15.4760
18	0.00	-1.78	6.90	0.00	15.4760
	0.10	-1.16	5.63	0.00	16.2024
	0.20	-0.66	4.31	0.00	16.9286
	0.30	-0.30	2.93	0.00	17.6546
	0.40	-0.08	1.50	0.00	18.3807
	0.50	0.00	0.00	0.00	19.1067

Condizione : Nbp

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
2	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000

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3	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
4	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
5	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
6	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
7	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
8	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
9	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
10	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
11	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
12	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
13	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
14	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
15	0.00	0.00	0.00	-54.82	0.0000			
	0.10	0.00	0.00	-54.82	0.0000			
	0.20	0.00	0.00	-54.82	0.0000			
	0.30	0.00	0.00	-54.82	0.0000			
	0.40	0.00	0.00	-54.82	0.0000			
	0.50	0.00	0.00	-54.82	0.0000			
16	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
17	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			
	0.40	0.00	0.00	-54.83	0.0000			
	0.50	0.00	0.00	-54.83	0.0000			
18	0.00	0.00	0.00	-54.83	0.0000			
	0.10	0.00	0.00	-54.83	0.0000			
	0.20	0.00	0.00	-54.83	0.0000			
	0.30	0.00	0.00	-54.83	0.0000			

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0.40	0.00	0.00	-54.83	0.0000
0.50	0.00	0.00	-54.83	0.0000

Combinazioni di carico

combinazione	Nppm	Tppm	Mppm	Mbp0(Mb+tb*(H+s))	Tbp	.qs	Tsacpv	Tqpv	Mqpv	Msacpv	Spinta Passiva..	Nbp
SLE RARA	1.00	1.00	1.00	1.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SLU	1.50	1.50	1.50	1.50	1.50	1.50	1.35	1.50	1.50	1.35	1.00	1.50

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	139.83	60.03	-60.82	0.0000
	0.10	145.85	60.41	-60.82	0.0000
	0.20	151.91	60.79	-60.82	0.0000
	0.30	158.01	61.17	-60.82	0.0000
	0.40	164.15	61.55	-60.82	0.0000
	0.50	170.32	61.93	-60.82	0.0000
2	0.00	170.32	61.93	-60.83	0.0000
	0.10	176.53	62.32	-60.83	0.0000
	0.20	182.79	62.70	-60.83	0.0000
	0.30	189.07	63.08	-60.83	0.0000
	0.40	195.40	63.46	-60.83	0.0000
	0.50	201.77	63.84	-60.83	0.0000
3	0.00	201.77	63.84	-60.82	0.0000
	0.10	207.99	60.69	-60.82	0.0000
	0.20	213.89	57.20	-60.82	0.0000
	0.30	219.42	53.38	-60.82	0.0000
	0.40	224.56	49.22	-60.82	0.0000
	0.50	229.26	44.72	-60.82	0.0000
4	0.00	229.26	44.72	-60.82	0.0000
	0.10	233.49	39.89	-60.82	0.0000
	0.20	237.22	34.72	-60.82	0.0000
	0.30	240.42	29.22	-60.82	0.0000
	0.40	243.06	23.38	-60.82	0.0000
	0.50	245.09	17.20	-60.82	0.0000
5	0.00	245.09	17.20	-60.83	66.7812
	0.10	246.57	12.46	-60.83	64.3851
	0.20	247.59	7.91	-60.83	62.0293
	0.30	248.16	3.55	-60.83	59.7138
	0.40	248.30	-0.63	-60.83	57.4388
	0.50	248.04	-4.64	-60.83	55.2041
6	0.00	248.04	-4.64	-60.82	55.2041
	0.10	247.38	-8.46	-60.82	53.0100
	0.20	246.35	-12.11	-60.82	50.8561
	0.30	244.96	-15.59	-60.82	48.7423
	0.40	243.24	-18.91	-60.82	46.6685
	0.50	241.19	-22.06	-60.82	44.6343
7	0.00	241.19	-22.06	-60.82	44.6343
	0.10	238.83	-25.05	-60.82	42.6394
	0.20	236.18	-27.88	-60.82	40.6834
	0.30	233.26	-30.55	-60.82	38.7659
	0.40	230.08	-33.08	-60.82	36.8864
	0.50	226.65	-35.46	-60.82	35.0444
8	0.00	226.65	-35.46	-60.83	35.0444
	0.10	222.99	-37.69	-60.83	33.2393
	0.20	219.12	-39.78	-60.83	31.4706
	0.30	215.04	-41.73	-60.83	29.7375
	0.40	210.77	-43.54	-60.83	28.0395
	0.50	206.34	-45.22	-60.83	26.3759
9	0.00	206.34	-45.22	-60.82	26.3759
	0.10	201.74	-46.77	-60.82	24.7459
	0.20	196.99	-48.19	-60.82	23.1487
	0.30	192.10	-49.48	-60.82	21.5836
	0.40	187.09	-50.65	-60.82	20.0499
	0.50	181.98	-51.70	-60.82	18.5466
10	0.00	181.98	-51.70	-60.83	18.5466
	0.10	176.76	-52.62	-60.83	17.0730
	0.20	171.46	-53.44	-60.83	15.6282
	0.30	166.08	-54.14	-60.83	14.2113
	0.40	160.63	-54.72	-60.83	12.8215
	0.50	155.14	-55.20	-60.83	11.4578
11	0.00	155.14	-55.20	-60.82	11.4578
	0.10	149.60	-55.57	-60.82	10.1195
	0.20	144.03	-55.83	-60.82	8.8055
	0.30	138.43	-55.99	-60.82	7.5150
	0.40	132.83	-56.05	-60.82	6.2470
	0.50	127.23	-56.00	-60.82	5.0007
12	0.00	127.23	-56.00	-60.82	5.0007
	0.10	121.63	-55.86	-60.82	3.7751
	0.20	116.06	-55.62	-60.82	2.5694
	0.30	110.51	-55.29	-60.82	1.3825
	0.40	105.00	-54.86	-60.82	0.2137
	0.50	99.54	-54.34	-60.82	-0.9381
13	0.00	99.54	-54.34	-60.82	-0.9381
	0.10	94.14	-53.73	-60.82	-2.0736
	0.20	88.80	-53.03	-60.82	-3.1937
	0.30	83.54	-52.24	-60.82	-4.2994
	0.40	78.36	-51.36	-60.82	-5.3915
	0.50	73.27	-50.39	-60.82	-6.4708
14	0.00	73.27	-50.39	-60.82	-6.4708
	0.10	68.28	-49.34	-60.82	-7.5382
	0.20	63.40	-48.21	-60.82	-8.5944
	0.30	58.64	-46.99	-60.82	-9.6403

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	0.40	54.01	-45.69	-60.82	-10.6766
	0.50	49.51	-44.30	-60.82	-11.7042
15	0.00	49.51	-44.30	-60.82	-11.7042
	0.10	45.15	-42.84	-60.82	-12.7237
	0.20	40.94	-41.29	-60.82	-13.7358
	0.30	36.89	-39.66	-60.82	-14.7412
	0.40	33.01	-37.95	-60.82	-15.7406
	0.50	29.31	-36.17	-60.82	-16.7347
16	0.00	29.31	-36.17	-60.83	-16.7347
	0.10	25.78	-34.30	-60.83	-17.7240
	0.20	22.45	-32.36	-60.83	-18.7090
	0.30	19.31	-30.33	-60.83	-19.6904
	0.40	16.38	-28.23	-60.83	-20.6687
	0.50	13.67	-26.05	-60.83	-21.6442
17	0.00	13.67	-26.05	-60.82	-21.6442
	0.10	11.18	-23.79	-60.82	-22.6176
	0.20	8.91	-21.46	-60.82	-23.5891
	0.30	6.89	-19.05	-60.82	-24.5592
	0.40	5.11	-16.56	-60.82	-25.5281
	0.50	3.58	-13.99	-60.82	-26.4962
18	0.00	3.58	-13.99	-60.82	-26.4962
	0.10	2.31	-11.35	-60.82	-27.4638
	0.20	1.31	-8.63	-60.82	-28.4309
	0.30	0.59	-5.83	-60.82	-29.3978
	0.40	0.15	-2.95	-60.82	-30.3646
	0.50	0.00	0.00	-60.82	-31.3314

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	209.39	88.98	-91.24	0.0000
	0.10	218.32	89.55	-91.24	0.0000
	0.20	227.30	90.12	-91.24	0.0000
	0.30	236.34	90.69	-91.24	0.0000
	0.40	245.44	91.26	-91.24	0.0000
	0.50	254.59	91.83	-91.24	0.0000
2	0.00	254.59	91.83	-91.24	0.0000
	0.10	263.80	92.40	-91.24	0.0000
	0.20	273.07	92.97	-91.24	0.0000
	0.30	282.40	93.54	-91.24	0.0000
	0.40	291.78	94.12	-91.24	0.0000
	0.50	301.22	94.69	-91.24	0.0000
3	0.00	301.22	94.69	-91.24	0.0000
	0.10	310.54	91.73	-91.24	0.0000
	0.20	319.55	88.43	-91.24	0.0000
	0.30	328.22	84.80	-91.24	0.0000
	0.40	336.50	80.83	-91.24	0.0000
	0.50	344.37	76.52	-91.24	0.0000
4	0.00	344.37	76.52	-91.24	0.0000
	0.10	351.80	71.88	-91.24	0.0000
	0.20	358.74	66.90	-91.24	0.0000
	0.30	365.17	61.59	-91.24	0.0000
	0.40	371.05	55.94	-91.24	0.0000
	0.50	376.34	49.95	-91.24	0.0000
5	0.00	376.34	49.95	-91.24	120.3775
	0.10	380.90	41.25	-91.24	116.2429
	0.20	384.60	32.88	-91.24	112.1703
	0.30	387.49	24.83	-91.24	108.1604
	0.40	389.58	17.09	-91.24	104.2136
	0.50	390.92	9.67	-91.24	100.3303
6	0.00	390.92	9.67	-91.24	100.3303
	0.10	391.53	2.56	-91.24	96.5107
	0.20	391.44	-4.25	-91.24	92.7548
	0.30	390.68	-10.77	-91.24	89.0628
	0.40	389.29	-16.99	-91.24	85.4344
	0.50	387.30	-22.92	-91.24	81.8694
7	0.00	387.30	-22.92	-91.24	81.8694
	0.10	384.72	-28.58	-91.24	78.3676
	0.20	381.59	-33.95	-91.24	74.9284
	0.30	377.94	-39.06	-91.24	71.5514
	0.40	373.79	-43.90	-91.24	68.2360
	0.50	369.17	-48.47	-91.24	64.9815
8	0.00	369.17	-48.47	-91.24	64.9815
	0.10	364.10	-52.79	-91.24	61.7871
	0.20	358.62	-56.86	-91.24	58.6521
	0.30	352.74	-60.68	-91.24	55.5755
	0.40	346.49	-64.25	-91.24	52.5563
	0.50	339.89	-67.59	-91.24	49.5937
9	0.00	339.89	-67.59	-91.24	49.5937
	0.10	332.98	-70.69	-91.24	46.6864
	0.20	325.76	-73.57	-91.24	43.8333
	0.30	318.27	-76.21	-91.24	41.0334
	0.40	310.53	-78.64	-91.24	38.2853
	0.50	302.55	-80.85	-91.24	35.5878
10	0.00	302.55	-80.85	-91.24	35.5878
	0.10	294.37	-82.84	-91.24	32.9396
	0.20	285.99	-84.63	-91.24	30.3394
	0.30	277.45	-86.21	-91.24	27.7858
	0.40	268.76	-87.59	-91.24	25.2774
	0.50	259.94	-88.77	-91.24	22.8127
11	0.00	259.94	-88.77	-91.24	22.8127
	0.10	251.01	-89.76	-91.24	20.3905
	0.20	241.99	-90.55	-91.24	18.0091
	0.30	232.90	-91.16	-91.24	15.6672
	0.40	223.77	-91.58	-91.24	13.3632

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	0.50	214.60	-91.81	-91.24	11.0957
12	0.00	214.60	-91.81	-91.24	11.0957
	0.10	205.41	-91.87	-91.24	8.8632
	0.20	196.23	-91.75	-91.24	6.6641
	0.30	187.06	-91.46	-91.24	4.4970
	0.40	177.94	-91.00	-91.24	2.3604
	0.50	168.87	-90.36	-91.24	0.2528
13	0.00	168.87	-90.36	-91.24	0.2528
	0.10	159.87	-89.56	-91.24	-1.8273
	0.20	150.96	-88.60	-91.24	-3.8814
	0.30	142.16	-87.47	-91.24	-5.9108
	0.40	133.48	-86.18	-91.24	-7.9171
	0.50	124.93	-84.73	-91.24	-9.9016
14	0.00	124.93	-84.73	-91.24	-9.9016
	0.10	116.53	-83.13	-91.24	-11.8657
	0.20	108.31	-81.36	-91.24	-13.8109
	0.30	100.27	-79.45	-91.24	-15.7384
	0.40	92.42	-77.38	-91.24	-17.6496
	0.50	84.80	-75.16	-91.24	-19.5457
15	0.00	84.80	-75.16	-91.24	-19.5457
	0.10	77.40	-72.79	-91.24	-21.4280
	0.20	70.24	-70.26	-91.24	-23.2977
	0.30	63.35	-67.59	-91.24	-25.1559
	0.40	56.73	-64.78	-91.24	-27.0038
	0.50	50.40	-61.81	-91.24	-28.8424
16	0.00	50.40	-61.81	-91.24	-28.8424
	0.10	44.37	-58.70	-91.24	-30.6729
	0.20	38.66	-55.44	-91.24	-32.4960
	0.30	33.29	-52.04	-91.24	-34.3129
	0.40	28.26	-48.49	-91.24	-36.1244
	0.50	23.59	-44.80	-91.24	-37.9312
17	0.00	23.59	-44.80	-91.24	-37.9312
	0.10	19.30	-40.97	-91.24	-39.7342
	0.20	15.41	-36.99	-91.24	-41.5341
	0.30	11.91	-32.87	-91.24	-43.3314
	0.40	8.84	-28.60	-91.24	-45.1268
	0.50	6.20	-24.19	-91.24	-46.9208
18	0.00	6.20	-24.19	-91.24	-46.9208
	0.10	4.00	-19.64	-91.24	-48.7137
	0.20	2.27	-14.94	-91.24	-50.5060
	0.30	1.02	-10.10	-91.24	-52.2978
	0.40	0.26	-5.12	-91.24	-54.0896
	0.50	0.00	0.00	-91.24	-55.8812

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**ALLEGATO N°4. Fondazioni su pali per Barriere di h=4.75m con rilevato di H=3.0m
Effetti indotti dal ritiro e dalla diminuzione di temperatura.
Calcolo agli elementi finiti con il programma di calcolo "ENG"**

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198 di 313**Geometria struttura****Coordinate nodali e vincoli fissi****Coordinate nodali e vincoli fissi :**

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	1	0

Caratteristiche delle aste**Elemento strutturale:**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
6	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura**RITIRO+AT****Spostamenti imposti :**

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-16.81	LL
	2	0.00	0.00	-16.81	-33.63	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

Risultati**Condizioni di carico****Condizione : RITIRO+AT****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	-234.06	69.48	0.00	0.0000
	0.25	-216.69	69.48	0.00	0.0000
	0.50	-199.32	69.48	0.00	0.0000
2	0.00	-199.32	69.48	0.00	0.0000
	0.25	-181.95	69.48	0.00	0.0000
	0.50	-164.57	69.48	0.00	0.0000

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3	0.00	-164.57	69.48	0.00	0.0000			
	0.25	-147.20	69.48	0.00	0.0000			
	0.50	-129.83	69.48	0.00	0.0000			
4	0.00	-129.83	69.48	0.00	0.0000			
	0.25	-112.46	69.48	0.00	0.0000			
	0.50	-95.09	69.48	0.00	0.0000			
5	0.00	-95.09	69.48	0.00	34.8815			
	0.25	-78.58	62.66	0.00	33.4950			
	0.50	-63.74	56.13	0.00	32.0284			
6	0.00	-63.74	56.13	0.00	32.0284			
	0.25	-50.49	49.89	0.00	30.4967			
	0.50	-38.76	43.97	0.00	28.9135			
7	0.00	-38.76	43.97	0.00	28.9135			
	0.25	-28.48	38.36	0.00	27.2906			
	0.50	-19.56	33.08	0.00	25.6387			
8	0.00	-19.56	33.08	0.00	25.6387			
	0.25	-11.91	28.14	0.00	23.9667			
	0.50	-5.46	23.52	0.00	22.2825			
9	0.00	-5.46	23.52	0.00	22.2825			
	0.25	-0.12	19.25	0.00	20.5926			
	0.50	4.19	15.31	0.00	18.9025			
10	0.00	4.19	15.31	0.00	18.9025			
	0.25	7.56	11.71	0.00	17.2166			
	0.50	10.07	8.44	0.00	15.5383			
11	0.00	10.07	8.44	0.00	15.5383			
	0.25	11.81	5.51	0.00	13.8703			
	0.50	12.86	2.91	0.00	12.2142			
12	0.00	12.86	2.91	0.00	12.2142			
	0.25	13.29	0.64	0.00	10.5711			
	0.50	13.20	-1.31	0.00	8.9416			
13	0.00	13.20	-1.31	0.00	8.9416			
	0.25	12.67	-2.93	0.00	7.3254			
	0.50	11.76	-4.23	0.00	5.7221			
14	0.00	11.76	-4.23	0.00	5.7221			
	0.25	10.58	-5.21	0.00	4.1308			
	0.50	9.18	-5.88	0.00	2.5502			
15	0.00	9.18	-5.88	0.00	2.5502			
	0.25	7.66	-6.23	0.00	0.9790			
	0.50	6.09	-6.27	0.00	-0.5844			
16	0.00	6.09	-6.27	0.00	-0.5844			
	0.25	4.55	-6.00	0.00	-2.1416			
	0.50	3.12	-5.42	0.00	-3.6942			
17	0.00	3.12	-5.42	0.00	-3.6942			
	0.25	1.87	-4.53	0.00	-5.2436			
	0.50	0.88	-3.33	0.00	-6.7910			
18	0.00	0.88	-3.33	0.00	-6.7910			
	0.25	0.23	-1.82	0.00	-8.3375			
	0.50	0.00	0.00	0.00	-9.8838			

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	146.20	0.00	0.00	0.0000
	0.25	146.11	-1.05	0.00	0.0000
	0.50	145.50	-4.20	0.00	0.0000
2	0.00	145.50	-4.20	0.00	0.0000
	0.25	143.83	-9.46	0.00	0.0000
	0.50	140.59	-16.81	0.00	0.0000
3	0.00	140.59	-16.81	0.00	0.0000
	0.25	135.25	-26.27	0.00	0.0000
	0.50	127.28	-37.83	0.00	0.0000
4	0.00	127.28	-37.83	0.00	0.0000
	0.25	116.16	-51.49	0.00	0.0000
	0.50	101.36	-67.25	0.00	0.0000
5	0.00	101.36	-67.26	0.00	-31.9592
	0.25	85.34	-60.99	0.00	-30.8105
	0.50	70.85	-54.97	0.00	-29.5748
6	0.00	70.85	-54.97	0.00	-29.5748
	0.25	57.83	-49.20	0.00	-28.2668
	0.50	46.22	-43.70	0.00	-26.8997
7	0.00	46.22	-43.70	0.00	-26.8997
	0.25	35.96	-38.48	0.00	-25.4855
	0.50	26.96	-33.54	0.00	-24.0346
8	0.00	26.96	-33.54	0.00	-24.0346
	0.25	19.16	-28.89	0.00	-22.5561
	0.50	12.49	-24.54	0.00	-21.0579
9	0.00	12.49	-24.54	0.00	-21.0579
	0.25	6.87	-20.49	0.00	-19.5470
	0.50	2.22	-16.74	0.00	-18.0290
10	0.00	2.22	-16.74	0.00	-18.0290
	0.25	-1.53	-13.30	0.00	-16.5086
	0.50	-4.46	-10.16	0.00	-14.9898

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11	0.00	-4.46	-10.16	0.00	-14.9898		
	0.25	-6.63	-7.32	0.00	-13.4754		
	0.50	-8.14	-4.78	0.00	-11.9677		
12	0.00	-8.14	-4.78	0.00	-11.9677		
	0.25	-9.05	-2.55	0.00	-10.4683		
	0.50	-9.44	-0.61	0.00	-8.9780		
13	0.00	-9.44	-0.61	0.00	-8.9780		
	0.25	-9.38	1.04	0.00	-7.4973		
	0.50	-8.95	2.38	0.00	-6.0261		
14	0.00	-8.95	2.38	0.00	-6.0261		
	0.25	-8.21	3.44	0.00	-4.5640		
	0.50	-7.25	4.20	0.00	-3.1103		
15	0.00	-7.25	4.20	0.00	-3.1103		
	0.25	-6.13	4.68	0.00	-1.6639		
	0.50	-4.93	4.87	0.00	-0.2238		
16	0.00	-4.93	4.87	0.00	-0.2238		
	0.25	-3.72	4.77	0.00	1.2113		
	0.50	-2.57	4.39	0.00	2.6426		
17	0.00	-2.57	4.39	0.00	2.6426		
	0.25	-1.55	3.72	0.00	4.0713		
	0.50	-0.74	2.76	0.00	5.4984		
18	0.00	-0.74	2.76	0.00	5.4984		
	0.25	-0.20	1.52	0.00	6.9247		
	0.50	0.00	0.00	0.00	8.3508		

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLE RARA	1.00	1.00
SLU	1.50	1.00

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	-87.86	69.48	0.00	0.0000
	0.25	-70.58	68.43	0.00	0.0000
	0.50	-53.82	65.28	0.00	0.0000
2	0.00	-53.82	65.28	0.00	0.0000
	0.25	-38.11	60.03	0.00	0.0000
	0.50	-23.98	52.67	0.00	0.0000
3	0.00	-23.98	52.67	0.00	0.0000
	0.25	-11.95	43.21	0.00	0.0000
	0.50	-2.55	31.65	0.00	0.0000
4	0.00	-2.55	31.65	0.00	0.0000
	0.25	3.70	17.99	0.00	0.0000
	0.50	6.27	2.23	0.00	0.0000
5	0.00	6.27	2.23	0.00	2.9223
	0.25	6.76	1.67	0.00	2.6845
	0.50	7.11	1.16	0.00	2.4536
6	0.00	7.11	1.16	0.00	2.4536
	0.25	7.34	0.69	0.00	2.2299
	0.50	7.46	0.27	0.00	2.0137
7	0.00	7.46	0.27	0.00	2.0137
	0.25	7.48	-0.11	0.00	1.8051
	0.50	7.40	-0.45	0.00	1.6041
8	0.00	7.40	-0.45	0.00	1.6041
	0.25	7.25	-0.75	0.00	1.4106
	0.50	7.03	-1.02	0.00	1.2245
9	0.00	7.03	-1.02	0.00	1.2245
	0.25	6.75	-1.24	0.00	1.0456
	0.50	6.41	-1.43	0.00	0.8735
10	0.00	6.41	-1.43	0.00	0.8735
	0.25	6.03	-1.59	0.00	0.7080
	0.50	5.62	-1.72	0.00	0.5486
11	0.00	5.62	-1.72	0.00	0.5486
	0.25	5.18	-1.81	0.00	0.3949
	0.50	4.72	-1.87	0.00	0.2465
12	0.00	4.72	-1.87	0.00	0.2465
	0.25	4.24	-1.91	0.00	0.1029
	0.50	3.76	-1.92	0.00	-0.0364
13	0.00	3.76	-1.92	0.00	-0.0364
	0.25	3.29	-1.90	0.00	-0.1719
	0.50	2.82	-1.85	0.00	-0.3040
14	0.00	2.82	-1.85	0.00	-0.3040
	0.25	2.37	-1.77	0.00	-0.4332
	0.50	1.93	-1.68	0.00	-0.5600
15	0.00	1.93	-1.68	0.00	-0.5600
	0.25	1.53	-1.55	0.00	-0.6849
	0.50	1.16	-1.40	0.00	-0.8082
16	0.00	1.16	-1.40	0.00	-0.8082
	0.25	0.83	-1.23	0.00	-0.9303
	0.50	0.55	-1.03	0.00	-1.0515
17	0.00	0.55	-1.03	0.00	-1.0515
	0.25	0.32	-0.81	0.00	-1.1722

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.50	0.14	-0.56	0.00	-1.2926
18	0.00	0.14	-0.56	0.00	-1.2926
	0.25	0.04	-0.29	0.00	-1.4128
	0.50	0.00	0.00	0.00	-1.5330

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	-204.89	104.22	0.00	0.0000
	0.25	-178.92	103.17	0.00	0.0000
	0.50	-153.48	100.02	0.00	0.0000
2	0.00	-153.48	100.02	0.00	0.0000
	0.25	-129.08	94.77	0.00	0.0000
	0.50	-106.27	87.41	0.00	0.0000
3	0.00	-106.27	87.41	0.00	0.0000
	0.25	-85.55	77.95	0.00	0.0000
	0.50	-67.47	66.39	0.00	0.0000
4	0.00	-67.47	66.39	0.00	0.0000
	0.25	-52.53	52.73	0.00	0.0000
	0.50	-41.27	36.97	0.00	0.0000
5	0.00	-41.27	36.97	0.00	20.3630
	0.25	-32.53	33.00	0.00	19.4320
	0.50	-24.76	29.22	0.00	18.4678
6	0.00	-24.76	29.22	0.00	18.4678
	0.25	-17.91	25.64	0.00	17.4783
	0.50	-11.92	22.25	0.00	16.4705
7	0.00	-11.92	22.25	0.00	16.4705
	0.25	-6.76	19.07	0.00	15.4504
	0.50	-2.37	16.09	0.00	14.4234
8	0.00	-2.37	16.09	0.00	14.4234
	0.25	1.30	13.31	0.00	13.3940
	0.50	4.30	10.75	0.00	12.3658
9	0.00	4.30	10.75	0.00	12.3658
	0.25	6.69	8.38	0.00	11.3419
	0.50	8.51	6.22	0.00	10.3248
10	0.00	8.51	6.22	0.00	10.3248
	0.25	9.81	4.26	0.00	9.3163
	0.50	10.66	2.50	0.00	8.3177
11	0.00	10.66	2.50	0.00	8.3177
	0.25	11.08	0.94	0.00	7.3300
	0.50	11.14	-0.42	0.00	6.3536
12	0.00	11.14	-0.42	0.00	6.3536
	0.25	10.89	-1.59	0.00	5.3884
	0.50	10.37	-2.57	0.00	4.4344
13	0.00	10.37	-2.57	0.00	4.4344
	0.25	9.62	-3.36	0.00	3.4908
	0.50	8.70	-3.96	0.00	2.5571
14	0.00	8.70	-3.96	0.00	2.5571
	0.25	7.65	-4.38	0.00	1.6322
	0.50	6.53	-4.62	0.00	0.7151
15	0.00	6.53	-4.62	0.00	0.7151
	0.25	5.36	-4.67	0.00	-0.1954
	0.50	4.21	-4.54	0.00	-1.1004
16	0.00	4.21	-4.54	0.00	-1.1004
	0.25	3.11	-4.23	0.00	-2.0011
	0.50	2.11	-3.74	0.00	-2.8986
17	0.00	2.11	-3.74	0.00	-2.8986
	0.25	1.25	-3.07	0.00	-3.7940
	0.50	0.59	-2.23	0.00	-4.6881
18	0.00	0.59	-2.23	0.00	-4.6881
	0.25	0.15	-1.20	0.00	-5.5816
	0.50	0.00	0.00	0.00	-6.4749

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**ALLEGATO N°5. 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"**

Doc. N.

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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	1	0

Caratteristiche delle aste**Elemento strutturale :**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.5E7	0.0000	0.00
2	1	0.2785	0.006174	3.5E7	0.0000	0.00
3	1	0.2785	0.006174	3.1447E7	0.0000	0.00
4	1	0.2785	0.006174	3.1447E7	0.0000	0.00
5	1	0.2785	0.006174	3.1447E7	0.0000	0.00
6	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
7	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
8	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
9	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
10	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
11	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
12	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
13	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
14	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
15	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
16	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
17	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
18	1	0.2785	0.006174	3.1447E7	10000.0000	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura**Nppm****Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

Tppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Mppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Mbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-82.27

Tbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	28.13	0.00	0.00

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204 di 313**qs****Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	2.85	2.85	LL
	2	0.00	0.00	2.85	2.85	LL
	3	0.00	0.00	2.85	2.85	LL
	4	0.00	0.00	2.85	2.85	LL
	5	0.00	0.00	3.69	3.69	LL
	6	0.00	0.00	3.69	3.69	LL
	7	0.00	0.00	3.69	3.69	LL
	8	0.00	0.00	3.69	3.69	LL
	9	0.00	0.00	3.69	3.69	LL
	10	0.00	0.00	3.69	3.69	LL
	11	0.00	0.00	3.69	3.69	LL
	12	0.00	0.00	3.69	3.69	LL
	13	0.00	0.00	3.69	3.69	LL
	14	0.00	0.00	3.69	3.69	LL
	15	0.00	0.00	3.69	3.69	LL
	16	0.00	0.00	3.69	3.69	LL
	17	0.00	0.00	3.69	3.69	LL
	18	0.00	0.00	3.69	3.69	LL

Tsacp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

Mqp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

Msacp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-25.22	-37.83	LL
	4	0.00	0.00	-37.83	-50.44	LL
	5	0.00	0.00	-49.47	-61.84	LL

Nbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-48.95	0.00

Risultati**Condizioni di carico****Condizione : Nppm****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
2	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
3	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
4	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

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5	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
6	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
7	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
8	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
9	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
10	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
11	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
12	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
13	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
14	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
15	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
16	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
17	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
18	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			

Condizione : Tppm
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000
	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000

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2	0.00	1.50	3.00	0.00	0.0000		
	0.10	1.80	3.00	0.00	0.0000		
	0.20	2.10	3.00	0.00	0.0000		
	0.30	2.40	3.00	0.00	0.0000		
	0.40	2.70	3.00	0.00	0.0000		
	0.50	3.00	3.00	0.00	0.0000		
3	0.00	3.00	3.00	0.00	0.0000		
	0.10	3.30	3.00	0.00	0.0000		
	0.20	3.60	3.00	0.00	0.0000		
	0.30	3.90	3.00	0.00	0.0000		
	0.40	4.20	3.00	0.00	0.0000		
	0.50	4.50	3.00	0.00	0.0000		
4	0.00	4.50	3.00	0.00	0.0000		
	0.10	4.80	3.00	0.00	0.0000		
	0.20	5.10	3.00	0.00	0.0000		
	0.30	5.40	3.00	0.00	0.0000		
	0.40	5.70	3.00	0.00	0.0000		
	0.50	6.00	3.00	0.00	0.0000		
5	0.00	6.00	3.00	0.00	0.0000		
	0.10	6.30	3.00	0.00	0.0000		
	0.20	6.60	3.00	0.00	0.0000		
	0.30	6.90	3.00	0.00	0.0000		
	0.40	7.20	3.00	0.00	0.0000		
	0.50	7.50	3.00	0.00	0.0000		
6	0.00	7.50	3.00	0.00	6.0282		
	0.10	7.78	2.65	0.00	5.7838		
	0.20	8.03	2.31	0.00	5.5434		
	0.30	8.24	1.98	0.00	5.3071		
	0.40	8.43	1.67	0.00	5.0751		
	0.50	8.58	1.38	0.00	4.8474		
7	0.00	8.58	1.38	0.00	4.8474		
	0.10	8.70	1.09	0.00	4.6241		
	0.20	8.80	0.82	0.00	4.4053		
	0.30	8.87	0.57	0.00	4.1910		
	0.40	8.91	0.32	0.00	3.9813		
	0.50	8.93	0.09	0.00	3.7762		
8	0.00	8.93	0.09	0.00	3.7762		
	0.10	8.93	-0.13	0.00	3.5757		
	0.20	8.91	-0.34	0.00	3.3798		
	0.30	8.86	-0.54	0.00	3.1884		
	0.40	8.80	-0.72	0.00	3.0017		
	0.50	8.72	-0.89	0.00	2.8194		
9	0.00	8.72	-0.89	0.00	2.8194		
	0.10	8.62	-1.06	0.00	2.6417		
	0.20	8.51	-1.21	0.00	2.4684		
	0.30	8.38	-1.35	0.00	2.2995		
	0.40	8.24	-1.49	0.00	2.1348		
	0.50	8.08	-1.61	0.00	1.9745		
10	0.00	8.08	-1.61	0.00	1.9745		
	0.10	7.92	-1.72	0.00	1.8183		
	0.20	7.74	-1.83	0.00	1.6661		
	0.30	7.55	-1.92	0.00	1.5180		
	0.40	7.35	-2.01	0.00	1.3737		
	0.50	7.15	-2.09	0.00	1.2333		
11	0.00	7.15	-2.09	0.00	1.2333		
	0.10	6.94	-2.16	0.00	1.0965		
	0.20	6.72	-2.22	0.00	0.9632		
	0.30	6.49	-2.27	0.00	0.8335		
	0.40	6.26	-2.32	0.00	0.7071		
	0.50	6.03	-2.36	0.00	0.5839		
12	0.00	6.03	-2.36	0.00	0.5839		
	0.10	5.79	-2.39	0.00	0.4638		
	0.20	5.55	-2.41	0.00	0.3467		
	0.30	5.31	-2.43	0.00	0.2324		
	0.40	5.07	-2.44	0.00	0.1209		
	0.50	4.82	-2.44	0.00	0.0120		
13	0.00	4.82	-2.44	0.00	0.0120		
	0.10	4.58	-2.44	0.00	-0.0944		
	0.20	4.33	-2.43	0.00	-0.1984		
	0.30	4.09	-2.42	0.00	-0.3003		
	0.40	3.85	-2.40	0.00	-0.4000		
	0.50	3.61	-2.37	0.00	-0.4977		
14	0.00	3.61	-2.37	0.00	-0.4977		
	0.10	3.38	-2.34	0.00	-0.5936		
	0.20	3.15	-2.30	0.00	-0.6877		
	0.30	2.92	-2.25	0.00	-0.7802		
	0.40	2.69	-2.21	0.00	-0.8712		
	0.50	2.48	-2.15	0.00	-0.9608		
15	0.00	2.48	-2.15	0.00	-0.9608		
	0.10	2.26	-2.09	0.00	-1.0492		
	0.20	2.06	-2.03	0.00	-1.1364		
	0.30	1.86	-1.95	0.00	-1.2225		
	0.40	1.67	-1.88	0.00	-1.3076		
	0.50	1.48	-1.80	0.00	-1.3919		
16	0.00	1.48	-1.80	0.00	-1.3919		
	0.10	1.31	-1.71	0.00	-1.4755		
	0.20	1.14	-1.62	0.00	-1.5583		
	0.30	0.98	-1.53	0.00	-1.6406		
	0.40	0.84	-1.43	0.00	-1.7224		
	0.50	0.70	-1.32	0.00	-1.8037		
17	0.00	0.70	-1.32	0.00	-1.8037		
	0.10	0.57	-1.21	0.00	-1.8847		
	0.20	0.46	-1.09	0.00	-1.9654		
	0.30	0.35	-0.97	0.00	-2.0458		
	0.40	0.26	-0.85	0.00	-2.1261		

GENERAL CONTRACTOR



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	0.50	0.18	-0.72	0.00	-2.2062
18	0.00	0.18	-0.72	0.00	-2.2062
	0.10	0.12	-0.59	0.00	-2.2862
	0.20	0.07	-0.45	0.00	-2.3662
	0.30	0.03	-0.30	0.00	-2.4461
	0.40	0.01	-0.15	0.00	-2.5260
	0.50	0.00	0.00	0.00	-2.6059

Condizione : Mppm
Solicitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
3	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
4	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
5	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
6	0.00	8.30	0.00	0.00	2.8472
	0.10	8.29	-0.17	0.00	2.6906
	0.20	8.27	-0.32	0.00	2.5383
	0.30	8.23	-0.47	0.00	2.3902
	0.40	8.17	-0.61	0.00	2.2463
	0.50	8.11	-0.74	0.00	2.1066
7	0.00	8.11	-0.74	0.00	2.1066
	0.10	8.03	-0.86	0.00	1.9711
	0.20	7.93	-0.97	0.00	1.8398
	0.30	7.83	-1.08	0.00	1.7125
	0.40	7.72	-1.18	0.00	1.5893
	0.50	7.60	-1.27	0.00	1.4700
8	0.00	7.60	-1.27	0.00	1.4700
	0.10	7.46	-1.36	0.00	1.3547
	0.20	7.33	-1.43	0.00	1.2432
	0.30	7.18	-1.50	0.00	1.1355
	0.40	7.02	-1.57	0.00	1.0314
	0.50	6.86	-1.63	0.00	0.9310
9	0.00	6.86	-1.63	0.00	0.9310
	0.10	6.70	-1.68	0.00	0.8341
	0.20	6.53	-1.73	0.00	0.7407
	0.30	6.35	-1.77	0.00	0.6506
	0.40	6.18	-1.81	0.00	0.5638
	0.50	5.99	-1.84	0.00	0.4802
10	0.00	5.99	-1.84	0.00	0.4802
	0.10	5.81	-1.86	0.00	0.3997
	0.20	5.62	-1.88	0.00	0.3222
	0.30	5.43	-1.90	0.00	0.2475
	0.40	5.24	-1.91	0.00	0.1757
	0.50	5.05	-1.92	0.00	0.1065
11	0.00	5.05	-1.92	0.00	0.1065
	0.10	4.86	-1.93	0.00	0.0400
	0.20	4.66	-1.93	0.00	-0.0241
	0.30	4.47	-1.92	0.00	-0.0857
	0.40	4.28	-1.92	0.00	-0.1450
	0.50	4.09	-1.91	0.00	-0.2022
12	0.00	4.09	-1.91	0.00	-0.2022
	0.10	3.90	-1.89	0.00	-0.2572
	0.20	3.71	-1.88	0.00	-0.3102
	0.30	3.52	-1.86	0.00	-0.3614
	0.40	3.34	-1.83	0.00	-0.4107
	0.50	3.16	-1.81	0.00	-0.4582
13	0.00	3.16	-1.81	0.00	-0.4582
	0.10	2.98	-1.78	0.00	-0.5042
	0.20	2.80	-1.75	0.00	-0.5486
	0.30	2.63	-1.71	0.00	-0.5916
	0.40	2.46	-1.68	0.00	-0.6332
	0.50	2.29	-1.64	0.00	-0.6736
14	0.00	2.29	-1.64	0.00	-0.6736
	0.10	2.13	-1.60	0.00	-0.7128
	0.20	1.97	-1.55	0.00	-0.7509
	0.30	1.82	-1.51	0.00	-0.7879
	0.40	1.67	-1.46	0.00	-0.8241

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	0.50	1.53	-1.41	0.00	-0.8593
15	0.00	1.53	-1.41	0.00	-0.8593
	0.10	1.39	-1.35	0.00	-0.8938
	0.20	1.26	-1.30	0.00	-0.9276
	0.30	1.13	-1.24	0.00	-0.9607
	0.40	1.01	-1.18	0.00	-0.9933
	0.50	0.89	-1.12	0.00	-1.0253
16	0.00	0.89	-1.12	0.00	-1.0253
	0.10	0.78	-1.06	0.00	-1.0568
	0.20	0.68	-1.00	0.00	-1.0880
	0.30	0.58	-0.93	0.00	-1.1188
	0.40	0.49	-0.86	0.00	-1.1493
	0.50	0.41	-0.79	0.00	-1.1795
17	0.00	0.41	-0.79	0.00	-1.1795
	0.10	0.34	-0.72	0.00	-1.2096
	0.20	0.27	-0.65	0.00	-1.2394
	0.30	0.21	-0.57	0.00	-1.2691
	0.40	0.15	-0.50	0.00	-1.2987
	0.50	0.11	-0.42	0.00	-1.3283
18	0.00	0.11	-0.42	0.00	-1.3283
	0.10	0.07	-0.34	0.00	-1.3578
	0.20	0.04	-0.26	0.00	-1.3872
	0.30	0.02	-0.17	0.00	-1.4166
	0.40	0.00	-0.09	0.00	-1.4460
	0.50	0.00	0.00	0.00	-1.4754

Condizione : Mbp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
2	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
3	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
4	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
5	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
6	0.00	82.27	0.00	0.00	28.2207
	0.10	82.18	-1.64	0.00	26.6682
	0.20	81.94	-3.19	0.00	25.1581
	0.30	81.55	-4.65	0.00	23.6901
	0.40	81.01	-6.03	0.00	22.2642
	0.50	80.34	-7.32	0.00	20.8800
7	0.00	80.34	-7.32	0.00	20.8800
	0.10	79.55	-8.53	0.00	19.5371
	0.20	78.64	-9.66	0.00	18.2352
	0.30	77.62	-10.71	0.00	16.9738
	0.40	76.50	-11.69	0.00	15.7524
	0.50	75.29	-12.60	0.00	14.5704
8	0.00	75.29	-12.60	0.00	14.5704
	0.10	73.99	-13.43	0.00	13.4271
	0.20	72.60	-14.20	0.00	12.3220
	0.30	71.15	-14.91	0.00	11.2542
	0.40	69.62	-15.55	0.00	10.2231
	0.50	68.04	-16.13	0.00	9.2279
9	0.00	68.04	-16.13	0.00	9.2279
	0.10	66.40	-16.66	0.00	8.2676
	0.20	64.71	-17.12	0.00	7.3416
	0.30	62.98	-17.54	0.00	6.4489
	0.40	61.20	-17.89	0.00	5.5886
	0.50	59.40	-18.20	0.00	4.7599
10	0.00	59.40	-18.20	0.00	4.7599
	0.10	57.57	-18.47	0.00	3.9617
	0.20	55.71	-18.68	0.00	3.1932
	0.30	53.83	-18.85	0.00	2.4534
	0.40	51.94	-18.97	0.00	1.7413
	0.50	50.04	-19.06	0.00	1.0559
11	0.00	50.04	-19.06	0.00	1.0559
	0.10	48.13	-19.10	0.00	0.3963
	0.20	46.22	-19.10	0.00	-0.2385
	0.30	44.31	-19.07	0.00	-0.8495
	0.40	42.41	-19.00	0.00	-1.4377

GENERAL CONTRACTOR



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GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.50	40.51	-18.90	0.00		-2.0040		
12	0.00	40.51	-18.90	0.00		-2.0040		
	0.10	38.63	-18.76	0.00		-2.5495		
	0.20	36.76	-18.60	0.00		-3.0750		
	0.30	34.91	-18.40	0.00		-3.5817		
	0.40	33.08	-18.17	0.00		-4.0703		
	0.50	31.28	-17.91	0.00		-4.5420		
13	0.00	31.28	-17.91	0.00		-4.5420		
	0.10	29.50	-17.62	0.00		-4.9975		
	0.20	27.75	-17.31	0.00		-5.4378		
	0.30	26.04	-16.97	0.00		-5.8638		
	0.40	24.36	-16.61	0.00		-6.2764		
	0.50	22.72	-16.22	0.00		-6.6765		
14	0.00	22.72	-16.22	0.00		-6.6765		
	0.10	21.11	-15.81	0.00		-7.0649		
	0.20	19.55	-15.38	0.00		-7.4424		
	0.30	18.04	-14.92	0.00		-7.8098		
	0.40	16.57	-14.44	0.00		-8.1679		
	0.50	15.15	-13.94	0.00		-8.5175		
15	0.00	15.15	-13.94	0.00		-8.5175		
	0.10	13.78	-13.42	0.00		-8.8593		
	0.20	12.47	-12.88	0.00		-9.1940		
	0.30	11.21	-12.32	0.00		-9.5222		
	0.40	10.00	-11.74	0.00		-9.8447		
	0.50	8.86	-11.15	0.00		-10.1620		
16	0.00	8.86	-11.15	0.00		-10.1620		
	0.10	7.77	-10.53	0.00		-10.4748		
	0.20	6.75	-9.89	0.00		-10.7836		
	0.30	5.80	-9.24	0.00		-11.0888		
	0.40	4.91	-8.57	0.00		-11.3911		
	0.50	4.08	-7.88	0.00		-11.6909		
17	0.00	4.08	-7.88	0.00		-11.6909		
	0.10	3.33	-7.17	0.00		-11.9885		
	0.20	2.65	-6.44	0.00		-12.2845		
	0.30	2.04	-5.70	0.00		-12.5790		
	0.40	1.51	-4.94	0.00		-12.8726		
	0.50	1.06	-4.16	0.00		-13.1653		
18	0.00	1.06	-4.16	0.00		-13.1653		
	0.10	0.68	-3.36	0.00		-13.4575		
	0.20	0.39	-2.55	0.00		-13.7493		
	0.30	0.17	-1.72	0.00		-14.0409		
	0.40	0.04	-0.87	0.00		-14.3324		
	0.50	0.00	0.00	0.00		-14.6240		

Condizione : Tbp

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	28.13	0.00	0.0000
	0.10	2.81	28.13	0.00	0.0000
	0.20	5.62	28.13	0.00	0.0000
	0.30	8.44	28.13	0.00	0.0000
	0.40	11.25	28.13	0.00	0.0000
	0.50	14.06	28.13	0.00	0.0000
2	0.00	14.06	28.12	0.00	0.0000
	0.10	16.88	28.12	0.00	0.0000
	0.20	19.69	28.12	0.00	0.0000
	0.30	22.50	28.12	0.00	0.0000
	0.40	25.31	28.12	0.00	0.0000
	0.50	28.13	28.12	0.00	0.0000
3	0.00	28.13	28.12	0.00	0.0000
	0.10	30.94	28.12	0.00	0.0000
	0.20	33.75	28.12	0.00	0.0000
	0.30	36.56	28.12	0.00	0.0000
	0.40	39.37	28.12	0.00	0.0000
	0.50	42.19	28.12	0.00	0.0000
4	0.00	42.19	28.12	0.00	0.0000
	0.10	45.00	28.12	0.00	0.0000
	0.20	47.81	28.12	0.00	0.0000
	0.30	50.63	28.12	0.00	0.0000
	0.40	53.44	28.12	0.00	0.0000
	0.50	56.25	28.12	0.00	0.0000
5	0.00	56.25	28.12	0.00	0.0000
	0.10	59.06	28.12	0.00	0.0000
	0.20	61.88	28.12	0.00	0.0000
	0.30	64.69	28.12	0.00	0.0000
	0.40	67.50	28.12	0.00	0.0000
	0.50	70.31	28.12	0.00	0.0000
6	0.00	70.31	28.12	0.00	56.5145
	0.10	72.96	24.81	0.00	54.2231
	0.20	75.28	21.64	0.00	51.9692
	0.30	77.29	18.59	0.00	49.7540
	0.40	79.00	15.68	0.00	47.5787
	0.50	80.43	12.90	0.00	45.4441
7	0.00	80.43	12.90	0.00	45.4441
	0.10	81.59	10.24	0.00	43.3508
	0.20	82.48	7.71	0.00	41.2996
	0.30	83.13	5.30	0.00	39.2908
	0.40	83.55	3.01	0.00	37.3248
	0.50	83.74	0.83	0.00	35.4019
8	0.00	83.74	0.83	0.00	35.4019
	0.10	83.72	-1.23	0.00	33.5221
	0.20	83.50	-3.18	0.00	31.6854
	0.30	83.08	-5.02	0.00	29.8916
	0.40	82.49	-6.76	0.00	28.1407

GENERAL CONTRACTOR



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	0.50	81.74	-8.39	0.00	26.4322			
9	0.00	81.74	-8.39	0.00	26.4322			
	0.10	80.82	-9.92	0.00	24.7658			
	0.20	79.76	-11.35	0.00	23.1411			
	0.30	78.55	-12.69	0.00	21.5574			
	0.40	77.22	-13.94	0.00	20.0142			
	0.50	75.77	-15.09	0.00	18.5107			
10	0.00	75.77	-15.09	0.00	18.5107			
	0.10	74.21	-16.15	0.00	17.0462			
	0.20	72.54	-17.13	0.00	15.6200			
	0.30	70.78	-18.02	0.00	14.2311			
	0.40	68.94	-18.83	0.00	12.8787			
	0.50	67.02	-19.56	0.00	11.5617			
11	0.00	67.02	-19.56	0.00	11.5617			
	0.10	65.03	-20.22	0.00	10.2793			
	0.20	62.98	-20.79	0.00	9.0304			
	0.30	60.87	-21.30	0.00	7.8139			
	0.40	58.72	-21.73	0.00	6.6287			
	0.50	56.53	-22.09	0.00	5.4738			
12	0.00	56.53	-22.09	0.00	5.4738			
	0.10	54.30	-22.38	0.00	4.3480			
	0.20	52.05	-22.61	0.00	3.2502			
	0.30	49.78	-22.77	0.00	2.1792			
	0.40	47.50	-22.87	0.00	1.1338			
	0.50	45.21	-22.91	0.00	0.1129			
13	0.00	45.21	-22.91	0.00	0.1129			
	0.10	42.92	-22.89	0.00	-0.8847			
	0.20	40.64	-22.81	0.00	-1.8603			
	0.30	38.36	-22.67	0.00	-2.8149			
	0.40	36.11	-22.47	0.00	-3.7497			
	0.50	33.87	-22.22	0.00	-4.6660			
14	0.00	33.87	-22.22	0.00	-4.6660			
	0.10	31.66	-21.91	0.00	-5.5647			
	0.20	29.49	-21.55	0.00	-6.4472			
	0.30	27.36	-21.14	0.00	-7.3145			
	0.40	25.26	-20.68	0.00	-8.1677			
	0.50	23.22	-20.16	0.00	-9.0079			
15	0.00	23.22	-20.16	0.00	-9.0079			
	0.10	21.23	-19.60	0.00	-9.8362			
	0.20	19.30	-18.99	0.00	-10.6535			
	0.30	17.44	-18.32	0.00	-11.4608			
	0.40	15.64	-17.61	0.00	-12.2592			
	0.50	13.92	-16.86	0.00	-13.0495			
16	0.00	13.92	-16.86	0.00	-13.0495			
	0.10	12.27	-16.05	0.00	-13.8326			
	0.20	10.71	-15.20	0.00	-14.6094			
	0.30	9.23	-14.30	0.00	-15.3807			
	0.40	7.85	-13.36	0.00	-16.1473			
	0.50	6.56	-12.37	0.00	-16.9098			
17	0.00	6.56	-12.37	0.00	-16.9098			
	0.10	5.38	-11.34	0.00	-17.6689			
	0.20	4.29	-10.26	0.00	-18.4252			
	0.30	3.32	-9.13	0.00	-19.1793			
	0.40	2.47	-7.96	0.00	-19.9317			
	0.50	1.73	-6.75	0.00	-20.6829			
18	0.00	1.73	-6.75	0.00	-20.6829			
	0.10	1.12	-5.49	0.00	-21.4331			
	0.20	0.64	-4.18	0.00	-22.1827			
	0.30	0.29	-2.83	0.00	-22.9320			
	0.40	0.07	-1.44	0.00	-23.6812			
	0.50	0.00	0.00	0.00	-24.4303			

bCondizione : qs

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.01	0.29	0.00	0.0000
	0.20	0.06	0.57	0.00	0.0000
	0.30	0.13	0.86	0.00	0.0000
	0.40	0.23	1.14	0.00	0.0000
	0.50	0.36	1.43	0.00	0.0000
2	0.00	0.36	1.43	0.00	0.0000
	0.10	0.51	1.71	0.00	0.0000
	0.20	0.70	2.00	0.00	0.0000
	0.30	0.91	2.28	0.00	0.0000
	0.40	1.16	2.57	0.00	0.0000
	0.50	1.43	2.85	0.00	0.0000
3	0.00	1.43	2.85	0.00	0.0000
	0.10	1.73	3.14	0.00	0.0000
	0.20	2.06	3.43	0.00	0.0000
	0.30	2.41	3.71	0.00	0.0000
	0.40	2.80	4.00	0.00	0.0000
	0.50	3.21	4.28	0.00	0.0000
4	0.00	3.21	4.28	0.00	0.0000
	0.10	3.65	4.57	0.00	0.0000
	0.20	4.12	4.85	0.00	0.0000
	0.30	4.62	5.14	0.00	0.0000
	0.40	5.15	5.42	0.00	0.0000
	0.50	5.71	5.71	0.00	0.0000
5	0.00	5.71	5.71	0.00	0.0000
	0.10	6.30	6.08	0.00	0.0000
	0.20	6.92	6.45	0.00	0.0000
	0.30	7.59	6.82	0.00	0.0000
	0.40	8.29	7.18	0.00	0.0000

GENERAL CONTRACTOR



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	0.50	9.02	7.55	0.00	0.0000
6	0.00	9.02	7.55	0.00	17.9575
	0.10	9.75	6.86	0.00	17.5282
	0.20	10.40	6.19	0.00	17.1038
	0.30	10.98	5.55	0.00	16.6849
	0.40	11.51	4.93	0.00	16.2716
	0.50	11.97	4.34	0.00	15.8642
7	0.00	11.97	4.34	0.00	15.8642
	0.10	12.38	3.77	0.00	15.4630
	0.20	12.73	3.23	0.00	15.0681
	0.30	13.02	2.71	0.00	14.6798
	0.40	13.27	2.21	0.00	14.2982
	0.50	13.47	1.73	0.00	13.9235
8	0.00	13.47	1.73	0.00	13.9235
	0.10	13.62	1.28	0.00	13.5556
	0.20	13.72	0.85	0.00	13.1948
	0.30	13.79	0.44	0.00	12.8411
	0.40	13.81	0.05	0.00	12.4944
	0.50	13.80	-0.32	0.00	12.1549
9	0.00	13.80	-0.32	0.00	12.1549
	0.10	13.75	-0.67	0.00	11.8224
	0.20	13.66	-1.00	0.00	11.4971
	0.30	13.55	-1.31	0.00	11.1788
	0.40	13.40	-1.60	0.00	10.8674
	0.50	13.23	-1.87	0.00	10.5630
10	0.00	13.23	-1.87	0.00	10.5630
	0.10	13.03	-2.12	0.00	10.2653
	0.20	12.81	-2.36	0.00	9.9744
	0.30	12.56	-2.58	0.00	9.6901
	0.40	12.29	-2.78	0.00	9.4122
	0.50	12.00	-2.97	0.00	9.1407
11	0.00	12.00	-2.97	0.00	9.1407
	0.10	11.70	-3.14	0.00	8.8753
	0.20	11.37	-3.29	0.00	8.6160
	0.30	11.04	-3.43	0.00	8.3625
	0.40	10.69	-3.56	0.00	8.1148
	0.50	10.33	-3.67	0.00	7.8725
12	0.00	10.33	-3.67	0.00	7.8725
	0.10	9.95	-3.76	0.00	7.6355
	0.20	9.57	-3.84	0.00	7.4037
	0.30	9.19	-3.91	0.00	7.1768
	0.40	8.79	-3.97	0.00	6.9546
	0.50	8.39	-4.01	0.00	6.7369
13	0.00	8.39	-4.01	0.00	6.7369
	0.10	7.99	-4.03	0.00	6.5236
	0.20	7.59	-4.05	0.00	6.3144
	0.30	7.18	-4.05	0.00	6.1091
	0.40	6.78	-4.04	0.00	5.9075
	0.50	6.37	-4.02	0.00	5.7094
14	0.00	6.37	-4.02	0.00	5.7094
	0.10	5.97	-3.99	0.00	5.5145
	0.20	5.58	-3.94	0.00	5.3228
	0.30	5.18	-3.89	0.00	5.1339
	0.40	4.80	-3.82	0.00	4.9477
	0.50	4.42	-3.74	0.00	4.7640
15	0.00	4.42	-3.74	0.00	4.7640
	0.10	4.05	-3.65	0.00	4.5825
	0.20	3.69	-3.55	0.00	4.4031
	0.30	3.34	-3.44	0.00	4.2256
	0.40	3.00	-3.32	0.00	4.0499
	0.50	2.68	-3.19	0.00	3.8757
16	0.00	2.68	-3.19	0.00	3.8757
	0.10	2.36	-3.05	0.00	3.7029
	0.20	2.07	-2.90	0.00	3.5312
	0.30	1.78	-2.73	0.00	3.3607
	0.40	1.52	-2.56	0.00	3.1911
	0.50	1.27	-2.38	0.00	3.0222
17	0.00	1.27	-2.38	0.00	3.0222
	0.10	1.04	-2.19	0.00	2.8540
	0.20	0.84	-1.98	0.00	2.6864
	0.30	0.65	-1.77	0.00	2.5192
	0.40	0.48	-1.55	0.00	2.3523
	0.50	0.34	-1.31	0.00	2.1857
18	0.00	0.34	-1.31	0.00	2.1857
	0.10	0.22	-1.07	0.00	2.0192
	0.20	0.12	-0.82	0.00	1.8528
	0.30	0.06	-0.56	0.00	1.6866
	0.40	0.01	-0.28	0.00	1.5203
	0.50	0.00	0.00	0.00	1.3541

Condizione : Tsacp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000
	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000
	0.40	6.42	7.14	0.00	0.0000

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	0.50	7.14	7.14	0.00	0.0000			
3	0.00	7.14	7.14	0.00	0.0000			
	0.10	7.85	7.14	0.00	0.0000			
	0.20	8.56	7.14	0.00	0.0000			
	0.30	9.28	7.14	0.00	0.0000			
	0.40	9.99	7.14	0.00	0.0000			
	0.50	10.70	7.14	0.00	0.0000			
4	0.00	10.70	7.14	0.00	0.0000			
	0.10	11.42	7.14	0.00	0.0000			
	0.20	12.13	7.14	0.00	0.0000			
	0.30	12.85	7.14	0.00	0.0000			
	0.40	13.56	7.14	0.00	0.0000			
	0.50	14.27	7.14	0.00	0.0000			
5	0.00	14.27	7.14	0.00	0.0000			
	0.10	14.99	7.14	0.00	0.0000			
	0.20	15.70	7.14	0.00	0.0000			
	0.30	16.41	7.14	0.00	0.0000			
	0.40	17.13	7.14	0.00	0.0000			
	0.50	17.84	7.14	0.00	0.0000			
6	0.00	17.84	7.14	0.00	14.3401			
	0.10	18.51	6.30	0.00	13.7587			
	0.20	19.10	5.49	0.00	13.1868			
	0.30	19.61	4.72	0.00	12.6247			
	0.40	20.05	3.98	0.00	12.0727			
	0.50	20.41	3.27	0.00	11.5311			
7	0.00	20.41	3.27	0.00	11.5311			
	0.10	20.70	2.60	0.00	10.9999			
	0.20	20.93	1.96	0.00	10.4794			
	0.30	21.09	1.34	0.00	9.9697			
	0.40	21.20	0.76	0.00	9.4709			
	0.50	21.25	0.21	0.00	8.9830			
8	0.00	21.25	0.21	0.00	8.9830			
	0.10	21.24	-0.31	0.00	8.5060			
	0.20	21.19	-0.81	0.00	8.0399			
	0.30	21.08	-1.27	0.00	7.5848			
	0.40	20.93	-1.71	0.00	7.1405			
	0.50	20.74	-2.13	0.00	6.7070			
9	0.00	20.74	-2.13	0.00	6.7070			
	0.10	20.51	-2.52	0.00	6.2841			
	0.20	20.24	-2.88	0.00	5.8719			
	0.30	19.93	-3.22	0.00	5.4700			
	0.40	19.59	-3.54	0.00	5.0784			
	0.50	19.23	-3.83	0.00	4.6969			
10	0.00	19.23	-3.83	0.00	4.6969			
	0.10	18.83	-4.10	0.00	4.3254			
	0.20	18.41	-4.35	0.00	3.9635			
	0.30	17.96	-4.57	0.00	3.6110			
	0.40	17.49	-4.78	0.00	3.2679			
	0.50	17.01	-4.96	0.00	2.9337			
11	0.00	17.01	-4.96	0.00	2.9337			
	0.10	16.50	-5.13	0.00	2.6083			
	0.20	15.98	-5.28	0.00	2.2914			
	0.30	15.45	-5.40	0.00	1.9827			
	0.40	14.90	-5.51	0.00	1.6820			
	0.50	14.34	-5.61	0.00	1.3889			
12	0.00	14.34	-5.61	0.00	1.3889			
	0.10	13.78	-5.68	0.00	1.1033			
	0.20	13.21	-5.74	0.00	0.8247			
	0.30	12.63	-5.78	0.00	0.5530			
	0.40	12.05	-5.80	0.00	0.2877			
	0.50	11.47	-5.81	0.00	0.0286			
13	0.00	11.47	-5.81	0.00	0.0286			
	0.10	10.89	-5.81	0.00	-0.2245			
	0.20	10.31	-5.79	0.00	-0.4720			
	0.30	9.73	-5.75	0.00	-0.7143			
	0.40	9.16	-5.70	0.00	-0.9515			
	0.50	8.59	-5.64	0.00	-1.1839			
14	0.00	8.59	-5.64	0.00	-1.1839			
	0.10	8.03	-5.56	0.00	-1.4120			
	0.20	7.48	-5.47	0.00	-1.6359			
	0.30	6.94	-5.36	0.00	-1.8560			
	0.40	6.41	-5.25	0.00	-2.0725			
	0.50	5.89	-5.12	0.00	-2.2857			
15	0.00	5.89	-5.12	0.00	-2.2857			
	0.10	5.39	-4.97	0.00	-2.4959			
	0.20	4.90	-4.82	0.00	-2.7032			
	0.30	4.42	-4.65	0.00	-2.9081			
	0.40	3.97	-4.47	0.00	-3.1107			
	0.50	3.53	-4.28	0.00	-3.3112			
16	0.00	3.53	-4.28	0.00	-3.3112			
	0.10	3.11	-4.07	0.00	-3.5099			
	0.20	2.72	-3.86	0.00	-3.7070			
	0.30	2.34	-3.63	0.00	-3.9027			
	0.40	1.99	-3.39	0.00	-4.0972			
	0.50	1.66	-3.14	0.00	-4.2907			
17	0.00	1.66	-3.14	0.00	-4.2907			
	0.10	1.36	-2.88	0.00	-4.4833			
	0.20	1.09	-2.60	0.00	-4.6753			
	0.30	0.84	-2.32	0.00	-4.8666			
	0.40	0.63	-2.02	0.00	-5.0575			
	0.50	0.44	-1.71	0.00	-5.2481			
18	0.00	0.44	-1.71	0.00	-5.2481			
	0.10	0.28	-1.39	0.00	-5.4385			
	0.20	0.16	-1.06	0.00	-5.6287			

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0.30	0.07	-0.72	0.00	-5.8188
0.40	0.02	-0.37	0.00	-6.0089
0.50	0.00	0.00	0.00	-6.1990

Condizione : Top
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000
2	0.00	7.14	14.27	0.00	0.0000
	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.85	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.13	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.41	14.27	0.00	0.0000
4	0.00	21.41	14.27	0.00	0.0000
	0.10	22.84	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.12	14.27	0.00	0.0000
	0.50	28.55	14.27	0.00	0.0000
5	0.00	28.55	14.27	0.00	0.0000
	0.10	29.97	14.27	0.00	0.0000
	0.20	31.40	14.27	0.00	0.0000
	0.30	32.83	14.27	0.00	0.0000
	0.40	34.26	14.27	0.00	0.0000
	0.50	35.68	14.27	0.00	0.0000
6	0.00	35.68	14.27	0.00	28.6802
	0.10	37.03	12.59	0.00	27.5174
	0.20	38.20	10.98	0.00	26.3735
	0.30	39.22	9.44	0.00	25.2494
	0.40	40.09	7.96	0.00	24.1455
	0.50	40.82	6.55	0.00	23.0622
7	0.00	40.82	6.55	0.00	23.0622
	0.10	41.40	5.20	0.00	21.9999
	0.20	41.86	3.91	0.00	20.9589
	0.30	42.19	2.69	0.00	19.9395
	0.40	42.40	1.53	0.00	18.9418
	0.50	42.50	0.42	0.00	17.9659
8	0.00	42.50	0.42	0.00	17.9659
	0.10	42.49	-0.62	0.00	17.0119
	0.20	42.37	-1.61	0.00	16.0798
	0.30	42.16	-2.55	0.00	15.1695
	0.40	41.86	-3.43	0.00	14.2810
	0.50	41.48	-4.26	0.00	13.4139
9	0.00	41.48	-4.26	0.00	13.4139
	0.10	41.01	-5.04	0.00	12.5683
	0.20	40.47	-5.76	0.00	11.7437
	0.30	39.86	-6.44	0.00	10.9400
	0.40	39.19	-7.07	0.00	10.1569
	0.50	38.45	-7.66	0.00	9.3939
10	0.00	38.45	-7.66	0.00	9.3939
	0.10	37.66	-8.20	0.00	8.6507
	0.20	36.81	-8.69	0.00	7.9269
	0.30	35.92	-9.15	0.00	7.2221
	0.40	34.99	-9.56	0.00	6.5357
	0.50	34.01	-9.93	0.00	5.8674
11	0.00	34.01	-9.93	0.00	5.8674
	0.10	33.00	-10.26	0.00	5.2166
	0.20	31.96	-10.55	0.00	4.5828
	0.30	30.89	-10.81	0.00	3.9654
	0.40	29.80	-11.03	0.00	3.3640
	0.50	28.69	-11.21	0.00	2.7779
12	0.00	28.69	-11.21	0.00	2.7779
	0.10	27.56	-11.36	0.00	2.2066
	0.20	26.42	-11.48	0.00	1.6494
	0.30	25.26	-11.56	0.00	1.1059
	0.40	24.11	-11.61	0.00	0.5754
	0.50	22.94	-11.63	0.00	0.0573
13	0.00	22.94	-11.63	0.00	0.0573
	0.10	21.78	-11.62	0.00	-0.4490
	0.20	20.62	-11.57	0.00	-0.9441
	0.30	19.47	-11.50	0.00	-1.4285
	0.40	18.32	-11.40	0.00	-1.9029
	0.50	17.19	-11.27	0.00	-2.3679
14	0.00	17.19	-11.27	0.00	-2.3679
	0.10	16.07	-11.12	0.00	-2.8240
	0.20	14.97	-10.94	0.00	-3.2719
	0.30	13.88	-10.73	0.00	-3.7120
	0.40	12.82	-10.49	0.00	-4.1450
	0.50	11.78	-10.23	0.00	-4.5714
15	0.00	11.78	-10.23	0.00	-4.5714
	0.10	10.78	-9.95	0.00	-4.9917
	0.20	9.80	-9.63	0.00	-5.4065

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.30	8.85	-9.30	0.00	-5.8162
	0.40	7.94	-8.94	0.00	-6.2213
	0.50	7.06	-8.55	0.00	-6.6224
16	0.00	7.06	-8.55	0.00	-6.6224
	0.10	6.23	-8.15	0.00	-7.0198
	0.20	5.43	-7.71	0.00	-7.4141
	0.30	4.68	-7.26	0.00	-7.8055
	0.40	3.98	-6.78	0.00	-8.1945
	0.50	3.33	-6.28	0.00	-8.5814
17	0.00	3.33	-6.28	0.00	-8.5814
	0.10	2.73	-5.75	0.00	-8.9667
	0.20	2.18	-5.21	0.00	-9.3505
	0.30	1.69	-4.64	0.00	-9.7332
	0.40	1.25	-4.04	0.00	-10.1150
	0.50	0.88	-3.42	0.00	-10.4962
18	0.00	0.88	-3.42	0.00	-10.4962
	0.10	0.57	-2.79	0.00	-10.8770
	0.20	0.32	-2.12	0.00	-11.2574
	0.30	0.15	-1.44	0.00	-11.6377
	0.40	0.04	-0.73	0.00	-12.0178
	0.50	0.00	0.00	0.00	-12.3980

Condizione : Mqp**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
6	0.00	7.14	0.00	0.00	2.4481
	0.10	7.13	-0.14	0.00	2.3134
	0.20	7.11	-0.28	0.00	2.1824
	0.30	7.07	-0.40	0.00	2.0551
	0.40	7.03	-0.52	0.00	1.9314
	0.50	6.97	-0.63	0.00	1.8113
7	0.00	6.97	-0.63	0.00	1.8113
	0.10	6.90	-0.74	0.00	1.6948
	0.20	6.82	-0.84	0.00	1.5819
	0.30	6.73	-0.93	0.00	1.4725
	0.40	6.64	-1.01	0.00	1.3665
	0.50	6.53	-1.09	0.00	1.2640
8	0.00	6.53	-1.09	0.00	1.2640
	0.10	6.42	-1.17	0.00	1.1648
	0.20	6.30	-1.23	0.00	1.0689
	0.30	6.17	-1.29	0.00	0.9763
	0.40	6.04	-1.35	0.00	0.8868
	0.50	5.90	-1.40	0.00	0.8005
9	0.00	5.90	-1.40	0.00	0.8005
	0.10	5.76	-1.44	0.00	0.7172
	0.20	5.61	-1.49	0.00	0.6369
	0.30	5.46	-1.52	0.00	0.5594
	0.40	5.31	-1.55	0.00	0.4848
	0.50	5.15	-1.58	0.00	0.4129
10	0.00	5.15	-1.58	0.00	0.4129
	0.10	4.99	-1.60	0.00	0.3437
	0.20	4.83	-1.62	0.00	0.2770
	0.30	4.67	-1.64	0.00	0.2128
	0.40	4.51	-1.65	0.00	0.1511
	0.50	4.34	-1.65	0.00	0.0916
11	0.00	4.34	-1.65	0.00	0.0916
	0.10	4.18	-1.66	0.00	0.0344
	0.20	4.01	-1.66	0.00	-0.0207
	0.30	3.84	-1.65	0.00	-0.0737
	0.40	3.68	-1.65	0.00	-0.1247
	0.50	3.51	-1.64	0.00	-0.1738
12	0.00	3.51	-1.64	0.00	-0.1738

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.10	3.35	-1.63	0.00	-0.2212
	0.20	3.19	-1.61	0.00	-0.2668
	0.30	3.03	-1.60	0.00	-0.3107
	0.40	2.87	-1.58	0.00	-0.3531
	0.50	2.71	-1.55	0.00	-0.3940
13	0.00	2.71	-1.55	0.00	-0.3940
	0.10	2.56	-1.53	0.00	-0.4335
	0.20	2.41	-1.50	0.00	-0.4717
	0.30	2.26	-1.47	0.00	-0.5087
	0.40	2.11	-1.44	0.00	-0.5445
	0.50	1.97	-1.41	0.00	-0.5792
14	0.00	1.97	-1.41	0.00	-0.5792
	0.10	1.83	-1.37	0.00	-0.6129
	0.20	1.70	-1.33	0.00	-0.6456
	0.30	1.56	-1.29	0.00	-0.6775
	0.40	1.44	-1.25	0.00	-0.7086
	0.50	1.31	-1.21	0.00	-0.7389
15	0.00	1.31	-1.21	0.00	-0.7389
	0.10	1.20	-1.16	0.00	-0.7685
	0.20	1.08	-1.12	0.00	-0.7976
	0.30	0.97	-1.07	0.00	-0.8260
	0.40	0.87	-1.02	0.00	-0.8540
	0.50	0.77	-0.97	0.00	-0.8815
16	0.00	0.77	-0.97	0.00	-0.8815
	0.10	0.67	-0.91	0.00	-0.9087
	0.20	0.59	-0.86	0.00	-0.9355
	0.30	0.50	-0.80	0.00	-0.9619
	0.40	0.43	-0.74	0.00	-0.9882
	0.50	0.35	-0.68	0.00	-1.0142
17	0.00	0.35	-0.68	0.00	-1.0142
	0.10	0.29	-0.62	0.00	-1.0400
	0.20	0.23	-0.56	0.00	-1.0657
	0.30	0.18	-0.49	0.00	-1.0912
	0.40	0.13	-0.43	0.00	-1.1167
	0.50	0.09	-0.36	0.00	-1.1421
18	0.00	0.09	-0.36	0.00	-1.1421
	0.10	0.06	-0.29	0.00	-1.1674
	0.20	0.03	-0.22	0.00	-1.1927
	0.30	0.01	-0.15	0.00	-1.2180
	0.40	0.00	-0.08	0.00	-1.2433
	0.50	0.00	0.00	0.00	-1.2686

Condizione : Msacp

Sollecitazioni

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
2	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
3	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
4	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
5	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
6	0.00	2.38	0.00	0.00	0.8160
	0.10	2.38	-0.05	0.00	0.7711
	0.20	2.37	-0.09	0.00	0.7275
	0.30	2.36	-0.13	0.00	0.6850
	0.40	2.34	-0.17	0.00	0.6438
	0.50	2.32	-0.21	0.00	0.6038
7	0.00	2.32	-0.21	0.00	0.6038
	0.10	2.30	-0.25	0.00	0.5649
	0.20	2.27	-0.28	0.00	0.5273
	0.30	2.24	-0.31	0.00	0.4908
	0.40	2.21	-0.34	0.00	0.4555
	0.50	2.18	-0.36	0.00	0.4213
8	0.00	2.18	-0.36	0.00	0.4213
	0.10	2.14	-0.39	0.00	0.3883
	0.20	2.10	-0.41	0.00	0.3563
	0.30	2.06	-0.43	0.00	0.3254
	0.40	2.01	-0.45	0.00	0.2956
	0.50	1.97	-0.47	0.00	0.2668
9	0.00	1.97	-0.47	0.00	0.2668

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.10	1.92	-0.48	0.00	0.2391
	0.20	1.87	-0.50	0.00	0.2123
	0.30	1.82	-0.51	0.00	0.1865
	0.40	1.77	-0.52	0.00	0.1616
	0.50	1.72	-0.53	0.00	0.1376
10	0.00	1.72	-0.53	0.00	0.1376
	0.10	1.66	-0.53	0.00	0.1146
	0.20	1.61	-0.54	0.00	0.0923
	0.30	1.56	-0.55	0.00	0.0709
	0.40	1.50	-0.55	0.00	0.0503
	0.50	1.45	-0.55	0.00	0.0305
11	0.00	1.45	-0.55	0.00	0.0305
	0.10	1.39	-0.55	0.00	0.0115
	0.20	1.34	-0.55	0.00	-0.0069
	0.30	1.28	-0.55	0.00	-0.0246
	0.40	1.23	-0.55	0.00	-0.0416
	0.50	1.17	-0.55	0.00	-0.0579
12	0.00	1.17	-0.55	0.00	-0.0579
	0.10	1.12	-0.54	0.00	-0.0737
	0.20	1.06	-0.54	0.00	-0.0889
	0.30	1.01	-0.53	0.00	-0.1036
	0.40	0.96	-0.53	0.00	-0.1177
	0.50	0.90	-0.52	0.00	-0.1313
13	0.00	0.90	-0.52	0.00	-0.1313
	0.10	0.85	-0.51	0.00	-0.1445
	0.20	0.80	-0.50	0.00	-0.1572
	0.30	0.75	-0.49	0.00	-0.1696
	0.40	0.70	-0.48	0.00	-0.1815
	0.50	0.66	-0.47	0.00	-0.1931
14	0.00	0.66	-0.47	0.00	-0.1931
	0.10	0.61	-0.46	0.00	-0.2043
	0.20	0.57	-0.44	0.00	-0.2152
	0.30	0.52	-0.43	0.00	-0.2258
	0.40	0.48	-0.42	0.00	-0.2362
	0.50	0.44	-0.40	0.00	-0.2463
15	0.00	0.44	-0.40	0.00	-0.2463
	0.10	0.40	-0.39	0.00	-0.2562
	0.20	0.36	-0.37	0.00	-0.2659
	0.30	0.32	-0.36	0.00	-0.2753
	0.40	0.29	-0.34	0.00	-0.2847
	0.50	0.26	-0.32	0.00	-0.2938
16	0.00	0.26	-0.32	0.00	-0.2938
	0.10	0.22	-0.30	0.00	-0.3029
	0.20	0.20	-0.29	0.00	-0.3118
	0.30	0.17	-0.27	0.00	-0.3206
	0.40	0.14	-0.25	0.00	-0.3294
	0.50	0.12	-0.23	0.00	-0.3381
17	0.00	0.12	-0.23	0.00	-0.3381
	0.10	0.10	-0.21	0.00	-0.3467
	0.20	0.08	-0.19	0.00	-0.3552
	0.30	0.06	-0.16	0.00	-0.3637
	0.40	0.04	-0.14	0.00	-0.3722
	0.50	0.03	-0.12	0.00	-0.3807
18	0.00	0.03	-0.12	0.00	-0.3807
	0.10	0.02	-0.10	0.00	-0.3891
	0.20	0.01	-0.07	0.00	-0.3976
	0.30	0.00	-0.05	0.00	-0.4060
	0.40	0.00	-0.03	0.00	-0.4144
	0.50	0.00	0.00	0.00	-0.4229

Condizione : SPINTA PASSIVA
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.13	-2.65	0.00	0.0000
	0.20	-0.54	-5.55	0.00	0.0000
	0.30	-1.25	-8.70	0.00	0.0000
	0.40	-2.29	-12.11	0.00	0.0000
	0.50	-3.68	-15.76	0.00	0.0000
4	0.00	-3.68	-15.76	0.00	0.0000
	0.10	-5.45	-19.67	0.00	0.0000
	0.20	-7.62	-23.83	0.00	0.0000
	0.30	-10.22	-28.25	0.00	0.0000
	0.40	-13.28	-32.91	0.00	0.0000
	0.50	-16.81	-37.83	0.00	0.0000
5	0.00	-16.81	-37.83	0.00	0.0000
	0.10	-20.85	-42.90	0.00	0.0000
	0.20	-25.40	-48.22	0.00	0.0000
	0.30	-30.50	-53.78	0.00	0.0000
	0.40	-36.17	-59.60	0.00	0.0000
	0.50	-42.43	-65.66	0.00	0.0000
6	0.00	-42.43	-65.66	0.00	-90.1787

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.10	-48.73	-60.35	0.00	-87.1263
	0.20	-54.50	-55.23	0.00	-84.0989
	0.30	-59.78	-50.29	0.00	-81.0996
	0.40	-64.57	-45.53	0.00	-78.1311
	0.50	-68.89	-40.94	0.00	-75.1958
7	0.00	-68.89	-40.94	0.00	-75.1958
	0.10	-72.76	-36.53	0.00	-72.2959
	0.20	-76.20	-32.29	0.00	-69.4336
	0.30	-79.22	-28.22	0.00	-66.6104
	0.40	-81.85	-24.32	0.00	-63.8280
	0.50	-84.09	-20.58	0.00	-61.0878
8	0.00	-84.09	-20.58	0.00	-61.0878
	0.10	-85.97	-17.00	0.00	-58.3908
	0.20	-87.50	-13.59	0.00	-55.7382
	0.30	-88.69	-10.33	0.00	-53.1305
	0.40	-89.57	-7.23	0.00	-50.5686
	0.50	-90.15	-4.28	0.00	-48.0527
9	0.00	-90.15	-4.28	0.00	-48.0527
	0.10	-90.43	-1.48	0.00	-45.5833
	0.20	-90.45	1.17	0.00	-43.1604
	0.30	-90.20	3.69	0.00	-40.7841
	0.40	-89.71	6.06	0.00	-38.4542
	0.50	-89.00	8.29	0.00	-36.1706
10	0.00	-89.00	8.29	0.00	-36.1706
	0.10	-88.06	10.38	0.00	-33.9328
	0.20	-86.92	12.35	0.00	-31.7403
	0.30	-85.60	14.18	0.00	-29.5925
	0.40	-84.09	15.89	0.00	-27.4889
	0.50	-82.42	17.47	0.00	-25.4285
11	0.00	-82.42	17.47	0.00	-25.4285
	0.10	-80.60	18.94	0.00	-23.4106
	0.20	-78.64	20.28	0.00	-21.4342
	0.30	-76.55	21.50	0.00	-19.4983
	0.40	-74.34	22.61	0.00	-17.6018
	0.50	-72.03	23.61	0.00	-15.7436
12	0.00	-72.03	23.61	0.00	-15.7436
	0.10	-69.62	24.50	0.00	-13.9225
	0.20	-67.13	25.27	0.00	-12.1372
	0.30	-64.57	25.95	0.00	-10.3865
	0.40	-61.95	26.52	0.00	-8.6691
	0.50	-59.27	26.99	0.00	-6.9836
13	0.00	-59.27	26.99	0.00	-6.9836
	0.10	-56.55	27.35	0.00	-5.3286
	0.20	-53.81	27.62	0.00	-3.7027
	0.30	-51.03	27.80	0.00	-2.1045
	0.40	-48.25	27.88	0.00	-0.5326
	0.50	-45.46	27.86	0.00	1.0144
14	0.00	-45.46	27.86	0.00	1.0144
	0.10	-42.68	27.76	0.00	2.5381
	0.20	-39.91	27.56	0.00	4.0397
	0.30	-37.17	27.27	0.00	5.5208
	0.40	-34.46	26.90	0.00	6.9827
	0.50	-31.79	26.44	0.00	8.4269
15	0.00	-31.79	26.44	0.00	8.4269
	0.10	-29.18	25.89	0.00	9.8547
	0.20	-26.62	25.26	0.00	11.2675
	0.30	-24.13	24.54	0.00	12.6666
	0.40	-21.71	23.74	0.00	14.0533
	0.50	-19.38	22.86	0.00	15.4287
16	0.00	-19.38	22.86	0.00	15.4287
	0.10	-17.14	21.90	0.00	16.7942
	0.20	-15.00	20.85	0.00	18.1508
	0.30	-12.98	19.73	0.00	19.4997
	0.40	-11.06	18.52	0.00	20.8420
	0.50	-9.27	17.23	0.00	22.1785
17	0.00	-9.27	17.23	0.00	22.1785
	0.10	-7.62	15.86	0.00	23.5102
	0.20	-6.10	14.42	0.00	24.8380
	0.30	-4.74	12.89	0.00	26.1627
	0.40	-3.53	11.29	0.00	27.4849
	0.50	-2.48	9.60	0.00	28.8053
18	0.00	-2.48	9.60	0.00	28.8053
	0.10	-1.61	7.84	0.00	30.1244
	0.20	-0.92	6.00	0.00	31.4427
	0.30	-0.41	4.08	0.00	32.7604
	0.40	-0.10	2.08	0.00	34.0780
	0.50	0.00	0.00	0.00	35.3955

Condizione : Nbp

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
2	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
3	0.00	0.00	0.00	-48.95	0.0000

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	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
4	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
5	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
6	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
7	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
8	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
9	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
10	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
11	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
12	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
13	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
14	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
15	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
16	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
17	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
18	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000

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combinazione	Nppm	Tppm	Mppm	Mbp	Tbp	qs	Tsacpv.	Tqpv	Mqpv	Msacpv.	Spinta	Passiva..Nbp
SLE RARA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SLU	1.50	1.50	1.50	1.50	1.50	1.50	1.35	1.50	1.50	1.35	1.00	1.50

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	100.08	52.53	-54.95	0.0000
	0.10	105.35	52.82	-54.95	0.0000
	0.20	110.65	53.11	-54.95	0.0000
	0.30	115.97	53.39	-54.95	0.0000
	0.40	121.32	53.68	-54.95	0.0000
	0.50	126.71	53.96	-54.95	0.0000
2	0.00	126.71	53.96	-54.95	0.0000
	0.10	132.12	54.25	-54.95	0.0000
	0.20	137.55	54.53	-54.95	0.0000
	0.30	143.02	54.82	-54.95	0.0000
	0.40	148.52	55.10	-54.95	0.0000
	0.50	154.04	55.39	-54.95	0.0000
3	0.00	154.04	55.39	-54.95	0.0000
	0.10	159.47	53.03	-54.95	0.0000
	0.20	164.64	50.41	-54.95	0.0000
	0.30	169.54	47.54	-54.95	0.0000
	0.40	174.14	44.43	-54.95	0.0000
	0.50	178.42	41.05	-54.95	0.0000
4	0.00	178.42	41.05	-54.95	0.0000
	0.10	182.34	37.43	-54.95	0.0000
	0.20	185.89	33.55	-54.95	0.0000
	0.30	189.05	29.43	-54.95	0.0000
	0.40	191.77	25.05	-54.95	0.0000
	0.50	194.05	20.41	-54.95	0.0000
5	0.00	194.05	20.41	-54.95	0.0000
	0.10	195.85	15.71	-54.95	0.0000
	0.20	197.18	10.76	-54.95	0.0000
	0.30	198.00	5.57	-54.95	0.0000
	0.40	198.29	0.12	-54.95	0.0000
	0.50	198.01	-5.57	-54.95	0.0000
6	0.00	198.01	-5.57	-54.95	67.6739
	0.10	197.28	-9.14	-54.95	64.1282
	0.20	196.19	-12.51	-54.95	60.6840
	0.30	194.78	-15.67	-54.95	57.3409
	0.40	193.07	-18.63	-54.95	54.0981
	0.50	191.06	-21.41	-54.95	50.9547
7	0.00	191.06	-21.41	-54.95	50.9547
	0.10	188.79	-24.00	-54.95	47.9097
	0.20	186.27	-26.41	-54.95	44.9620
	0.30	183.51	-28.64	-54.95	42.1101
	0.40	180.55	-30.71	-54.95	39.3528
	0.50	177.38	-32.62	-54.95	36.6884
8	0.00	177.38	-32.62	-54.95	36.6884
	0.10	174.03	-34.36	-54.95	34.1154
	0.20	170.51	-35.96	-54.95	31.6319
	0.30	166.84	-37.41	-54.95	29.2364
	0.40	163.03	-38.72	-54.95	26.9267
	0.50	159.10	-39.90	-54.95	24.7010
9	0.00	159.10	-39.90	-54.95	24.7010
	0.10	155.06	-40.95	-54.95	22.5572
	0.20	150.91	-41.86	-54.95	20.4932
	0.30	146.69	-42.66	-54.95	18.5070
	0.40	142.39	-43.34	-54.95	16.5964
	0.50	138.02	-43.91	-54.95	14.7590
10	0.00	138.02	-43.91	-54.95	14.7590
	0.10	133.61	-44.37	-54.95	12.9928
	0.20	129.15	-44.73	-54.95	11.2953
	0.30	124.66	-44.99	-54.95	9.6644
	0.40	120.16	-45.15	-54.95	8.0977
	0.50	115.64	-45.22	-54.95	6.5928
11	0.00	115.64	-45.22	-54.95	6.5928
	0.10	111.12	-45.20	-54.95	5.1476
	0.20	106.60	-45.10	-54.95	3.7595
	0.30	102.10	-44.92	-54.95	2.4263
	0.40	97.62	-44.65	-54.95	1.1458
	0.50	93.17	-44.32	-54.95	-0.0845
12	0.00	93.17	-44.32	-54.95	-0.0845
	0.10	88.76	-43.91	-54.95	-1.2668
	0.20	84.39	-43.43	-54.95	-2.4034
	0.30	80.07	-42.88	-54.95	-3.4966
	0.40	75.82	-42.27	-54.95	-4.5485
	0.50	71.62	-41.60	-54.95	-5.5613
13	0.00	71.62	-41.60	-54.95	-5.5613
	0.10	67.50	-40.87	-54.95	-6.5373
	0.20	63.45	-40.08	-54.95	-7.4784
	0.30	59.48	-39.24	-54.95	-8.3869
	0.40	55.60	-38.34	-54.95	-9.2648
	0.50	51.82	-37.40	-54.95	-10.1140
14	0.00	51.82	-37.40	-54.95	-10.1140
	0.10	48.13	-36.40	-54.95	-10.9366
	0.20	44.54	-35.35	-54.95	-11.7343
	0.30	41.06	-34.26	-54.95	-12.5091
	0.40	37.69	-33.12	-54.95	-13.2628
	0.50	34.44	-31.93	-54.95	-13.9970

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15	0.00	34.44	-31.93	-54.95	-13.9970
	0.10	31.30	-30.70	-54.95	-14.7135
	0.20	28.30	-29.43	-54.95	-15.4139
	0.30	25.42	-28.12	-54.95	-16.0997
	0.40	22.67	-26.77	-54.95	-16.7723
	0.50	20.07	-25.38	-54.95	-17.4334
16	0.00	20.07	-25.38	-54.95	-17.4334
	0.10	17.60	-23.95	-54.95	-18.0840
	0.20	15.28	-22.48	-54.95	-18.7256
	0.30	13.11	-20.97	-54.95	-19.3594
	0.40	11.09	-19.42	-54.95	-19.9863
	0.50	9.22	-17.84	-54.95	-20.6076
17	0.00	9.22	-17.84	-54.95	-20.6076
	0.10	7.52	-16.22	-54.95	-21.2241
	0.20	5.98	-14.56	-54.95	-21.8367
	0.30	4.61	-12.87	-54.95	-22.4462
	0.40	3.41	-11.14	-54.95	-23.0534
	0.50	2.38	-9.37	-54.95	-23.6588
18	0.00	2.38	-9.37	-54.95	-23.6588
	0.10	1.53	-7.57	-54.95	-24.2629
	0.20	0.87	-5.73	-54.95	-24.8663
	0.30	0.39	-3.86	-54.95	-25.4692
	0.40	0.10	-1.95	-54.95	-26.0719
	0.50	0.00	0.00	-54.95	-26.6745

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	149.77	77.73	-82.42	0.0000
	0.10	157.56	78.16	-82.42	0.0000
	0.20	165.40	78.59	-82.42	0.0000
	0.30	173.28	79.02	-82.42	0.0000
	0.40	181.20	79.44	-82.42	0.0000
	0.50	189.17	79.87	-82.42	0.0000
2	0.00	189.17	79.87	-82.42	0.0000
	0.10	197.17	80.30	-82.42	0.0000
	0.20	205.23	80.73	-82.42	0.0000
	0.30	213.32	81.16	-82.42	0.0000
	0.40	221.46	81.58	-82.42	0.0000
	0.50	229.64	82.01	-82.42	0.0000
3	0.00	229.64	82.01	-82.43	0.0000
	0.10	237.73	79.79	-82.43	0.0000
	0.20	245.59	77.32	-82.43	0.0000
	0.30	253.19	74.60	-82.43	0.0000
	0.40	260.50	71.62	-82.43	0.0000
	0.50	267.50	68.39	-82.43	0.0000
4	0.00	267.50	68.39	-82.43	0.0000
	0.10	274.17	64.91	-82.43	0.0000
	0.20	280.47	61.18	-82.43	0.0000
	0.30	286.40	57.19	-82.43	0.0000
	0.40	291.91	52.95	-82.43	0.0000
	0.50	296.98	48.47	-82.43	0.0000
5	0.00	296.98	48.47	-82.43	0.0000
	0.10	301.60	43.95	-82.43	0.0000
	0.20	305.76	39.18	-82.43	0.0000
	0.30	309.43	34.17	-82.43	0.0000
	0.40	312.59	28.91	-82.43	0.0000
	0.50	315.20	23.40	-82.43	0.0000
6	0.00	315.20	23.40	-82.43	144.3268
	0.10	317.15	15.52	-82.43	137.5759
	0.20	318.32	8.04	-82.43	130.9884
	0.30	318.77	0.95	-82.43	124.5647
	0.40	318.52	-5.76	-82.43	118.3052
	0.50	317.63	-12.10	-82.43	112.2098
7	0.00	317.63	-12.10	-82.43	112.2098
	0.10	316.12	-18.08	-82.43	106.2778
	0.20	314.02	-23.72	-82.43	100.5087
	0.30	311.38	-29.01	-82.43	94.9013
	0.40	308.23	-33.97	-82.43	89.4542
	0.50	304.60	-38.61	-82.43	84.1658
8	0.00	304.60	-38.61	-82.43	84.1658
	0.10	300.52	-42.94	-82.43	79.0343
	0.20	296.02	-46.97	-82.43	74.0576
	0.30	291.14	-50.70	-82.43	69.2333
	0.40	285.89	-54.15	-82.43	64.5589
	0.50	280.32	-57.32	-82.43	60.0317
9	0.00	280.32	-57.32	-82.43	60.0317
	0.10	274.44	-60.23	-82.43	55.6489
	0.20	268.28	-62.88	-82.43	51.4074
	0.30	261.87	-65.28	-82.43	47.3041
	0.40	255.23	-67.43	-82.43	43.3357
	0.50	248.39	-69.36	-82.43	39.4987
10	0.00	248.39	-69.36	-82.43	39.4987
	0.10	241.37	-71.06	-82.43	35.7896
	0.20	234.19	-72.54	-82.43	32.2048
	0.30	226.87	-73.81	-82.43	28.7406
	0.40	219.43	-74.87	-82.43	25.3932
	0.50	211.90	-75.74	-82.43	22.1589
11	0.00	211.90	-75.74	-82.43	22.1589
	0.10	204.29	-76.42	-82.43	19.0337
	0.20	196.62	-76.92	-82.43	16.0137
	0.30	188.91	-77.23	-82.43	13.0949
	0.40	181.18	-77.38	-82.43	10.2735
	0.50	173.44	-77.36	-82.43	7.5453

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12	0.00	173.44	-77.36	-82.43		7.5453		
	0.10	165.71	-77.18	-82.43		4.9065		
	0.20	158.01	-76.84	-82.43		2.3531		
	0.30	150.35	-76.35	-82.43		-0.1190		
	0.40	142.75	-75.72	-82.43		-2.5137		
	0.50	135.21	-74.95	-82.43		-4.8348		
13	0.00	135.21	-74.95	-82.43		-4.8348		
	0.10	127.76	-74.04	-82.43		-7.0863		
	0.20	120.41	-73.00	-82.43		-9.2719		
	0.30	113.17	-71.82	-82.43		-11.3956		
	0.40	106.05	-70.53	-82.43		-13.4610		
	0.50	99.07	-69.11	-82.43		-15.4717		
14	0.00	99.07	-69.11	-82.43		-15.4717		
	0.10	92.23	-67.57	-82.43		-17.4314		
	0.20	85.56	-65.92	-82.43		-19.3436		
	0.30	79.05	-64.15	-82.43		-21.2118		
	0.40	72.73	-62.27	-82.43		-23.0392		
	0.50	66.60	-60.29	-82.43		-24.8292		
15	0.00	66.60	-60.29	-82.43		-24.8292		
	0.10	60.68	-58.20	-82.43		-26.5848		
	0.20	54.96	-56.00	-82.43		-28.3092		
	0.30	49.48	-53.70	-82.43		-30.0053		
	0.40	44.23	-51.30	-82.43		-31.6758		
	0.50	39.22	-48.81	-82.43		-33.3236		
16	0.00	39.22	-48.81	-82.43		-33.3236		
	0.10	34.47	-46.21	-82.43		-34.9512		
	0.20	29.98	-43.52	-82.43		-36.5610		
	0.30	25.77	-40.73	-82.43		-38.1554		
	0.40	21.84	-37.85	-82.43		-39.7365		
	0.50	18.20	-34.87	-82.43		-41.3063		
17	0.00	18.20	-34.87	-82.43		-41.3063		
	0.10	14.87	-31.80	-82.43		-42.8667		
	0.20	11.85	-28.63	-82.43		-44.4195		
	0.30	9.14	-25.38	-82.43		-45.9661		
	0.40	6.77	-22.03	-82.43		-47.5080		
	0.50	4.74	-18.59	-82.43		-49.0465		
18	0.00	4.74	-18.59	-82.43		-49.0465		
	0.10	3.06	-15.05	-82.43		-50.5824		
	0.20	1.73	-11.43	-82.43		-52.1168		
	0.30	0.78	-7.71	-82.43		-53.6503		
	0.40	0.20	-3.90	-82.43		-55.1833		
	0.50	0.00	0.00	-82.43		-56.7162		

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**ALLEGATO N°6. Fondazioni su pali per Barriere di h=3.75m con rilevato di H=3.0m
Effetti indotti dal ritiro e dalla diminuzione di temperatura.
Calcolo agli elementi finiti con il programma di calcolo "ENG"**

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223 di 313**Geometria struttura****Coordinate nodali e vincoli fissi****Coordinate nodali e vincoli fissi :**

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	1	0

Caratteristiche delle aste**Elemento strutturale:**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.5E7	0.0000	0.00
2	1	0.2785	0.006174	3.5E7	0.0000	0.00
3	1	0.2785	0.006174	3.1447E7	0.0000	0.00
4	1	0.2785	0.006174	3.1447E7	0.0000	0.00
5	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
6	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
7	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
8	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
9	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
10	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
11	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
12	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
13	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
14	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
15	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
16	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
17	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
18	1	0.2785	0.006174	3.1447E7	10000.0000	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura**RITIRO+AT****Spostamenti imposti :**

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-12.61	LL
	2	0.00	0.00	-12.61	-25.22	LL
	3	0.00	0.00	-25.22	-37.83	LL
	4	0.00	0.00	-37.83	-50.44	LL

Risultati**Condizioni di carico****Condizione : RITIRO+AT****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	-110.57	39.30	0.00	0.0000
	0.25	-100.74	39.30	0.00	0.0000
	0.50	-90.92	39.30	0.00	0.0000
2	0.00	-90.92	39.30	0.00	0.0000
	0.25	-81.10	39.30	0.00	0.0000
	0.50	-71.27	39.30	0.00	0.0000
3	0.00	-71.27	39.30	0.00	0.0000
	0.25	-61.45	39.30	0.00	0.0000

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	0.50	-51.62	39.30	0.00	0.0000
4	0.00	-51.62	39.30	0.00	0.0000
	0.25	-41.80	39.30	0.00	0.0000
	0.50	-31.98	39.30	0.00	0.0000
5	0.00	-31.98	39.30	0.00	33.0396
	0.25	-22.76	34.48	0.00	31.2768
	0.50	-14.71	29.94	0.00	29.4403
6	0.00	-14.71	29.94	0.00	29.4403
	0.25	-7.77	25.68	0.00	27.5563
	0.50	-1.85	21.70	0.00	25.6469
7	0.00	-1.85	21.70	0.00	25.6469
	0.25	3.11	18.01	0.00	23.7313
	0.50	7.18	14.60	0.00	21.8255
8	0.00	7.18	14.60	0.00	21.8255
	0.25	10.43	11.48	0.00	19.9426
	0.50	12.94	8.63	0.00	18.0931
9	0.00	12.94	8.63	0.00	18.0931
	0.25	14.77	6.06	0.00	16.2850
	0.50	15.99	3.76	0.00	14.5243
10	0.00	15.99	3.76	0.00	14.5243
	0.25	16.67	1.71	0.00	12.8149
	0.50	16.87	-0.08	0.00	11.1591
11	0.00	16.87	-0.08	0.00	11.1591
	0.25	16.65	-1.63	0.00	9.5575
	0.50	16.08	-2.94	0.00	8.0093
12	0.00	16.08	-2.94	0.00	8.0093
	0.25	15.20	-4.03	0.00	6.5129
	0.50	14.08	-4.89	0.00	5.0653
13	0.00	14.08	-4.89	0.00	5.0653
	0.25	12.77	-5.54	0.00	3.6629
	0.50	11.33	-5.99	0.00	2.3017
14	0.00	11.33	-5.99	0.00	2.3017
	0.25	9.79	-6.23	0.00	0.9769
	0.50	8.23	-6.28	0.00	-0.3164
15	0.00	8.23	-6.28	0.00	-0.3164
	0.25	6.67	-6.14	0.00	-1.5833
	0.50	5.17	-5.81	0.00	-2.8286
16	0.00	5.17	-5.81	0.00	-2.8286
	0.25	3.78	-5.30	0.00	-4.0573
	0.50	2.54	-4.60	0.00	-5.2737
17	0.00	2.54	-4.60	0.00	-5.2737
	0.25	1.50	-3.72	0.00	-6.4820
	0.50	0.69	-2.66	0.00	-7.6853
18	0.00	0.69	-2.66	0.00	-7.6853
	0.25	0.18	-1.42	0.00	-8.8864
	0.50	0.00	0.00	0.00	-10.0868

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	83.10	0.00	0.00	0.0000
	0.25	83.03	-0.79	0.00	0.0000
	0.50	82.57	-3.15	0.00	0.0000
2	0.00	82.57	-3.15	0.00	0.0000
	0.25	81.32	-7.09	0.00	0.0000
	0.50	78.89	-12.61	0.00	0.0000
3	0.00	78.89	-12.61	0.00	0.0000
	0.25	74.89	-19.70	0.00	0.0000
	0.50	68.91	-28.37	0.00	0.0000
4	0.00	68.91	-28.37	0.00	0.0000
	0.25	60.57	-38.62	0.00	0.0000
	0.50	49.47	-50.44	0.00	0.0000
5	0.00	49.47	-50.44	0.00	-39.6778
	0.25	37.59	-44.64	0.00	-37.7886
	0.50	27.12	-39.14	0.00	-35.7781
6	0.00	27.12	-39.14	0.00	-35.7781
	0.25	17.99	-33.95	0.00	-33.6798
	0.50	10.12	-29.07	0.00	-31.5234
7	0.00	10.12	-29.07	0.00	-31.5234
	0.25	3.43	-24.52	0.00	-29.3340
	0.50	-2.16	-20.29	0.00	-27.1332
8	0.00	-2.16	-20.29	0.00	-27.1332
	0.25	-6.74	-16.40	0.00	-24.9392
	0.50	-10.39	-12.83	0.00	-22.7665
9	0.00	-10.39	-12.83	0.00	-22.7665
	0.25	-13.18	-9.59	0.00	-20.6271
	0.50	-15.21	-6.66	0.00	-18.5300
10	0.00	-15.21	-6.66	0.00	-18.5300
	0.25	-16.54	-4.04	0.00	-16.4816
	0.50	-17.25	-1.73	0.00	-14.4862
11	0.00	-17.25	-1.73	0.00	-14.4862
	0.25	-17.43	0.30	0.00	-12.5463
	0.50	-17.13	2.03	0.00	-10.6623

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12	0.00	-17.13	2.03	0.00	-10.6623		
	0.25	-16.43	3.49	0.00	-8.8333		
	0.50	-15.41	4.68	0.00	-7.0572		
13	0.00	-15.41	4.68	0.00	-7.0572		
	0.25	-14.12	5.60	0.00	-5.3305		
	0.50	-12.63	6.27	0.00	-3.6493		
14	0.00	-12.63	6.27	0.00	-3.6493		
	0.25	-11.00	6.70	0.00	-2.0086		
	0.50	-9.30	6.88	0.00	-0.4034		
15	0.00	-9.30	6.88	0.00	-0.4034		
	0.25	-7.58	6.82	0.00	1.1719		
	0.50	-5.91	6.53	0.00	2.7228		
16	0.00	-5.91	6.53	0.00	2.7228		
	0.25	-4.34	6.00	0.00	4.2547		
	0.50	-2.93	5.25	0.00	5.7725		
17	0.00	-2.93	5.25	0.00	5.7725		
	0.25	-1.73	4.28	0.00	7.2809		
	0.50	-0.81	3.08	0.00	8.7836		
18	0.00	-0.81	3.08	0.00	8.7836		
	0.25	-0.21	1.65	0.00	10.2836		
	0.50	0.00	0.00	0.00	11.7829		

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLE RARA	1.00	1.00
SLU	1.50	1.00

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	-27.47	39.30	0.00	0.0000
	0.25	-17.71	38.51	0.00	0.0000
	0.50	-8.35	36.14	0.00	0.0000
2	0.00	-8.35	36.14	0.00	0.0000
	0.25	0.23	32.20	0.00	0.0000
	0.50	7.62	26.69	0.00	0.0000
3	0.00	7.62	26.69	0.00	0.0000
	0.25	13.44	19.59	0.00	0.0000
	0.50	17.29	10.92	0.00	0.0000
4	0.00	17.29	10.92	0.00	0.0000
	0.25	18.77	0.68	0.00	0.0000
	0.50	17.49	-11.14	0.00	0.0000
5	0.00	17.49	-11.14	0.00	-6.6382
	0.25	14.83	-10.16	0.00	-6.5119
	0.50	12.41	-9.20	0.00	-6.3377
6	0.00	12.41	-9.20	0.00	-6.3377
	0.25	10.23	-8.27	0.00	-6.1236
	0.50	8.28	-7.37	0.00	-5.8765
7	0.00	8.28	-7.37	0.00	-5.8765
	0.25	6.54	-6.51	0.00	-5.6026
	0.50	5.02	-5.69	0.00	-5.3077
8	0.00	5.02	-5.69	0.00	-5.3077
	0.25	3.69	-4.92	0.00	-4.9966
	0.50	2.55	-4.20	0.00	-4.6735
9	0.00	2.55	-4.20	0.00	-4.6735
	0.25	1.59	-3.53	0.00	-4.3421
	0.50	0.78	-2.90	0.00	-4.0057
10	0.00	0.78	-2.90	0.00	-4.0057
	0.25	0.13	-2.33	0.00	-3.6666
	0.50	-0.38	-1.80	0.00	-3.3271
11	0.00	-0.38	-1.80	0.00	-3.3271
	0.25	-0.77	-1.33	0.00	-2.9888
	0.50	-1.05	-0.91	0.00	-2.6529
12	0.00	-1.05	-0.91	0.00	-2.6529
	0.25	-1.23	-0.54	0.00	-2.3204
	0.50	-1.33	-0.22	0.00	-1.9919
13	0.00	-1.33	-0.22	0.00	-1.9919
	0.25	-1.34	0.06	0.00	-1.6676
	0.50	-1.30	0.28	0.00	-1.3476
14	0.00	-1.30	0.28	0.00	-1.3476
	0.25	-1.21	0.46	0.00	-1.0318
	0.50	-1.07	0.59	0.00	-0.7198
15	0.00	-1.07	0.59	0.00	-0.7198
	0.25	-0.91	0.68	0.00	-0.4113
	0.50	-0.74	0.72	0.00	-0.1058
16	0.00	-0.74	0.72	0.00	-0.1058
	0.25	-0.56	0.71	0.00	0.1974
	0.50	-0.39	0.66	0.00	0.4988
17	0.00	-0.39	0.66	0.00	0.4988
	0.25	-0.24	0.56	0.00	0.7989
	0.50	-0.11	0.42	0.00	1.0982
18	0.00	-0.11	0.42	0.00	1.0982

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0.25	-0.03	0.23	0.00	1.3972
0.50	0.00	0.00	0.00	1.6961

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	-82.75	58.94	0.00	0.0000
	0.25	-68.08	58.15	0.00	0.0000
	0.50	-53.81	55.79	0.00	0.0000
2	0.00	-53.81	55.79	0.00	0.0000
	0.25	-40.32	51.85	0.00	0.0000
	0.50	-28.01	46.33	0.00	0.0000
3	0.00	-28.01	46.33	0.00	0.0000
	0.25	-17.28	39.24	0.00	0.0000
	0.50	-8.53	30.57	0.00	0.0000
4	0.00	-8.53	30.57	0.00	0.0000
	0.25	-2.13	20.32	0.00	0.0000
	0.50	1.51	8.50	0.00	0.0000
5	0.00	1.51	8.50	0.00	9.8816
	0.25	3.45	7.08	0.00	9.1265
	0.50	5.06	5.77	0.00	8.3824
6	0.00	5.06	5.77	0.00	8.3824
	0.25	6.35	4.57	0.00	7.6545
	0.50	7.35	3.48	0.00	6.9470
7	0.00	7.35	3.48	0.00	6.9470
	0.25	8.10	2.49	0.00	6.2630
	0.50	8.61	1.61	0.00	5.6051
8	0.00	8.61	1.61	0.00	5.6051
	0.25	8.91	0.82	0.00	4.9748
	0.50	9.02	0.12	0.00	4.3731
9	0.00	9.02	0.12	0.00	4.3731
	0.25	8.97	-0.49	0.00	3.8004
	0.50	8.78	-1.02	0.00	3.2565
10	0.00	8.78	-1.02	0.00	3.2565
	0.25	8.47	-1.47	0.00	2.7409
	0.50	8.05	-1.84	0.00	2.2525
11	0.00	8.05	-1.84	0.00	2.2525
	0.25	7.55	-2.15	0.00	1.7900
	0.50	6.99	-2.38	0.00	1.3517
12	0.00	6.99	-2.38	0.00	1.3517
	0.25	6.37	-2.55	0.00	0.9360
	0.50	5.71	-2.66	0.00	0.5407
13	0.00	5.71	-2.66	0.00	0.5407
	0.25	5.04	-2.71	0.00	0.1639
	0.50	4.36	-2.71	0.00	-0.1968
14	0.00	4.36	-2.71	0.00	-0.1968
	0.25	3.69	-2.66	0.00	-0.5434
	0.50	3.04	-2.55	0.00	-0.8781
15	0.00	3.04	-2.55	0.00	-0.8781
	0.25	2.42	-2.39	0.00	-1.2030
	0.50	1.85	-2.19	0.00	-1.5201
16	0.00	1.85	-2.19	0.00	-1.5201
	0.25	1.33	-1.94	0.00	-1.8313
	0.50	0.88	-1.64	0.00	-2.1381
17	0.00	0.88	-1.64	0.00	-2.1381
	0.25	0.51	-1.30	0.00	-2.4421
	0.50	0.24	-0.91	0.00	-2.7444
18	0.00	0.24	-0.91	0.00	-2.7444
	0.25	0.06	-0.48	0.00	-3.0460
	0.50	0.00	0.00	0.00	-3.3473

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**ALLEGATO N°7. 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"**



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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	0	0
26	0.00	-12.50	0	0	0
27	0.00	-13.00	0	1	0

Caratteristiche delle aste

Elemento strutturale :

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
25	25	26	0.50
26	26	27	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	0.0000	0.00
6	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
19	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
20	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
21	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
22	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
23	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
24	2	0.4952	0.019514	3.5E7	10000.0000	0.80
25	2	0.4952	0.019514	3.5E7	10000.0000	0.80
26	2	0.4952	0.019514	3.5E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Sezione 2 : diametro =0.80

Carichi applicati alla struttura

Mppm

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Tppm

Carichi nodali :

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descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Nppm

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

Mbp=Mb+Tb*(H+s)

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-224.02

Tbp

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	57.58	0.00	0.00

qs

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	3.81	3.81	LL
	2	0.00	0.00	3.81	3.81	LL
	3	0.00	0.00	3.81	3.81	LL
	4	0.00	0.00	3.81	3.81	LL
	5	0.00	0.00	3.81	3.81	LL
	6	0.00	0.00	3.81	3.81	LL
	7	0.00	0.00	3.81	3.81	LL
	8	0.00	0.00	3.81	3.81	LL
	9	0.00	0.00	3.81	3.81	LL
	10	0.00	0.00	3.81	3.81	LL
	11	0.00	0.00	3.81	3.81	LL
	12	0.00	0.00	3.81	3.81	LL
	13	0.00	0.00	4.92	4.92	LL
	14	0.00	0.00	4.92	4.92	LL
	15	0.00	0.00	4.92	4.92	LL
	16	0.00	0.00	4.92	4.92	LL
	17	0.00	0.00	4.92	4.92	LL
	18	0.00	0.00	4.92	4.92	LL
	19	0.00	0.00	4.92	4.92	LL
	20	0.00	0.00	4.92	4.92	LL
	21	0.00	0.00	4.92	4.92	LL
	22	0.00	0.00	4.92	4.92	LL
	23	0.00	0.00	4.92	4.92	LL
	24	0.00	0.00	4.92	4.92	LL

Tsacpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

Mqpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

Msacpv

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL
	5	0.00	0.00	-67.26	-84.07	LL

Nbp

Carichi nodali :

descrizione	nodo	Fx	Fy	M
	1	0.00	-57.58	0.00

Risultati

Condizioni di carico

Condizione : Mppm

Sollecitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000

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	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
3	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
4	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
5	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
6	0.00	8.30	0.00	0.00	2.1169
	0.10	8.29	-0.16	0.00	1.9801
	0.20	8.27	-0.32	0.00	1.8474
	0.30	8.23	-0.46	0.00	1.7188
	0.40	8.18	-0.59	0.00	1.5942
	0.50	8.11	-0.71	0.00	1.4735
7	0.00	8.11	-0.71	0.00	1.4735
	0.10	8.03	-0.83	0.00	1.3569
	0.20	7.95	-0.93	0.00	1.2441
	0.30	7.85	-1.02	0.00	1.1353
	0.40	7.74	-1.11	0.00	1.0303
	0.50	7.63	-1.19	0.00	0.9290
8	0.00	7.63	-1.19	0.00	0.9290
	0.10	7.50	-1.26	0.00	0.8315
	0.20	7.38	-1.32	0.00	0.7377
	0.30	7.24	-1.38	0.00	0.6475
	0.40	7.10	-1.42	0.00	0.5608
	0.50	6.96	-1.47	0.00	0.4775
9	0.00	6.96	-1.47	0.00	0.4775
	0.10	6.81	-1.50	0.00	0.3977
	0.20	6.66	-1.53	0.00	0.3212
	0.30	6.50	-1.55	0.00	0.2480
	0.40	6.35	-1.57	0.00	0.1779
	0.50	6.19	-1.58	0.00	0.1110
10	0.00	6.19	-1.58	0.00	0.1110
	0.10	6.03	-1.59	0.00	0.0470
	0.20	5.87	-1.59	0.00	-0.0140
	0.30	5.71	-1.59	0.00	-0.0721
	0.40	5.55	-1.58	0.00	-0.1274
	0.50	5.40	-1.56	0.00	-0.1800
11	0.00	5.40	-1.56	0.00	-0.1800
	0.10	5.24	-1.55	0.00	-0.2300
	0.20	5.09	-1.53	0.00	-0.2774
	0.30	4.94	-1.50	0.00	-0.3223
	0.40	4.79	-1.48	0.00	-0.3648
	0.50	4.64	-1.45	0.00	-0.4050
12	0.00	4.64	-1.45	0.00	-0.4050
	0.10	4.50	-1.41	0.00	-0.4429
	0.20	4.36	-1.38	0.00	-0.4786
	0.30	4.22	-1.34	0.00	-0.5122
	0.40	4.09	-1.29	0.00	-0.5437
	0.50	3.96	-1.25	0.00	-0.5732
13	0.00	3.96	-1.25	0.00	-0.1911
	0.10	3.84	-1.23	0.00	-0.2003
	0.20	3.72	-1.22	0.00	-0.2088
	0.30	3.60	-1.20	0.00	-0.2168
	0.40	3.48	-1.18	0.00	-0.2242
	0.50	3.36	-1.16	0.00	-0.2310
14	0.00	3.36	-1.16	0.00	-0.2310
	0.10	3.24	-1.15	0.00	-0.2372
	0.20	3.13	-1.13	0.00	-0.2430
	0.30	3.02	-1.11	0.00	-0.2482
	0.40	2.91	-1.09	0.00	-0.2529
	0.50	2.80	-1.07	0.00	-0.2572
15	0.00	2.80	-1.07	0.00	-0.2572
	0.10	2.70	-1.05	0.00	-0.2610
	0.20	2.59	-1.03	0.00	-0.2643
	0.30	2.49	-1.00	0.00	-0.2673
	0.40	2.39	-0.98	0.00	-0.2698
	0.50	2.29	-0.96	0.00	-0.2719
16	0.00	2.29	-0.96	0.00	-0.2719
	0.10	2.20	-0.94	0.00	-0.2737
	0.20	2.11	-0.92	0.00	-0.2751
	0.30	2.02	-0.90	0.00	-0.2762
	0.40	1.93	-0.87	0.00	-0.2769
	0.50	1.84	-0.85	0.00	-0.2773

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17	0.00	1.84	-0.85	0.00	-0.2773
	0.10	1.76	-0.83	0.00	-0.2775
	0.20	1.67	-0.81	0.00	-0.2773
	0.30	1.60	-0.78	0.00	-0.2769
	0.40	1.52	-0.76	0.00	-0.2762
	0.50	1.44	-0.74	0.00	-0.2752
18	0.00	1.44	-0.74	0.00	-0.2752
	0.10	1.37	-0.72	0.00	-0.2740
	0.20	1.30	-0.70	0.00	-0.2726
	0.30	1.23	-0.68	0.00	-0.2710
	0.40	1.16	-0.65	0.00	-0.2692
	0.50	1.10	-0.63	0.00	-0.2672
19	0.00	1.10	-0.63	0.00	-0.2672
	0.10	1.04	-0.61	0.00	-0.2650
	0.20	0.98	-0.59	0.00	-0.2627
	0.30	0.92	-0.57	0.00	-0.2602
	0.40	0.86	-0.55	0.00	-0.2575
	0.50	0.81	-0.53	0.00	-0.2547
20	0.00	0.81	-0.53	0.00	-0.2547
	0.10	0.76	-0.51	0.00	-0.2518
	0.20	0.71	-0.49	0.00	-0.2487
	0.30	0.66	-0.47	0.00	-0.2455
	0.40	0.61	-0.45	0.00	-0.2423
	0.50	0.57	-0.43	0.00	-0.2389
21	0.00	0.57	-0.43	0.00	-0.2389
	0.10	0.53	-0.41	0.00	-0.2354
	0.20	0.49	-0.39	0.00	-0.2319
	0.30	0.45	-0.37	0.00	-0.2282
	0.40	0.41	-0.36	0.00	-0.2245
	0.50	0.38	-0.34	0.00	-0.2207
22	0.00	0.38	-0.34	0.00	-0.2207
	0.10	0.35	-0.32	0.00	-0.2169
	0.20	0.31	-0.30	0.00	-0.2130
	0.30	0.29	-0.29	0.00	-0.2090
	0.40	0.26	-0.27	0.00	-0.2050
	0.50	0.23	-0.25	0.00	-0.2010
23	0.00	0.23	-0.25	0.00	-0.2010
	0.10	0.21	-0.24	0.00	-0.1969
	0.20	0.18	-0.22	0.00	-0.1928
	0.30	0.16	-0.21	0.00	-0.1887
	0.40	0.14	-0.19	0.00	-0.1845
	0.50	0.12	-0.18	0.00	-0.1803
24	0.00	0.12	-0.18	0.00	-0.1803
	0.10	0.11	-0.16	0.00	-0.1761
	0.20	0.09	-0.15	0.00	-0.1719
	0.30	0.08	-0.14	0.00	-0.1677
	0.40	0.06	-0.12	0.00	-0.1634
	0.50	0.05	-0.11	0.00	-0.1592
25	0.00	0.05	-0.11	0.00	-0.1592
	0.10	0.04	-0.10	0.00	-0.1549
	0.20	0.03	-0.09	0.00	-0.1506
	0.30	0.02	-0.07	0.00	-0.1464
	0.40	0.02	-0.06	0.00	-0.1421
	0.50	0.01	-0.05	0.00	-0.1378
26	0.00	0.01	-0.05	0.00	-0.1378
	0.10	0.01	-0.04	0.00	-0.1335
	0.20	0.00	-0.03	0.00	-0.1292
	0.30	0.00	-0.02	0.00	-0.1250
	0.40	0.00	-0.01	0.00	-0.1207
	0.50	0.00	0.00	0.00	-0.1164

Condizione : Tppm

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000
	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000
2	0.00	1.50	3.00	0.00	0.0000
	0.10	1.80	3.00	0.00	0.0000
	0.20	2.10	3.00	0.00	0.0000
	0.30	2.40	3.00	0.00	0.0000
	0.40	2.70	3.00	0.00	0.0000
	0.50	3.00	3.00	0.00	0.0000
3	0.00	3.00	3.00	0.00	0.0000
	0.10	3.30	3.00	0.00	0.0000
	0.20	3.60	3.00	0.00	0.0000
	0.30	3.90	3.00	0.00	0.0000
	0.40	4.20	3.00	0.00	0.0000
	0.50	4.50	3.00	0.00	0.0000
4	0.00	4.50	3.00	0.00	0.0000
	0.10	4.80	3.00	0.00	0.0000
	0.20	5.10	3.00	0.00	0.0000
	0.30	5.40	3.00	0.00	0.0000
	0.40	5.70	3.00	0.00	0.0000
	0.50	6.00	3.00	0.00	0.0000
5	0.00	6.00	3.00	0.00	0.0000
	0.10	6.30	3.00	0.00	0.0000
	0.20	6.60	3.00	0.00	0.0000
	0.30	6.90	3.00	0.00	0.0000

GENERAL CONTRACTOR



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	0.40	7.20	3.00	0.00		0.0000		
	0.50	7.50	3.00	0.00		0.0000		
6	0.00	7.50	3.00	0.00		4.3466		
	0.10	7.78	2.66	0.00		4.1465		
	0.20	8.03	2.34	0.00		3.9503		
	0.30	8.25	2.03	0.00		3.7580		
	0.40	8.44	1.74	0.00		3.5697		
	0.50	8.60	1.46	0.00		3.3855		
7	0.00	8.60	1.46	0.00		3.3855		
	0.10	8.73	1.20	0.00		3.2055		
	0.20	8.84	0.95	0.00		3.0298		
	0.30	8.92	0.71	0.00		2.8585		
	0.40	8.98	0.49	0.00		2.6914		
	0.50	9.02	0.29	0.00		2.5288		
8	0.00	9.02	0.29	0.00		2.5288		
	0.10	9.04	0.09	0.00		2.3706		
	0.20	9.04	-0.09	0.00		2.2168		
	0.30	9.02	-0.26	0.00		2.0674		
	0.40	8.99	-0.42	0.00		1.9225		
	0.50	8.94	-0.57	0.00		1.7819		
9	0.00	8.94	-0.57	0.00		1.7819		
	0.10	8.87	-0.71	0.00		1.6457		
	0.20	8.80	-0.83	0.00		1.5138		
	0.30	8.71	-0.95	0.00		1.3863		
	0.40	8.61	-1.05	0.00		1.2629		
	0.50	8.50	-1.15	0.00		1.1438		
10	0.00	8.50	-1.15	0.00		1.1438		
	0.10	8.38	-1.24	0.00		1.0289		
	0.20	8.25	-1.32	0.00		0.9180		
	0.30	8.11	-1.38	0.00		0.8112		
	0.40	7.97	-1.44	0.00		0.7084		
	0.50	7.83	-1.50	0.00		0.6094		
11	0.00	7.83	-1.50	0.00		0.6094		
	0.10	7.67	-1.54	0.00		0.5143		
	0.20	7.52	-1.58	0.00		0.4229		
	0.30	7.36	-1.61	0.00		0.3352		
	0.40	7.20	-1.63	0.00		0.2511		
	0.50	7.03	-1.65	0.00		0.1705		
12	0.00	7.03	-1.65	0.00		0.1705		
	0.10	6.87	-1.66	0.00		0.0933		
	0.20	6.70	-1.66	0.00		0.0195		
	0.30	6.53	-1.66	0.00		-0.0510		
	0.40	6.37	-1.66	0.00		-0.1183		
	0.50	6.20	-1.64	0.00		-0.1825		
13	0.00	6.20	-1.64	0.00		-0.0608		
	0.10	6.04	-1.64	0.00		-0.0812		
	0.20	5.87	-1.63	0.00		-0.1006		
	0.30	5.71	-1.62	0.00		-0.1191		
	0.40	5.55	-1.61	0.00		-0.1366		
	0.50	5.39	-1.60	0.00		-0.1532		
14	0.00	5.39	-1.60	0.00		-0.1532		
	0.10	5.23	-1.59	0.00		-0.1690		
	0.20	5.07	-1.57	0.00		-0.1839		
	0.30	4.92	-1.56	0.00		-0.1979		
	0.40	4.76	-1.54	0.00		-0.2112		
	0.50	4.61	-1.53	0.00		-0.2237		
15	0.00	4.61	-1.53	0.00		-0.2237		
	0.10	4.46	-1.51	0.00		-0.2354		
	0.20	4.31	-1.49	0.00		-0.2464		
	0.30	4.16	-1.47	0.00		-0.2567		
	0.40	4.01	-1.45	0.00		-0.2663		
	0.50	3.87	-1.43	0.00		-0.2753		
16	0.00	3.87	-1.43	0.00		-0.2753		
	0.10	3.73	-1.40	0.00		-0.2836		
	0.20	3.59	-1.38	0.00		-0.2914		
	0.30	3.45	-1.36	0.00		-0.2985		
	0.40	3.32	-1.33	0.00		-0.3051		
	0.50	3.18	-1.31	0.00		-0.3112		
17	0.00	3.18	-1.31	0.00		-0.3112		
	0.10	3.06	-1.28	0.00		-0.3167		
	0.20	2.93	-1.26	0.00		-0.3217		
	0.30	2.80	-1.23	0.00		-0.3263		
	0.40	2.68	-1.21	0.00		-0.3304		
	0.50	2.56	-1.18	0.00		-0.3340		
18	0.00	2.56	-1.18	0.00		-0.3340		
	0.10	2.45	-1.15	0.00		-0.3373		
	0.20	2.33	-1.12	0.00		-0.3401		
	0.30	2.22	-1.10	0.00		-0.3426		
	0.40	2.11	-1.07	0.00		-0.3447		
	0.50	2.01	-1.04	0.00		-0.3464		
19	0.00	2.01	-1.04	0.00		-0.3464		
	0.10	1.90	-1.01	0.00		-0.3479		
	0.20	1.80	-0.99	0.00		-0.3490		
	0.30	1.71	-0.96	0.00		-0.3498		
	0.40	1.61	-0.93	0.00		-0.3504		
	0.50	1.52	-0.90	0.00		-0.3506		
20	0.00	1.52	-0.90	0.00		-0.3506		
	0.10	1.43	-0.88	0.00		-0.3507		
	0.20	1.35	-0.85	0.00		-0.3505		
	0.30	1.26	-0.82	0.00		-0.3501		
	0.40	1.18	-0.79	0.00		-0.3494		
	0.50	1.10	-0.76	0.00		-0.3486		
21	0.00	1.10	-0.76	0.00		-0.3486		
	0.10	1.03	-0.74	0.00		-0.3476		

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	0.20	0.96	-0.71	0.00	-0.3465
	0.30	0.89	-0.68	0.00	-0.3452
	0.40	0.82	-0.65	0.00	-0.3437
	0.50	0.76	-0.63	0.00	-0.3421
22	0.00	0.76	-0.63	0.00	-0.3421
	0.10	0.70	-0.60	0.00	-0.3404
	0.20	0.64	-0.57	0.00	-0.3385
	0.30	0.58	-0.54	0.00	-0.3366
	0.40	0.53	-0.52	0.00	-0.3346
	0.50	0.48	-0.49	0.00	-0.3325
23	0.00	0.48	-0.49	0.00	-0.3325
	0.10	0.43	-0.46	0.00	-0.3303
	0.20	0.38	-0.44	0.00	-0.3280
	0.30	0.34	-0.41	0.00	-0.3257
	0.40	0.30	-0.39	0.00	-0.3233
	0.50	0.26	-0.36	0.00	-0.3208
24	0.00	0.26	-0.36	0.00	-0.3208
	0.10	0.23	-0.34	0.00	-0.3184
	0.20	0.20	-0.31	0.00	-0.3159
	0.30	0.17	-0.28	0.00	-0.3133
	0.40	0.14	-0.26	0.00	-0.3108
	0.50	0.12	-0.24	0.00	-0.3082
25	0.00	0.12	-0.24	0.00	-0.3082
	0.10	0.09	-0.21	0.00	-0.3056
	0.20	0.07	-0.19	0.00	-0.3030
	0.30	0.06	-0.16	0.00	-0.3003
	0.40	0.04	-0.14	0.00	-0.2977
	0.50	0.03	-0.12	0.00	-0.2951
26	0.00	0.03	-0.12	0.00	-0.2951
	0.10	0.02	-0.09	0.00	-0.2924
	0.20	0.01	-0.07	0.00	-0.2898
	0.30	0.00	-0.05	0.00	-0.2871
	0.40	0.00	-0.02	0.00	-0.2845
	0.50	0.00	0.00	0.00	-0.2818

Condizione : Nppm**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
2	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
3	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
4	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
5	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
6	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
7	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
8	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
9	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
10	0.00	0.00	0.00	-6.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
11	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
12	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
13	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
14	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
15	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
16	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
17	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
18	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
19	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
20	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
21	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
22	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
23	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
24	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
25	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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26	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

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

asta	x	M	T	N	P
1	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
2	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.01	0.00	0.00	0.0000
3	0.00	224.01	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
4	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.01	0.00	0.00	0.0000
5	0.00	224.02	0.00	0.00	0.0000
	0.10	224.02	0.00	0.00	0.0000
	0.20	224.02	0.00	0.00	0.0000
	0.30	224.02	0.00	0.00	0.0000
	0.40	224.02	0.00	0.00	0.0000
	0.50	224.02	0.00	0.00	0.0000
6	0.00	224.01	0.00	0.00	57.1338
	0.10	223.79	-4.41	0.00	53.4432
	0.20	223.14	-8.53	0.00	49.8619
	0.30	222.10	-12.37	0.00	46.3897
	0.40	220.68	-15.93	0.00	43.0260
	0.50	218.92	-19.24	0.00	39.7702
7	0.00	218.92	-19.24	0.00	39.7702
	0.10	216.84	-22.28	0.00	36.6215
	0.20	214.47	-25.08	0.00	33.5787
	0.30	211.83	-27.64	0.00	30.6408
	0.40	208.95	-29.97	0.00	27.8064
	0.50	205.84	-32.08	0.00	25.0741
8	0.00	205.84	-32.08	0.00	25.0741
	0.10	202.54	-33.98	0.00	22.4425
	0.20	199.05	-35.67	0.00	19.9098
	0.30	195.41	-37.16	0.00	17.4745
	0.40	191.63	-38.46	0.00	15.1347
	0.50	187.73	-39.57	0.00	12.8886
9	0.00	187.73	-39.57	0.00	12.8886
	0.10	183.72	-40.52	0.00	10.7343
	0.20	179.63	-41.29	0.00	8.6697
	0.30	175.47	-41.90	0.00	6.6930
	0.40	171.25	-42.36	0.00	4.8020
	0.50	167.00	-42.67	0.00	2.9948
10	0.00	167.00	-42.67	0.00	2.9948
	0.10	162.73	-42.84	0.00	1.2692
	0.20	158.44	-42.87	0.00	-0.3768
	0.30	154.15	-42.78	0.00	-1.9454
	0.40	149.89	-42.57	0.00	-3.4386
	0.50	145.65	-42.23	0.00	-4.8585
11	0.00	145.65	-42.23	0.00	-4.8585
	0.10	141.44	-41.79	0.00	-6.2073
	0.20	137.29	-41.25	0.00	-7.4869
	0.30	133.20	-40.60	0.00	-8.6993
	0.40	129.17	-39.86	0.00	-9.8467
	0.50	125.23	-39.03	0.00	-10.9309
12	0.00	125.23	-39.03	0.00	-10.9309
	0.10	121.37	-38.12	0.00	-11.9539
	0.20	117.61	-37.12	0.00	-12.9175
	0.30	113.95	-36.06	0.00	-13.8237
	0.40	110.40	-34.92	0.00	-14.6741
	0.50	106.97	-33.72	0.00	-15.4705
13	0.00	106.97	-33.72	0.00	-15.4705
	0.10	103.62	-33.30	0.00	-5.1568
	0.20	100.31	-32.86	0.00	-5.4049
	0.30	97.05	-32.40	0.00	-5.6361
	0.40	93.83	-31.92	0.00	-5.8509
	0.50	90.66	-31.43	0.00	-6.0499
14	0.00	90.66	-31.43	0.00	-6.2336
	0.10	87.54	-30.93	0.00	-6.4026
	0.20	84.48	-30.41	0.00	-6.5572
	0.30	81.46	-29.88	0.00	-6.6981
	0.40	78.50	-29.34	0.00	-6.8258

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	0.50	75.59	-28.79	0.00		-6.9406		
15	0.00	75.59	-28.79	0.00		-6.9406		
	0.10	72.74	-28.24	0.00		-7.0431		
	0.20	69.95	-27.67	0.00		-7.1338		
	0.30	67.21	-27.10	0.00		-7.2131		
	0.40	64.53	-26.52	0.00		-7.2814		
	0.50	61.90	-25.94	0.00		-7.3392		
16	0.00	61.90	-25.94	0.00		-7.3392		
	0.10	59.34	-25.35	0.00		-7.3869		
	0.20	56.83	-24.76	0.00		-7.4249		
	0.30	54.39	-24.16	0.00		-7.4537		
	0.40	52.00	-23.57	0.00		-7.4736		
	0.50	49.67	-22.97	0.00		-7.4851		
17	0.00	49.67	-22.97	0.00		-7.4851		
	0.10	47.41	-22.37	0.00		-7.4884		
	0.20	45.20	-21.78	0.00		-7.4840		
	0.30	43.05	-21.18	0.00		-7.4723		
	0.40	40.96	-20.59	0.00		-7.4535		
	0.50	38.93	-19.99	0.00		-7.4281		
18	0.00	38.93	-19.99	0.00		-7.4281		
	0.10	36.96	-19.40	0.00		-7.3963		
	0.20	35.05	-18.81	0.00		-7.3585		
	0.30	33.20	-18.23	0.00		-7.3149		
	0.40	31.41	-17.65	0.00		-7.2660		
	0.50	29.67	-17.07	0.00		-7.2120		
19	0.00	29.67	-17.07	0.00		-7.2120		
	0.10	27.99	-16.49	0.00		-7.1531		
	0.20	26.37	-15.93	0.00		-7.0896		
	0.30	24.81	-15.36	0.00		-7.0219		
	0.40	23.30	-14.81	0.00		-6.9501		
	0.50	21.85	-14.25	0.00		-6.8745		
20	0.00	21.85	-14.25	0.00		-6.8745		
	0.10	20.45	-13.71	0.00		-6.7953		
	0.20	19.11	-13.17	0.00		-6.7128		
	0.30	17.82	-12.64	0.00		-6.6272		
	0.40	16.58	-12.11	0.00		-6.5387		
	0.50	15.39	-11.60	0.00		-6.4475		
21	0.00	15.39	-11.60	0.00		-6.4475		
	0.10	14.26	-11.08	0.00		-6.3538		
	0.20	13.18	-10.58	0.00		-6.2578		
	0.30	12.14	-10.09	0.00		-6.1596		
	0.40	11.16	-9.60	0.00		-6.0594		
	0.50	10.22	-9.12	0.00		-5.9574		
22	0.00	10.22	-9.12	0.00		-5.9574		
	0.10	9.33	-8.65	0.00		-5.8538		
	0.20	8.49	-8.19	0.00		-5.7486		
	0.30	7.70	-7.73	0.00		-5.6420		
	0.40	6.95	-7.29	0.00		-5.5342		
	0.50	6.24	-6.85	0.00		-5.4253		
23	0.00	6.24	-6.85	0.00		-5.4253		
	0.10	5.58	-6.42	0.00		-5.3153		
	0.20	4.95	-6.00	0.00		-5.2044		
	0.30	4.38	-5.59	0.00		-5.0928		
	0.40	3.84	-5.19	0.00		-4.9804		
	0.50	3.34	-4.79	0.00		-4.8674		
24	0.00	3.34	-4.79	0.00		-4.8674		
	0.10	2.88	-4.41	0.00		-4.7538		
	0.20	2.46	-4.04	0.00		-4.6399		
	0.30	2.07	-3.67	0.00		-4.5255		
	0.40	1.72	-3.31	0.00		-4.4109		
	0.50	1.41	-2.97	0.00		-4.2960		
25	0.00	1.41	-2.97	0.00		-4.2960		
	0.10	1.13	-2.63	0.00		-4.1810		
	0.20	0.88	-2.30	0.00		-4.0657		
	0.30	0.67	-1.98	0.00		-3.9503		
	0.40	0.48	-1.67	0.00		-3.8349		
	0.50	0.33	-1.37	0.00		-3.7193		
26	0.00	0.33	-1.37	0.00		-3.7193		
	0.10	0.21	-1.08	0.00		-3.6037		
	0.20	0.12	-0.79	0.00		-3.4881		
	0.30	0.05	-0.52	0.00		-3.3725		
	0.40	0.01	-0.26	0.00		-3.2568		
	0.50	0.00	0.00	0.00		-3.1411		

Condizione : Tbp**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	57.58	0.00	0.0000
	0.10	5.76	57.58	0.00	0.0000
	0.20	11.51	57.58	0.00	0.0000
	0.30	17.27	57.58	0.00	0.0000
	0.40	23.03	57.58	0.00	0.0000
	0.50	28.79	57.58	0.00	0.0000
2	0.00	28.79	57.58	0.00	0.0000
	0.10	34.55	57.58	0.00	0.0000
	0.20	40.30	57.58	0.00	0.0000
	0.30	46.06	57.58	0.00	0.0000
	0.40	51.82	57.58	0.00	0.0000
	0.50	57.58	57.58	0.00	0.0000
3	0.00	57.58	57.57	0.00	0.0000
	0.10	63.33	57.57	0.00	0.0000
	0.20	69.09	57.57	0.00	0.0000
	0.30	74.85	57.57	0.00	0.0000

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	0.40	80.60	57.57	0.00	0.0000
	0.50	86.36	57.57	0.00	0.0000
4	0.00	86.36	57.57	0.00	0.0000
	0.10	92.12	57.57	0.00	0.0000
	0.20	97.88	57.57	0.00	0.0000
	0.30	103.63	57.57	0.00	0.0000
	0.40	109.39	57.57	0.00	0.0000
	0.50	115.15	57.57	0.00	0.0000
5	0.00	115.15	57.57	0.00	0.0000
	0.10	120.91	57.57	0.00	0.0000
	0.20	126.67	57.57	0.00	0.0000
	0.30	132.42	57.57	0.00	0.0000
	0.40	138.18	57.57	0.00	0.0000
	0.50	143.94	57.57	0.00	0.0000
6	0.00	143.94	57.58	0.00	83.4181
	0.10	149.37	51.07	0.00	79.5787
	0.20	154.16	44.88	0.00	75.8124
	0.30	158.35	38.98	0.00	72.1214
	0.40	161.97	33.37	0.00	68.5077
	0.50	165.04	28.04	0.00	64.9733
7	0.00	165.04	28.04	0.00	64.9733
	0.10	167.59	23.00	0.00	61.5195
	0.20	169.64	18.23	0.00	58.1476
	0.30	171.24	13.72	0.00	54.8586
	0.40	172.40	9.47	0.00	51.6533
	0.50	173.14	5.47	0.00	48.5323
8	0.00	173.14	5.47	0.00	48.5323
	0.10	173.50	1.72	0.00	45.4959
	0.20	173.49	-1.79	0.00	42.5443
	0.30	173.15	-5.07	0.00	39.6776
	0.40	172.49	-8.12	0.00	36.8954
	0.50	171.53	-10.95	0.00	34.1976
9	0.00	171.53	-10.95	0.00	34.1976
	0.10	170.30	-13.58	0.00	31.5836
	0.20	168.82	-16.00	0.00	29.0528
	0.30	167.11	-18.22	0.00	26.6046
	0.40	165.19	-20.24	0.00	24.2381
	0.50	163.07	-22.09	0.00	21.9523
10	0.00	163.07	-22.09	0.00	21.9523
	0.10	160.78	-23.75	0.00	19.7462
	0.20	158.33	-25.24	0.00	17.6187
	0.30	155.73	-26.56	0.00	15.5686
	0.40	153.02	-27.72	0.00	13.5947
	0.50	150.20	-28.73	0.00	11.6955
11	0.00	150.20	-28.73	0.00	11.6955
	0.10	147.28	-29.59	0.00	9.8698
	0.20	144.28	-30.31	0.00	8.1160
	0.30	141.22	-30.89	0.00	6.4328
	0.40	138.11	-31.34	0.00	4.8186
	0.50	134.96	-31.66	0.00	3.2720
12	0.00	134.96	-31.66	0.00	3.2720
	0.10	131.78	-31.86	0.00	1.7913
	0.20	128.59	-31.95	0.00	0.3750
	0.30	125.39	-31.92	0.00	-0.9784
	0.40	122.21	-31.79	0.00	-2.2705
	0.50	119.04	-31.56	0.00	-3.5028
13	0.00	119.04	-31.56	0.00	-1.1676
	0.10	115.89	-31.45	0.00	-1.5590
	0.20	112.75	-31.31	0.00	-1.9315
	0.30	109.63	-31.15	0.00	-2.2856
	0.40	106.52	-30.95	0.00	-2.6219
	0.50	103.44	-30.73	0.00	-2.9408
14	0.00	103.44	-30.73	0.00	-2.9408
	0.10	100.38	-30.48	0.00	-3.2428
	0.20	97.34	-30.21	0.00	-3.5285
	0.30	94.34	-29.92	0.00	-3.7984
	0.40	91.36	-29.60	0.00	-4.0528
	0.50	88.42	-29.27	0.00	-4.2924
15	0.00	88.42	-29.27	0.00	-4.2924
	0.10	85.51	-28.92	0.00	-4.5176
	0.20	82.63	-28.55	0.00	-4.7288
	0.30	79.80	-28.17	0.00	-4.9265
	0.40	77.00	-27.77	0.00	-5.1113
	0.50	74.24	-27.35	0.00	-5.2835
16	0.00	74.24	-27.35	0.00	-5.2835
	0.10	71.53	-26.92	0.00	-5.4436
	0.20	68.86	-26.48	0.00	-5.5921
	0.30	66.23	-26.03	0.00	-5.7293
	0.40	63.65	-25.57	0.00	-5.8557
	0.50	61.12	-25.10	0.00	-5.9718
17	0.00	61.12	-25.10	0.00	-5.9718
	0.10	58.63	-24.62	0.00	-6.0779
	0.20	56.20	-24.13	0.00	-6.1744
	0.30	53.81	-23.63	0.00	-6.2618
	0.40	51.47	-23.13	0.00	-6.3404
	0.50	49.18	-22.62	0.00	-6.4107
18	0.00	49.18	-22.62	0.00	-6.4107
	0.10	46.95	-22.11	0.00	-6.4729
	0.20	44.76	-21.59	0.00	-6.5275
	0.30	42.63	-21.06	0.00	-6.5747
	0.40	40.55	-20.54	0.00	-6.6150
	0.50	38.52	-20.01	0.00	-6.6488
19	0.00	38.52	-20.01	0.00	-6.6488
	0.10	36.55	-19.48	0.00	-6.6762

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	0.20	34.63	-18.94	0.00	-6.6977
	0.30	32.76	-18.41	0.00	-6.7135
	0.40	30.95	-17.87	0.00	-6.7240
	0.50	29.18	-17.34	0.00	-6.7295
20	0.00	29.18	-17.34	0.00	-6.7295
	0.10	27.48	-16.80	0.00	-6.7302
	0.20	25.82	-16.26	0.00	-6.7264
	0.30	24.23	-15.73	0.00	-6.7184
	0.40	22.68	-15.19	0.00	-6.7064
	0.50	21.19	-14.66	0.00	-6.6908
21	0.00	21.19	-14.66	0.00	-6.6908
	0.10	19.75	-14.12	0.00	-6.6717
	0.20	18.36	-13.59	0.00	-6.6494
	0.30	17.03	-13.06	0.00	-6.6241
	0.40	15.75	-12.54	0.00	-6.5960
	0.50	14.52	-12.01	0.00	-6.5654
22	0.00	14.52	-12.01	0.00	-6.5654
	0.10	13.35	-11.49	0.00	-6.5324
	0.20	12.22	-10.97	0.00	-6.4972
	0.30	11.15	-10.45	0.00	-6.4600
	0.40	10.13	-9.94	0.00	-6.4210
	0.50	9.17	-9.43	0.00	-6.3804
23	0.00	9.17	-9.43	0.00	-6.3804
	0.10	8.25	-8.92	0.00	-6.3382
	0.20	7.38	-8.42	0.00	-6.2947
	0.30	6.57	-7.92	0.00	-6.2500
	0.40	5.80	-7.42	0.00	-6.2043
	0.50	5.08	-6.93	0.00	-6.1576
24	0.00	5.08	-6.93	0.00	-6.1576
	0.10	4.41	-6.44	0.00	-6.1101
	0.20	3.79	-5.95	0.00	-6.0619
	0.30	3.22	-5.47	0.00	-6.0132
	0.40	2.70	-4.99	0.00	-5.9640
	0.50	2.23	-4.52	0.00	-5.9145
25	0.00	2.23	-4.52	0.00	-5.9145
	0.10	1.80	-4.05	0.00	-5.8646
	0.20	1.42	-3.58	0.00	-5.8144
	0.30	1.08	-3.12	0.00	-5.7641
	0.40	0.79	-2.66	0.00	-5.7135
	0.50	0.55	-2.21	0.00	-5.6629
26	0.00	0.55	-2.21	0.00	-5.6629
	0.10	0.35	-1.76	0.00	-5.6122
	0.20	0.20	-1.31	0.00	-5.5614
	0.30	0.09	-0.87	0.00	-5.5106
	0.40	0.02	-0.43	0.00	-5.4598
	0.50	0.00	0.00	0.00	-5.4090
Condizione : qs					
Sollecitazioni					
asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.02	0.38	0.00	0.0000
	0.20	0.08	0.76	0.00	0.0000
	0.30	0.17	1.14	0.00	0.0000
	0.40	0.30	1.52	0.00	0.0000
	0.50	0.48	1.90	0.00	0.0000
2	0.00	0.48	1.90	0.00	0.0000
	0.10	0.69	2.28	0.00	0.0000
	0.20	0.93	2.66	0.00	0.0000
	0.30	1.22	3.04	0.00	0.0000
	0.40	1.54	3.43	0.00	0.0000
	0.50	1.90	3.81	0.00	0.0000
3	0.00	1.90	3.81	0.00	0.0000
	0.10	2.30	4.19	0.00	0.0000
	0.20	2.74	4.57	0.00	0.0000
	0.30	3.22	4.95	0.00	0.0000
	0.40	3.73	5.33	0.00	0.0000
	0.50	4.28	5.71	0.00	0.0000
4	0.00	4.28	5.71	0.00	0.0000
	0.10	4.87	6.09	0.00	0.0000
	0.20	5.50	6.47	0.00	0.0000
	0.30	6.17	6.85	0.00	0.0000
	0.40	6.87	7.23	0.00	0.0000
	0.50	7.61	7.61	0.00	0.0000
5	0.00	7.61	7.61	0.00	0.0000
	0.10	8.39	7.99	0.00	0.0000
	0.20	9.21	8.37	0.00	0.0000
	0.30	10.07	8.75	0.00	0.0000
	0.40	10.96	9.13	0.00	0.0000
	0.50	11.89	9.52	0.00	0.0000
6	0.00	11.89	9.52	0.00	14.0043
	0.10	12.81	8.79	0.00	13.7477
	0.20	13.65	8.08	0.00	13.4974
	0.30	14.43	7.40	0.00	13.2537
	0.40	15.13	6.73	0.00	13.0171
	0.50	15.77	6.08	0.00	12.7879
7	0.00	15.77	6.08	0.00	12.7879
	0.10	16.35	5.45	0.00	12.5663
	0.20	16.86	4.84	0.00	12.3528
	0.30	17.32	4.24	0.00	12.1475
	0.40	17.71	3.66	0.00	11.9507
	0.50	18.05	3.09	0.00	11.7626
8	0.00	18.05	3.09	0.00	11.7626
	0.10	18.33	2.54	0.00	11.5832
	0.20	18.56	2.01	0.00	11.4128

GENERAL CONTRACTOR



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GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.30	18.73	1.48	0.00	11.2515
	0.40	18.86	0.97	0.00	11.0994
	0.50	18.93	0.47	0.00	10.9564
9	0.00	18.93	0.47	0.00	10.9564
	0.10	18.95	-0.01	0.00	10.8227
	0.20	18.93	-0.49	0.00	10.6983
	0.30	18.85	-0.96	0.00	10.5831
	0.40	18.73	-1.42	0.00	10.4772
	0.50	18.57	-1.87	0.00	10.3804
10	0.00	18.57	-1.87	0.00	10.3804
	0.10	18.36	-2.31	0.00	10.2926
	0.20	18.11	-2.75	0.00	10.2139
	0.30	17.81	-3.18	0.00	10.1440
	0.40	17.47	-3.61	0.00	10.0828
	0.50	17.09	-4.03	0.00	10.0301
11	0.00	17.09	-4.03	0.00	10.0301
	0.10	16.66	-4.45	0.00	9.9858
	0.20	16.20	-4.86	0.00	9.9496
	0.30	15.69	-5.28	0.00	9.9214
	0.40	15.14	-5.69	0.00	9.9008
	0.50	14.55	-6.09	0.00	9.8876
12	0.00	14.55	-6.09	0.00	9.8876
	0.10	13.92	-6.50	0.00	9.8815
	0.20	13.25	-6.91	0.00	9.8823
	0.30	12.54	-7.32	0.00	9.8895
	0.40	11.79	-7.73	0.00	9.9028
	0.50	11.00	-8.14	0.00	9.9220
13	0.00	11.00	-8.14	0.00	3.3073
	0.10	10.19	-7.91	0.00	3.3155
	0.20	9.41	-7.68	0.00	3.3253
	0.30	8.66	-7.46	0.00	3.3367
	0.40	7.92	-7.23	0.00	3.3494
	0.50	7.21	-7.01	0.00	3.3635
14	0.00	7.21	-7.01	0.00	3.3635
	0.10	6.52	-6.79	0.00	3.3787
	0.20	5.85	-6.56	0.00	3.3950
	0.30	5.21	-6.34	0.00	3.4123
	0.40	4.59	-6.13	0.00	3.4304
	0.50	3.98	-5.91	0.00	3.4492
15	0.00	3.98	-5.91	0.00	3.4492
	0.10	3.40	-5.69	0.00	3.4687
	0.20	2.85	-5.48	0.00	3.4888
	0.30	2.31	-5.27	0.00	3.5093
	0.40	1.79	-5.05	0.00	3.5302
	0.50	1.30	-4.85	0.00	3.5514
16	0.00	1.30	-4.85	0.00	3.5514
	0.10	0.82	-4.64	0.00	3.5728
	0.20	0.37	-4.43	0.00	3.5943
	0.30	-0.06	-4.23	0.00	3.6159
	0.40	-0.48	-4.03	0.00	3.6375
	0.50	-0.87	-3.83	0.00	3.6590
17	0.00	-0.87	-3.83	0.00	3.6590
	0.10	-1.24	-3.63	0.00	3.6804
	0.20	-1.59	-3.43	0.00	3.7015
	0.30	-1.93	-3.23	0.00	3.7224
	0.40	-2.24	-3.04	0.00	3.7430
	0.50	-2.54	-2.85	0.00	3.7632
18	0.00	-2.54	-2.85	0.00	3.7632
	0.10	-2.81	-2.66	0.00	3.7830
	0.20	-3.07	-2.47	0.00	3.8024
	0.30	-3.30	-2.28	0.00	3.8213
	0.40	-3.52	-2.09	0.00	3.8396
	0.50	-3.72	-1.91	0.00	3.8573
19	0.00	-3.72	-1.91	0.00	3.8573
	0.10	-3.91	-1.73	0.00	3.8744
	0.20	-4.07	-1.55	0.00	3.8909
	0.30	-4.21	-1.36	0.00	3.9068
	0.40	-4.34	-1.19	0.00	3.9219
	0.50	-4.45	-1.01	0.00	3.9364
20	0.00	-4.45	-1.01	0.00	3.9364
	0.10	-4.54	-0.83	0.00	3.9501
	0.20	-4.62	-0.65	0.00	3.9631
	0.30	-4.67	-0.48	0.00	3.9753
	0.40	-4.71	-0.31	0.00	3.9868
	0.50	-4.74	-0.13	0.00	3.9975
21	0.00	-4.74	-0.13	0.00	3.9975
	0.10	-4.74	0.04	0.00	4.0074
	0.20	-4.73	0.21	0.00	4.0165
	0.30	-4.70	0.38	0.00	4.0249
	0.40	-4.65	0.55	0.00	4.0325
	0.50	-4.59	0.72	0.00	4.0394
22	0.00	-4.59	0.72	0.00	4.0394
	0.10	-4.51	0.89	0.00	4.0455
	0.20	-4.41	1.06	0.00	4.0509
	0.30	-4.29	1.23	0.00	4.0555
	0.40	-4.16	1.40	0.00	4.0595
	0.50	-4.02	1.56	0.00	4.0628
23	0.00	-4.02	1.56	0.00	4.0628
	0.10	-3.85	1.73	0.00	4.0654
	0.20	-3.67	1.90	0.00	4.0674
	0.30	-3.47	2.07	0.00	4.0688
	0.40	-3.26	2.23	0.00	4.0696
	0.50	-3.02	2.40	0.00	4.0699
24	0.00	-3.02	2.40	0.00	4.0699

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	0.10	-2.78	2.57	0.00	4.0698
	0.20	-2.51	2.73	0.00	4.0692
	0.30	-2.23	2.90	0.00	4.0683
	0.40	-1.93	3.07	0.00	4.0670
	0.50	-1.62	3.23	0.00	4.0655
25	0.00	-1.62	3.23	0.00	4.0655
	0.10	-1.31	2.91	0.00	4.0637
	0.20	-1.03	2.59	0.00	4.0617
	0.30	-0.79	2.26	0.00	4.0596
	0.40	-0.58	1.94	0.00	4.0574
	0.50	-0.40	1.62	0.00	4.0550
26	0.00	-0.40	1.62	0.00	4.0550
	0.10	-0.26	1.29	0.00	4.0526
	0.20	-0.15	0.97	0.00	4.0502
	0.30	-0.06	0.65	0.00	4.0478
	0.40	-0.02	0.32	0.00	4.0453
	0.50	0.00	0.00	0.00	4.0429

Condizione : Tsacpy
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000
	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000
	0.40	6.42	7.14	0.00	0.0000
	0.50	7.14	7.14	0.00	0.0000
3	0.00	7.14	7.14	0.00	0.0000
	0.10	7.85	7.14	0.00	0.0000
	0.20	8.56	7.14	0.00	0.0000
	0.30	9.28	7.14	0.00	0.0000
	0.40	9.99	7.14	0.00	0.0000
	0.50	10.70	7.14	0.00	0.0000
4	0.00	10.70	7.14	0.00	0.0000
	0.10	11.42	7.14	0.00	0.0000
	0.20	12.13	7.14	0.00	0.0000
	0.30	12.85	7.14	0.00	0.0000
	0.40	13.56	7.14	0.00	0.0000
	0.50	14.27	7.14	0.00	0.0000
5	0.00	14.27	7.14	0.00	0.0000
	0.10	14.99	7.14	0.00	0.0000
	0.20	15.70	7.14	0.00	0.0000
	0.30	16.41	7.14	0.00	0.0000
	0.40	17.13	7.14	0.00	0.0000
	0.50	17.84	7.14	0.00	0.0000
6	0.00	17.84	7.14	0.00	10.3398
	0.10	18.51	6.33	0.00	9.8639
	0.20	19.11	5.56	0.00	9.3970
	0.30	19.63	4.83	0.00	8.9395
	0.40	20.08	4.14	0.00	8.4916
	0.50	20.46	3.48	0.00	8.0535
7	0.00	20.46	3.48	0.00	8.0535
	0.10	20.77	2.85	0.00	7.6254
	0.20	21.03	2.26	0.00	7.2075
	0.30	21.23	1.70	0.00	6.7998
	0.40	21.37	1.17	0.00	6.4025
	0.50	21.46	0.68	0.00	6.0156
8	0.00	21.46	0.68	0.00	6.0156
	0.10	21.51	0.21	0.00	5.6393
	0.20	21.50	-0.22	0.00	5.2734
	0.30	21.46	-0.63	0.00	4.9181
	0.40	21.38	-1.01	0.00	4.5732
	0.50	21.26	-1.36	0.00	4.2388
9	0.00	21.26	-1.36	0.00	4.2388
	0.10	21.11	-1.68	0.00	3.9148
	0.20	20.93	-1.98	0.00	3.6011
	0.30	20.71	-2.26	0.00	3.2977
	0.40	20.48	-2.51	0.00	3.0043
	0.50	20.21	-2.74	0.00	2.7210
10	0.00	20.21	-2.74	0.00	2.7210
	0.10	19.93	-2.94	0.00	2.4476
	0.20	19.62	-3.13	0.00	2.1839
	0.30	19.30	-3.29	0.00	1.9298
	0.40	18.97	-3.44	0.00	1.6851
	0.50	18.62	-3.56	0.00	1.4497
11	0.00	18.62	-3.56	0.00	1.4497
	0.10	18.26	-3.67	0.00	1.2234
	0.20	17.88	-3.76	0.00	1.0060
	0.30	17.50	-3.83	0.00	0.7974
	0.40	17.12	-3.88	0.00	0.5973
	0.50	16.73	-3.92	0.00	0.4056
12	0.00	16.73	-3.92	0.00	0.4056
	0.10	16.33	-3.95	0.00	0.2220
	0.20	15.94	-3.96	0.00	0.0465
	0.30	15.54	-3.96	0.00	-0.1213
	0.40	15.15	-3.94	0.00	-0.2814
	0.50	14.76	-3.91	0.00	-0.4342
13	0.00	14.76	-3.91	0.00	-0.4342

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	0.10	14.36	-3.90	0.00	-0.1932
	0.20	13.98	-3.88	0.00	-0.2394
	0.30	13.59	-3.86	0.00	-0.2833
	0.40	13.20	-3.84	0.00	-0.3250
	0.50	12.82	-3.81	0.00	-0.3645
14	0.00	12.82	-3.81	0.00	-0.3645
	0.10	12.44	-3.78	0.00	-0.4020
	0.20	12.07	-3.74	0.00	-0.4374
	0.30	11.69	-3.71	0.00	-0.4708
	0.40	11.32	-3.67	0.00	-0.5024
	0.50	10.96	-3.63	0.00	-0.5320
15	0.00	10.96	-3.63	0.00	-0.5320
	0.10	10.60	-3.58	0.00	-0.5600
	0.20	10.24	-3.54	0.00	-0.5861
	0.30	9.89	-3.49	0.00	-0.6107
	0.40	9.54	-3.44	0.00	-0.6336
	0.50	9.20	-3.39	0.00	-0.6549
16	0.00	9.20	-3.39	0.00	-0.6549
	0.10	8.87	-3.34	0.00	-0.6747
	0.20	8.54	-3.28	0.00	-0.6931
	0.30	8.21	-3.23	0.00	-0.7102
	0.40	7.89	-3.17	0.00	-0.7258
	0.50	7.58	-3.11	0.00	-0.7402
17	0.00	7.58	-3.11	0.00	-0.7402
	0.10	7.27	-3.05	0.00	-0.7534
	0.20	6.97	-2.99	0.00	-0.7653
	0.30	6.67	-2.93	0.00	-0.7762
	0.40	6.38	-2.87	0.00	-0.7859
	0.50	6.10	-2.80	0.00	-0.7946
18	0.00	6.10	-2.80	0.00	-0.7946
	0.10	5.82	-2.74	0.00	-0.8023
	0.20	5.55	-2.68	0.00	-0.8091
	0.30	5.28	-2.61	0.00	-0.8149
	0.40	5.03	-2.55	0.00	-0.8199
	0.50	4.77	-2.48	0.00	-0.8241
19	0.00	4.77	-2.48	0.00	-0.8241
	0.10	4.53	-2.41	0.00	-0.8275
	0.20	4.29	-2.35	0.00	-0.8302
	0.30	4.06	-2.28	0.00	-0.8321
	0.40	3.84	-2.22	0.00	-0.8334
	0.50	3.62	-2.15	0.00	-0.8341
20	0.00	3.62	-2.15	0.00	-0.8341
	0.10	3.41	-2.08	0.00	-0.8342
	0.20	3.20	-2.02	0.00	-0.8337
	0.30	3.00	-1.95	0.00	-0.8328
	0.40	2.81	-1.88	0.00	-0.8313
	0.50	2.63	-1.82	0.00	-0.8293
21	0.00	2.63	-1.82	0.00	-0.8293
	0.10	2.45	-1.75	0.00	-0.8270
	0.20	2.28	-1.68	0.00	-0.8242
	0.30	2.11	-1.62	0.00	-0.8211
	0.40	1.95	-1.55	0.00	-0.8176
	0.50	1.80	-1.49	0.00	-0.8138
22	0.00	1.80	-1.49	0.00	-0.8138
	0.10	1.65	-1.42	0.00	-0.8097
	0.20	1.52	-1.36	0.00	-0.8053
	0.30	1.38	-1.30	0.00	-0.8007
	0.40	1.26	-1.23	0.00	-0.7959
	0.50	1.14	-1.17	0.00	-0.7909
23	0.00	1.14	-1.17	0.00	-0.7909
	0.10	1.02	-1.11	0.00	-0.7856
	0.20	0.92	-1.04	0.00	-0.7802
	0.30	0.81	-0.98	0.00	-0.7747
	0.40	0.72	-0.92	0.00	-0.7690
	0.50	0.63	-0.86	0.00	-0.7632
24	0.00	0.63	-0.86	0.00	-0.7632
	0.10	0.55	-0.80	0.00	-0.7574
	0.20	0.47	-0.74	0.00	-0.7514
	0.30	0.40	-0.68	0.00	-0.7453
	0.40	0.33	-0.62	0.00	-0.7393
	0.50	0.28	-0.56	0.00	-0.7331
25	0.00	0.28	-0.56	0.00	-0.7331
	0.10	0.22	-0.50	0.00	-0.7269
	0.20	0.18	-0.44	0.00	-0.7207
	0.30	0.13	-0.39	0.00	-0.7145
	0.40	0.10	-0.33	0.00	-0.7082
	0.50	0.07	-0.27	0.00	-0.7019
26	0.00	0.07	-0.27	0.00	-0.7019
	0.10	0.04	-0.22	0.00	-0.6956
	0.20	0.02	-0.16	0.00	-0.6893
	0.30	0.01	-0.11	0.00	-0.6830
	0.40	0.00	-0.05	0.00	-0.6767
	0.50	0.00	0.00	0.00	-0.6704

Condizione : Tqpv

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000
2	0.00	7.13	14.27	0.00	0.0000

GENERAL CONTRACTOR



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	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.84	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.12	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.40	14.27	0.00	0.0000
4	0.00	21.41	14.27	0.00	0.0000
	0.10	22.83	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.11	14.27	0.00	0.0000
	0.50	28.54	14.27	0.00	0.0000
5	0.00	28.54	14.27	0.00	0.0000
	0.10	29.97	14.27	0.00	0.0000
	0.20	31.39	14.27	0.00	0.0000
	0.30	32.82	14.27	0.00	0.0000
	0.40	34.25	14.27	0.00	0.0000
	0.50	35.68	14.27	0.00	0.0000
6	0.00	35.67	14.27	0.00	20.6752
	0.10	37.02	12.66	0.00	19.7236
	0.20	38.21	11.12	0.00	18.7901
	0.30	39.25	9.66	0.00	17.8753
	0.40	40.14	8.27	0.00	16.9797
	0.50	40.90	6.95	0.00	16.1037
7	0.00	40.90	6.95	0.00	16.1037
	0.10	41.54	5.70	0.00	15.2476
	0.20	42.05	4.52	0.00	14.4119
	0.30	42.44	3.40	0.00	13.5967
	0.40	42.73	2.35	0.00	12.8023
	0.50	42.91	1.36	0.00	12.0288
8	0.00	42.91	1.36	0.00	12.0288
	0.10	43.00	0.43	0.00	11.2762
	0.20	43.00	-0.44	0.00	10.5446
	0.30	42.92	-1.26	0.00	9.8341
	0.40	42.75	-2.01	0.00	9.1445
	0.50	42.51	-2.72	0.00	8.4759
9	0.00	42.51	-2.72	0.00	8.4759
	0.10	42.21	-3.37	0.00	7.8280
	0.20	41.84	-3.96	0.00	7.2008
	0.30	41.42	-4.51	0.00	6.5940
	0.40	40.94	-5.02	0.00	6.0074
	0.50	40.42	-5.47	0.00	5.4409
10	0.00	40.42	-5.47	0.00	5.4409
	0.10	39.85	-5.89	0.00	4.8941
	0.20	39.24	-6.26	0.00	4.3668
	0.30	38.60	-6.58	0.00	3.8587
	0.40	37.93	-6.87	0.00	3.3694
	0.50	37.23	-7.12	0.00	2.8987
11	0.00	37.23	-7.12	0.00	2.8987
	0.10	36.50	-7.33	0.00	2.4462
	0.20	35.76	-7.51	0.00	2.0116
	0.30	35.00	-7.66	0.00	1.5944
	0.40	34.23	-7.77	0.00	1.1943
	0.50	33.45	-7.85	0.00	0.8110
12	0.00	33.45	-7.85	0.00	0.8110
	0.10	32.66	-7.90	0.00	0.4440
	0.20	31.87	-7.92	0.00	0.0929
	0.30	31.08	-7.91	0.00	-0.2425
	0.40	30.29	-7.88	0.00	-0.5627
	0.50	29.50	-7.82	0.00	-0.8682
13	0.00	29.50	-7.82	0.00	-0.2894
	0.10	28.72	-7.80	0.00	-0.3864
	0.20	27.95	-7.76	0.00	-0.4787
	0.30	27.17	-7.72	0.00	-0.5665
	0.40	26.40	-7.67	0.00	-0.6498
	0.50	25.64	-7.62	0.00	-0.7289
14	0.00	25.64	-7.62	0.00	-0.7289
	0.10	24.88	-7.55	0.00	-0.8037
	0.20	24.13	-7.49	0.00	-0.8746
	0.30	23.38	-7.42	0.00	-0.9414
	0.40	22.64	-7.34	0.00	-1.0045
	0.50	21.91	-7.25	0.00	-1.0639
15	0.00	21.91	-7.25	0.00	-1.0639
	0.10	21.19	-7.17	0.00	-1.1197
	0.20	20.48	-7.08	0.00	-1.1720
	0.30	19.78	-6.98	0.00	-1.2210
	0.40	19.08	-6.88	0.00	-1.2668
	0.50	18.40	-6.78	0.00	-1.3095
16	0.00	18.40	-6.78	0.00	-1.3095
	0.10	17.73	-6.67	0.00	-1.3492
	0.20	17.07	-6.56	0.00	-1.3860
	0.30	16.42	-6.45	0.00	-1.4200
	0.40	15.78	-6.34	0.00	-1.4513
	0.50	15.15	-6.22	0.00	-1.4801
17	0.00	15.15	-6.22	0.00	-1.4801
	0.10	14.53	-6.10	0.00	-1.5064
	0.20	13.93	-5.98	0.00	-1.5303
	0.30	13.34	-5.86	0.00	-1.5520
	0.40	12.76	-5.73	0.00	-1.5715
	0.50	12.19	-5.61	0.00	-1.5889

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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18	0.00	12.19	-5.61	0.00	-1.5889			
	0.10	11.64	-5.48	0.00	-1.6043			
	0.20	11.09	-5.35	0.00	-1.6178			
	0.30	10.57	-5.22	0.00	-1.6296			
	0.40	10.05	-5.09	0.00	-1.6395			
	0.50	9.55	-4.96	0.00	-1.6479			
19	0.00	9.55	-4.96	0.00	-1.6479			
	0.10	9.06	-4.83	0.00	-1.6547			
	0.20	8.58	-4.70	0.00	-1.6600			
	0.30	8.12	-4.56	0.00	-1.6639			
	0.40	7.67	-4.43	0.00	-1.6665			
	0.50	7.23	-4.30	0.00	-1.6679			
20	0.00	7.23	-4.30	0.00	-1.6679			
	0.10	6.81	-4.16	0.00	-1.6681			
	0.20	6.40	-4.03	0.00	-1.6671			
	0.30	6.00	-3.90	0.00	-1.6652			
	0.40	5.62	-3.77	0.00	-1.6622			
	0.50	5.25	-3.63	0.00	-1.6583			
21	0.00	5.25	-3.63	0.00	-1.6583			
	0.10	4.89	-3.50	0.00	-1.6536			
	0.20	4.55	-3.37	0.00	-1.6481			
	0.30	4.22	-3.24	0.00	-1.6418			
	0.40	3.90	-3.11	0.00	-1.6348			
	0.50	3.60	-2.98	0.00	-1.6272			
22	0.00	3.60	-2.98	0.00	-1.6272			
	0.10	3.31	-2.85	0.00	-1.6191			
	0.20	3.03	-2.72	0.00	-1.6103			
	0.30	2.76	-2.59	0.00	-1.6011			
	0.40	2.51	-2.46	0.00	-1.5915			
	0.50	2.27	-2.34	0.00	-1.5814			
23	0.00	2.27	-2.34	0.00	-1.5814			
	0.10	2.04	-2.21	0.00	-1.5709			
	0.20	1.83	-2.09	0.00	-1.5602			
	0.30	1.63	-1.96	0.00	-1.5491			
	0.40	1.44	-1.84	0.00	-1.5377			
	0.50	1.26	-1.72	0.00	-1.5262			
24	0.00	1.26	-1.72	0.00	-1.5262			
	0.10	1.09	-1.60	0.00	-1.5144			
	0.20	0.94	-1.47	0.00	-1.5025			
	0.30	0.80	-1.36	0.00	-1.4904			
	0.40	0.67	-1.24	0.00	-1.4782			
	0.50	0.55	-1.12	0.00	-1.4659			
25	0.00	0.55	-1.12	0.00	-1.4659			
	0.10	0.45	-1.00	0.00	-1.4535			
	0.20	0.35	-0.89	0.00	-1.4411			
	0.30	0.27	-0.77	0.00	-1.4286			
	0.40	0.20	-0.66	0.00	-1.4161			
	0.50	0.14	-0.55	0.00	-1.4036			
26	0.00	0.14	-0.55	0.00	-1.4036			
	0.10	0.09	-0.44	0.00	-1.3910			
	0.20	0.05	-0.33	0.00	-1.3784			
	0.30	0.02	-0.22	0.00	-1.3658			
	0.40	0.01	-0.11	0.00	-1.3532			
	0.50	0.00	0.00	0.00	-1.3406			

Condizione : Mqpv**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
6	0.00	7.14	0.00	0.00	1.8200
	0.10	7.13	-0.14	0.00	1.7024
	0.20	7.11	-0.27	0.00	1.5884
	0.30	7.07	-0.39	0.00	1.4777
	0.40	7.03	-0.51	0.00	1.3706
	0.50	6.97	-0.61	0.00	1.2669

GENERAL CONTRACTOR



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7	0.00	6.97	-0.61	0.00	1.2669			
	0.10	6.91	-0.71	0.00	1.1666			
	0.20	6.83	-0.80	0.00	1.0696			
	0.30	6.75	-0.88	0.00	0.9761			
	0.40	6.66	-0.95	0.00	0.8858			
	0.50	6.56	-1.02	0.00	0.7987			
8	0.00	6.56	-1.02	0.00	0.7987			
	0.10	6.45	-1.08	0.00	0.7149			
	0.20	6.34	-1.14	0.00	0.6342			
	0.30	6.22	-1.18	0.00	0.5567			
	0.40	6.10	-1.23	0.00	0.4821			
	0.50	5.98	-1.26	0.00	0.4106			
9	0.00	5.98	-1.26	0.00	0.4106			
	0.10	5.85	-1.29	0.00	0.3419			
	0.20	5.72	-1.32	0.00	0.2762			
	0.30	5.59	-1.33	0.00	0.2132			
	0.40	5.46	-1.35	0.00	0.1530			
	0.50	5.32	-1.36	0.00	0.0954			
10	0.00	5.32	-1.36	0.00	0.0954			
	0.10	5.18	-1.36	0.00	0.0404			
	0.20	5.05	-1.37	0.00	-0.0120			
	0.30	4.91	-1.36	0.00	-0.0620			
	0.40	4.77	-1.36	0.00	-0.1095			
	0.50	4.64	-1.35	0.00	-0.1548			
11	0.00	4.64	-1.35	0.00	-0.1548			
	0.10	4.51	-1.33	0.00	-0.1977			
	0.20	4.37	-1.31	0.00	-0.2385			
	0.30	4.24	-1.29	0.00	-0.2771			
	0.40	4.11	-1.27	0.00	-0.3137			
	0.50	3.99	-1.24	0.00	-0.3482			
12	0.00	3.99	-1.24	0.00	-0.3482			
	0.10	3.87	-1.21	0.00	-0.3808			
	0.20	3.75	-1.18	0.00	-0.4115			
	0.30	3.63	-1.15	0.00	-0.4404			
	0.40	3.52	-1.11	0.00	-0.4674			
	0.50	3.41	-1.07	0.00	-0.4928			
13	0.00	3.41	-1.07	0.00	-0.1643			
	0.10	3.30	-1.06	0.00	-0.1722			
	0.20	3.20	-1.05	0.00	-0.1795			
	0.30	3.09	-1.03	0.00	-0.1864			
	0.40	2.99	-1.02	0.00	-0.1927			
	0.50	2.89	-1.00	0.00	-0.1986			
14	0.00	2.89	-1.00	0.00	-0.1986			
	0.10	2.79	-0.99	0.00	-0.2040			
	0.20	2.69	-0.97	0.00	-0.2089			
	0.30	2.59	-0.95	0.00	-0.2134			
	0.40	2.50	-0.93	0.00	-0.2174			
	0.50	2.41	-0.92	0.00	-0.2211			
15	0.00	2.41	-0.92	0.00	-0.2211			
	0.10	2.32	-0.90	0.00	-0.2244			
	0.20	2.23	-0.88	0.00	-0.2272			
	0.30	2.14	-0.86	0.00	-0.2298			
	0.40	2.06	-0.84	0.00	-0.2319			
	0.50	1.97	-0.83	0.00	-0.2338			
16	0.00	1.97	-0.83	0.00	-0.2338			
	0.10	1.89	-0.81	0.00	-0.2353			
	0.20	1.81	-0.79	0.00	-0.2365			
	0.30	1.73	-0.77	0.00	-0.2374			
	0.40	1.66	-0.75	0.00	-0.2381			
	0.50	1.58	-0.73	0.00	-0.2384			
17	0.00	1.58	-0.73	0.00	-0.2384			
	0.10	1.51	-0.71	0.00	-0.2385			
	0.20	1.44	-0.69	0.00	-0.2384			
	0.30	1.37	-0.67	0.00	-0.2380			
	0.40	1.30	-0.66	0.00	-0.2374			
	0.50	1.24	-0.64	0.00	-0.2366			
18	0.00	1.24	-0.64	0.00	-0.2366			
	0.10	1.18	-0.62	0.00	-0.2356			
	0.20	1.12	-0.60	0.00	-0.2344			
	0.30	1.06	-0.58	0.00	-0.2330			
	0.40	1.00	-0.56	0.00	-0.2315			
	0.50	0.95	-0.54	0.00	-0.2297			
19	0.00	0.95	-0.54	0.00	-0.2297			
	0.10	0.89	-0.53	0.00	-0.2279			
	0.20	0.84	-0.51	0.00	-0.2258			
	0.30	0.79	-0.49	0.00	-0.2237			
	0.40	0.74	-0.47	0.00	-0.2214			
	0.50	0.70	-0.45	0.00	-0.2190			
20	0.00	0.70	-0.45	0.00	-0.2190			
	0.10	0.65	-0.44	0.00	-0.2165			
	0.20	0.61	-0.42	0.00	-0.2138			
	0.30	0.57	-0.40	0.00	-0.2111			
	0.40	0.53	-0.39	0.00	-0.2083			
	0.50	0.49	-0.37	0.00	-0.2054			
21	0.00	0.49	-0.37	0.00	-0.2054			
	0.10	0.45	-0.35	0.00	-0.2024			
	0.20	0.42	-0.34	0.00	-0.1993			
	0.30	0.39	-0.32	0.00	-0.1962			
	0.40	0.36	-0.31	0.00	-0.1930			
	0.50	0.33	-0.29	0.00	-0.1898			
22	0.00	0.33	-0.29	0.00	-0.1898			
	0.10	0.30	-0.28	0.00	-0.1865			
	0.20	0.27	-0.26	0.00	-0.1831			
	0.30	0.25	-0.25	0.00	-0.1797			

GENERAL CONTRACTOR



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GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.40	0.22	-0.23	0.00		-0.1763		
	0.50	0.20	-0.22	0.00		-0.1728		
23	0.00	0.20	-0.22	0.00		-0.1728		
	0.10	0.18	-0.20	0.00		-0.1693		
	0.20	0.16	-0.19	0.00		-0.1658		
	0.30	0.14	-0.18	0.00		-0.1622		
	0.40	0.12	-0.17	0.00		-0.1586		
	0.50	0.11	-0.15	0.00		-0.1550		
24	0.00	0.11	-0.15	0.00		-0.1550		
	0.10	0.09	-0.14	0.00		-0.1514		
	0.20	0.08	-0.13	0.00		-0.1478		
	0.30	0.07	-0.12	0.00		-0.1442		
	0.40	0.05	-0.11	0.00		-0.1405		
	0.50	0.04	-0.09	0.00		-0.1369		
25	0.00	0.04	-0.09	0.00		-0.1369		
	0.10	0.04	-0.08	0.00		-0.1332		
	0.20	0.03	-0.07	0.00		-0.1295		
	0.30	0.02	-0.06	0.00		-0.1258		
	0.40	0.02	-0.05	0.00		-0.1222		
	0.50	0.01	-0.04	0.00		-0.1185		
26	0.00	0.01	-0.04	0.00		-0.1185		
	0.10	0.01	-0.03	0.00		-0.1148		
	0.20	0.00	-0.03	0.00		-0.1111		
	0.30	0.00	-0.02	0.00		-0.1074		
	0.40	0.00	-0.01	0.00		-0.1037		
	0.50	0.00	0.00	0.00		-0.1001		

Condizione : Msacpv
Sollecitazioni

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
2	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
3	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
4	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
5	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
6	0.00	2.38	0.00	0.00	0.6067
	0.10	2.38	-0.05	0.00	0.5675
	0.20	2.37	-0.09	0.00	0.5295
	0.30	2.36	-0.13	0.00	0.4926
	0.40	2.34	-0.17	0.00	0.4569
	0.50	2.32	-0.20	0.00	0.4223
7	0.00	2.32	-0.20	0.00	0.4223
	0.10	2.30	-0.24	0.00	0.3889
	0.20	2.28	-0.27	0.00	0.3566
	0.30	2.25	-0.29	0.00	0.3254
	0.40	2.22	-0.32	0.00	0.2953
	0.50	2.19	-0.34	0.00	0.2663
8	0.00	2.19	-0.34	0.00	0.2663
	0.10	2.15	-0.36	0.00	0.2383
	0.20	2.11	-0.38	0.00	0.2114
	0.30	2.08	-0.39	0.00	0.1856
	0.40	2.03	-0.41	0.00	0.1607
	0.50	1.99	-0.42	0.00	0.1369
9	0.00	1.99	-0.42	0.00	0.1369
	0.10	1.95	-0.43	0.00	0.1140
	0.20	1.91	-0.44	0.00	0.0921
	0.30	1.86	-0.44	0.00	0.0711
	0.40	1.82	-0.45	0.00	0.0510
	0.50	1.77	-0.45	0.00	0.0318
10	0.00	1.77	-0.45	0.00	0.0318
	0.10	1.73	-0.45	0.00	0.0135
	0.20	1.68	-0.46	0.00	-0.0040
	0.30	1.64	-0.45	0.00	-0.0207
	0.40	1.59	-0.45	0.00	-0.0365
	0.50	1.55	-0.45	0.00	-0.0516
11	0.00	1.55	-0.45	0.00	-0.0516
	0.10	1.50	-0.44	0.00	-0.0659
	0.20	1.46	-0.44	0.00	-0.0795
	0.30	1.41	-0.43	0.00	-0.0924

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.40	1.37	-0.42	0.00		-0.1046		
	0.50	1.33	-0.41	0.00		-0.1161		
12	0.00	1.33	-0.41	0.00		-0.1161		
	0.10	1.29	-0.40	0.00		-0.1269		
	0.20	1.25	-0.39	0.00		-0.1372		
	0.30	1.21	-0.38	0.00		-0.1468		
	0.40	1.17	-0.37	0.00		-0.1558		
	0.50	1.14	-0.36	0.00		-0.1643		
13	0.00	1.14	-0.36	0.00		-0.0548		
	0.10	1.10	-0.35	0.00		-0.0574		
	0.20	1.07	-0.35	0.00		-0.0598		
	0.30	1.03	-0.34	0.00		-0.0621		
	0.40	1.00	-0.34	0.00		-0.0642		
	0.50	0.96	-0.33	0.00		-0.0662		
14	0.00	0.96	-0.33	0.00		-0.0662		
	0.10	0.93	-0.33	0.00		-0.0680		
	0.20	0.90	-0.32	0.00		-0.0696		
	0.30	0.87	-0.32	0.00		-0.0711		
	0.40	0.83	-0.31	0.00		-0.0725		
	0.50	0.80	-0.31	0.00		-0.0737		
15	0.00	0.80	-0.31	0.00		-0.0737		
	0.10	0.77	-0.30	0.00		-0.0748		
	0.20	0.74	-0.29	0.00		-0.0758		
	0.30	0.71	-0.29	0.00		-0.0766		
	0.40	0.69	-0.28	0.00		-0.0773		
	0.50	0.66	-0.28	0.00		-0.0779		
16	0.00	0.66	-0.28	0.00		-0.0779		
	0.10	0.63	-0.27	0.00		-0.0784		
	0.20	0.60	-0.26	0.00		-0.0788		
	0.30	0.58	-0.26	0.00		-0.0792		
	0.40	0.55	-0.25	0.00		-0.0794		
	0.50	0.53	-0.24	0.00		-0.0795		
17	0.00	0.53	-0.24	0.00		-0.0795		
	0.10	0.50	-0.24	0.00		-0.0795		
	0.20	0.48	-0.23	0.00		-0.0795		
	0.30	0.46	-0.22	0.00		-0.0793		
	0.40	0.43	-0.22	0.00		-0.0791		
	0.50	0.41	-0.21	0.00		-0.0789		
18	0.00	0.41	-0.21	0.00		-0.0789		
	0.10	0.39	-0.21	0.00		-0.0785		
	0.20	0.37	-0.20	0.00		-0.0781		
	0.30	0.35	-0.19	0.00		-0.0777		
	0.40	0.33	-0.19	0.00		-0.0772		
	0.50	0.32	-0.18	0.00		-0.0766		
19	0.00	0.32	-0.18	0.00		-0.0766		
	0.10	0.30	-0.18	0.00		-0.0760		
	0.20	0.28	-0.17	0.00		-0.0753		
	0.30	0.26	-0.16	0.00		-0.0746		
	0.40	0.25	-0.16	0.00		-0.0738		
	0.50	0.23	-0.15	0.00		-0.0730		
20	0.00	0.23	-0.15	0.00		-0.0730		
	0.10	0.22	-0.15	0.00		-0.0722		
	0.20	0.20	-0.14	0.00		-0.0713		
	0.30	0.19	-0.13	0.00		-0.0704		
	0.40	0.18	-0.13	0.00		-0.0694		
	0.50	0.16	-0.12	0.00		-0.0685		
21	0.00	0.16	-0.12	0.00		-0.0685		
	0.10	0.15	-0.12	0.00		-0.0675		
	0.20	0.14	-0.11	0.00		-0.0665		
	0.30	0.13	-0.11	0.00		-0.0654		
	0.40	0.12	-0.10	0.00		-0.0643		
	0.50	0.11	-0.10	0.00		-0.0633		
22	0.00	0.11	-0.10	0.00		-0.0633		
	0.10	0.10	-0.09	0.00		-0.0622		
	0.20	0.09	-0.09	0.00		-0.0610		
	0.30	0.08	-0.08	0.00		-0.0599		
	0.40	0.07	-0.08	0.00		-0.0588		
	0.50	0.07	-0.07	0.00		-0.0576		
23	0.00	0.07	-0.07	0.00		-0.0576		
	0.10	0.06	-0.07	0.00		-0.0564		
	0.20	0.05	-0.06	0.00		-0.0553		
	0.30	0.05	-0.06	0.00		-0.0541		
	0.40	0.04	-0.06	0.00		-0.0529		
	0.50	0.04	-0.05	0.00		-0.0517		
24	0.00	0.04	-0.05	0.00		-0.0517		
	0.10	0.03	-0.05	0.00		-0.0505		
	0.20	0.03	-0.04	0.00		-0.0493		
	0.30	0.02	-0.04	0.00		-0.0481		
	0.40	0.02	-0.04	0.00		-0.0468		
	0.50	0.01	-0.03	0.00		-0.0456		
25	0.00	0.01	-0.03	0.00		-0.0456		
	0.10	0.01	-0.03	0.00		-0.0444		
	0.20	0.01	-0.02	0.00		-0.0432		
	0.30	0.01	-0.02	0.00		-0.0419		
	0.40	0.01	-0.02	0.00		-0.0407		
	0.50	0.00	-0.01	0.00		-0.0395		
26	0.00	0.00	-0.01	0.00		-0.0395		
	0.10	0.00	-0.01	0.00		-0.0383		
	0.20	0.00	-0.01	0.00		-0.0370		
	0.30	0.00	-0.01	0.00		-0.0358		
	0.40	0.00	0.00	0.00		-0.0346		
	0.50	0.00	0.00	0.00		-0.0334		

Condizione : SPINTA PASSIVA
Sollecitazioni

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.17	-3.53	0.00	0.0000
	0.20	-0.72	-7.40	0.00	0.0000
	0.30	-1.66	-11.60	0.00	0.0000
	0.40	-3.05	-16.14	0.00	0.0000
	0.50	-4.90	-21.02	0.00	0.0000
4	0.00	-4.90	-21.02	0.00	0.0000
	0.10	-7.26	-26.23	0.00	0.0000
	0.20	-10.16	-31.78	0.00	0.0000
	0.30	-13.63	-37.66	0.00	0.0000
	0.40	-17.71	-43.88	0.00	0.0000
	0.50	-22.42	-50.44	0.00	0.0000
5	0.00	-22.42	-50.44	0.00	0.0000
	0.10	-27.80	-57.34	0.00	0.0000
	0.20	-33.90	-64.57	0.00	0.0000
	0.30	-40.73	-72.13	0.00	0.0000
	0.40	-48.34	-80.04	0.00	0.0000
	0.50	-56.75	-88.28	0.00	0.0000
6	0.00	-56.75	-88.27	0.00	-86.0861
	0.10	-65.24	-81.53	0.00	-82.9005
	0.20	-73.06	-75.05	0.00	-79.7467
	0.30	-80.25	-68.81	0.00	-76.6287
	0.40	-86.83	-62.82	0.00	-73.5498
	0.50	-92.83	-57.07	0.00	-70.5134
7	0.00	-92.83	-57.07	0.00	-70.5134
	0.10	-98.26	-51.57	0.00	-67.5223
	0.20	-103.15	-46.30	0.00	-64.5792
	0.30	-107.52	-41.26	0.00	-61.6866
	0.40	-111.41	-36.46	0.00	-58.8464
	0.50	-114.82	-31.87	0.00	-56.0608
8	0.00	-114.82	-31.87	0.00	-56.0608
	0.10	-117.79	-27.51	0.00	-53.3312
	0.20	-120.33	-23.36	0.00	-50.6592
	0.30	-122.47	-19.42	0.00	-48.0460
	0.40	-124.22	-15.69	0.00	-45.4927
	0.50	-125.61	-12.16	0.00	-43.0001
9	0.00	-125.61	-12.16	0.00	-43.0001
	0.10	-126.66	-8.83	0.00	-40.5689
	0.20	-127.39	-5.69	0.00	-38.1996
	0.30	-127.81	-2.74	0.00	-35.8925
	0.40	-127.94	0.04	0.00	-33.6480
	0.50	-127.81	2.63	0.00	-31.4659
10	0.00	-127.81	2.63	0.00	-31.4659
	0.10	-127.42	5.06	0.00	-29.3464
	0.20	-126.80	7.32	0.00	-27.2891
	0.30	-125.96	9.42	0.00	-25.2938
	0.40	-124.92	11.36	0.00	-23.3600
	0.50	-123.69	13.14	0.00	-21.4873
11	0.00	-123.69	13.14	0.00	-21.4873
	0.10	-122.30	14.79	0.00	-19.6751
	0.20	-120.74	16.29	0.00	-17.9227
	0.30	-119.04	17.65	0.00	-16.2293
	0.40	-117.22	18.88	0.00	-14.5940
	0.50	-115.27	19.98	0.00	-13.0161
12	0.00	-115.27	19.98	0.00	-13.0161
	0.10	-113.23	20.95	0.00	-11.4945
	0.20	-111.09	21.81	0.00	-10.0283
	0.30	-108.87	22.56	0.00	-8.6164
	0.40	-106.58	23.19	0.00	-7.2577
	0.50	-104.23	23.72	0.00	-5.9511
13	0.00	-104.23	23.72	0.00	-1.9837
	0.10	-101.85	23.86	0.00	-1.5651
	0.20	-99.46	23.97	0.00	-1.1632
	0.30	-97.06	24.04	0.00	-0.7775
	0.40	-94.65	24.09	0.00	-0.4075
	0.50	-92.24	24.11	0.00	-0.0530
14	0.00	-92.24	24.11	0.00	-0.0530
	0.10	-89.83	24.10	0.00	0.2865
	0.20	-87.43	24.06	0.00	0.6113
	0.30	-85.02	24.00	0.00	0.9219
	0.40	-82.63	23.92	0.00	1.2186
	0.50	-80.24	23.81	0.00	1.5019
15	0.00	-80.24	23.81	0.00	1.5019
	0.10	-77.87	23.68	0.00	1.7721
	0.20	-75.50	23.53	0.00	2.0296
	0.30	-73.16	23.35	0.00	2.2748
	0.40	-70.83	23.16	0.00	2.5080
	0.50	-68.53	22.95	0.00	2.7298
16	0.00	-68.53	22.95	0.00	2.7298
	0.10	-66.24	22.73	0.00	2.9403

GENERAL CONTRACTOR



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	0.20	-63.98	22.48	0.00	3.1401
	0.30	-61.75	22.23	0.00	3.3294
	0.40	-59.54	21.95	0.00	3.5087
	0.50	-57.36	21.67	0.00	3.6783
17	0.00	-57.36	21.67	0.00	3.6783
	0.10	-55.21	21.37	0.00	3.8385
	0.20	-53.08	21.06	0.00	3.9898
	0.30	-51.00	20.73	0.00	4.1324
	0.40	-48.94	20.40	0.00	4.2666
	0.50	-46.92	20.05	0.00	4.3929
18	0.00	-46.92	20.05	0.00	4.3929
	0.10	-44.93	19.70	0.00	4.5116
	0.20	-42.98	19.33	0.00	4.6229
	0.30	-41.06	18.96	0.00	4.7272
	0.40	-39.19	18.58	0.00	4.8249
	0.50	-37.35	18.19	0.00	4.9161
19	0.00	-37.35	18.19	0.00	4.9161
	0.10	-35.55	17.79	0.00	5.0013
	0.20	-33.79	17.39	0.00	5.0806
	0.30	-32.07	16.98	0.00	5.1545
	0.40	-30.39	16.57	0.00	5.2231
	0.50	-28.76	16.15	0.00	5.2868
20	0.00	-28.76	16.15	0.00	5.2868
	0.10	-27.16	15.72	0.00	5.3458
	0.20	-25.61	15.30	0.00	5.4004
	0.30	-24.10	14.86	0.00	5.4508
	0.40	-22.64	14.43	0.00	5.4972
	0.50	-21.22	13.99	0.00	5.5400
21	0.00	-21.22	13.99	0.00	5.5400
	0.10	-19.84	13.54	0.00	5.5793
	0.20	-18.51	13.10	0.00	5.6154
	0.30	-17.22	12.65	0.00	5.6485
	0.40	-15.98	12.19	0.00	5.6787
	0.50	-14.79	11.74	0.00	5.7064
22	0.00	-14.79	11.74	0.00	5.7064
	0.10	-13.63	11.28	0.00	5.7316
	0.20	-12.53	10.83	0.00	5.7546
	0.30	-11.47	10.37	0.00	5.7756
	0.40	-10.46	9.90	0.00	5.7947
	0.50	-9.49	9.44	0.00	5.8121
23	0.00	-9.49	9.44	0.00	5.8121
	0.10	-8.57	8.98	0.00	5.8280
	0.20	-7.69	8.51	0.00	5.8424
	0.30	-6.86	8.05	0.00	5.8557
	0.40	-6.08	7.58	0.00	5.8677
	0.50	-5.35	7.11	0.00	5.8788
24	0.00	-5.35	7.11	0.00	5.8788
	0.10	-4.66	6.64	0.00	5.8891
	0.20	-4.02	6.17	0.00	5.8987
	0.30	-3.43	5.70	0.00	5.9077
	0.40	-2.88	5.23	0.00	5.9162
	0.50	-2.38	4.75	0.00	5.9242
25	0.00	-2.38	4.75	0.00	5.9242
	0.10	-1.93	4.28	0.00	5.9320
	0.20	-1.53	3.81	0.00	5.9394
	0.30	-1.17	3.33	0.00	5.9466
	0.40	-0.86	2.86	0.00	5.9536
	0.50	-0.60	2.38	0.00	5.9606
26	0.00	-0.60	2.38	0.00	5.9606
	0.10	-0.38	1.91	0.00	5.9674
	0.20	-0.21	1.43	0.00	5.9742
	0.30	-0.10	0.96	0.00	5.9809
	0.40	-0.02	0.48	0.00	5.9876
	0.50	0.00	0.00	0.00	5.9943

Condizione : Nbp
Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
2	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
3	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
4	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
5	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
6	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
7	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
8	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
9	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
10	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
11	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
12	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
13	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
14	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
15	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
16	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
17	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000
18	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
19	0.00	0.00	0.00	-57.58	0.0000
	0.10	0.00	0.00	-57.58	0.0000
	0.20	0.00	0.00	-57.58	0.0000
	0.30	0.00	0.00	-57.58	0.0000
	0.40	0.00	0.00	-57.58	0.0000
	0.50	0.00	0.00	-57.58	0.0000
20	0.00	0.00	0.00	-57.57	0.0000
	0.10	0.00	0.00	-57.57	0.0000
	0.20	0.00	0.00	-57.57	0.0000
	0.30	0.00	0.00	-57.57	0.0000
	0.40	0.00	0.00	-57.57	0.0000
	0.50	0.00	0.00	-57.57	0.0000

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21	0.00	0.00	0.00	-57.58	0.0000			
	0.10	0.00	0.00	-57.58	0.0000			
	0.20	0.00	0.00	-57.58	0.0000			
	0.30	0.00	0.00	-57.58	0.0000			
	0.40	0.00	0.00	-57.58	0.0000			
	0.50	0.00	0.00	-57.58	0.0000			
22	0.00	0.00	0.00	-57.57	0.0000			
	0.10	0.00	0.00	-57.57	0.0000			
	0.20	0.00	0.00	-57.57	0.0000			
	0.30	0.00	0.00	-57.57	0.0000			
	0.40	0.00	0.00	-57.57	0.0000			
	0.50	0.00	0.00	-57.57	0.0000			
23	0.00	0.00	0.00	-57.57	0.0000			
	0.10	0.00	0.00	-57.57	0.0000			
	0.20	0.00	0.00	-57.57	0.0000			
	0.30	0.00	0.00	-57.57	0.0000			
	0.40	0.00	0.00	-57.57	0.0000			
	0.50	0.00	0.00	-57.57	0.0000			
24	0.00	0.00	0.00	-57.58	0.0000			
	0.10	0.00	0.00	-57.58	0.0000			
	0.20	0.00	0.00	-57.58	0.0000			
	0.30	0.00	0.00	-57.58	0.0000			
	0.40	0.00	0.00	-57.58	0.0000			
	0.50	0.00	0.00	-57.58	0.0000			
25	0.00	0.00	0.00	-57.58	0.0000			
	0.10	0.00	0.00	-57.58	0.0000			
	0.20	0.00	0.00	-57.58	0.0000			
	0.30	0.00	0.00	-57.58	0.0000			
	0.40	0.00	0.00	-57.58	0.0000			
	0.50	0.00	0.00	-57.58	0.0000			
26	0.00	0.00	0.00	-57.58	0.0000			
	0.10	0.00	0.00	-57.58	0.0000			
	0.20	0.00	0.00	-57.58	0.0000			
	0.30	0.00	0.00	-57.58	0.0000			
	0.40	0.00	0.00	-57.58	0.0000			
	0.50	0.00	0.00	-57.58	0.0000			

3.2 Combinazioni di carico

combinazione Mppm Tppm Nppm Mbp=Mb+Tb*(H+s).Tbpb qs Tsacpv.Tqpv Mqpv Msacpv..Spinta Passiva..Nbp
 SLU 1.50 1.50 1.50 1.50 1.50 1.50 1.35 1.50 1.50 1.35 1.00 1.00 1.50
 SLE RARA 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sollecitazioni**Combinazione : SLU**

asta	x	M	T	N	P
1	0.00	362.39	121.90	-95.36	0.0000
	0.10	374.61	122.47	-95.36	0.0000
	0.20	386.88	123.04	-95.36	0.0000
	0.30	399.22	123.61	-95.36	0.0000
	0.40	411.61	124.19	-95.36	0.0000
	0.50	424.05	124.76	-95.36	0.0000
2	0.00	424.05	124.76	-95.36	0.0000
	0.10	436.56	125.33	-95.36	0.0000
	0.20	449.12	125.90	-95.36	0.0000
	0.30	461.74	126.47	-95.36	0.0000
	0.40	474.41	127.04	-95.36	0.0000
	0.50	487.14	127.61	-95.36	0.0000
3	0.00	487.14	127.61	-95.36	0.0000
	0.10	499.76	124.65	-95.36	0.0000
	0.20	512.06	121.35	-95.36	0.0000
	0.30	524.02	117.72	-95.36	0.0000
	0.40	535.60	113.75	-95.36	0.0000
	0.50	546.76	109.45	-95.36	0.0000
4	0.00	546.76	109.45	-95.36	0.0000
	0.10	557.47	104.81	-95.36	0.0000
	0.20	567.71	99.83	-95.36	0.0000
	0.30	577.43	94.51	-95.36	0.0000
	0.40	586.60	88.86	-95.36	0.0000
	0.50	595.19	82.88	-95.36	0.0000
5	0.00	595.19	82.88	-95.36	0.0000
	0.10	603.17	76.55	-95.36	0.0000
	0.20	610.49	69.90	-95.36	0.0000
	0.30	617.13	62.90	-95.36	0.0000
	0.40	623.06	55.57	-95.36	0.0000
	0.50	628.24	47.90	-95.36	0.0000
6	0.00	628.24	47.90	-95.36	203.9639
	0.10	632.26	32.65	-95.36	192.6654
	0.20	634.80	18.29	-95.36	181.6758
	0.30	635.94	4.80	-95.36	170.9966
	0.40	635.78	-7.86	-95.36	160.6282
	0.50	634.40	-19.70	-95.36	150.5705
7	0.00	634.40	-19.70	-95.36	150.5705
	0.10	631.87	-30.75	-95.36	140.8229
	0.20	628.28	-41.03	-95.36	131.3842
	0.30	623.69	-50.58	-95.36	122.2526
	0.40	618.18	-59.40	-95.36	113.4259
	0.50	611.83	-67.54	-95.36	104.9013
8	0.00	611.83	-67.54	-95.36	104.9013
	0.10	604.70	-75.01	-95.36	96.6758
	0.20	596.85	-81.83	-95.36	88.7459
	0.30	588.35	-88.03	-95.36	81.1077
	0.40	579.26	-93.64	-95.36	73.7572
	0.50	569.64	-98.67	-95.36	66.6898

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9	0.00	569.64	-98.67	-95.36	66.6898			
	0.10	559.55	-103.14	-95.36	59.9009			
	0.20	549.03	-107.09	-95.36	53.3855			
	0.30	538.15	-110.53	-95.36	47.1385			
	0.40	526.94	-113.48	-95.36	41.1545			
	0.50	515.47	-115.96	-95.36	35.4282			
10	0.00	515.47	-115.96	-95.36	35.4282			
	0.10	503.77	-117.99	-95.36	29.9538			
	0.20	491.88	-119.60	-95.36	24.7257			
	0.30	479.86	-120.80	-95.36	19.7381			
	0.40	467.74	-121.62	-95.36	14.9851			
	0.50	455.55	-122.06	-95.36	10.4607			
11	0.00	455.55	-122.06	-95.36	10.4607			
	0.10	443.34	-122.15	-95.36	6.1590			
	0.20	431.13	-121.90	-95.36	2.0740			
	0.30	418.97	-121.34	-95.36	-1.8001			
	0.40	406.87	-120.48	-95.36	-5.4695			
	0.50	394.88	-119.33	-95.36	-8.9400			
12	0.00	394.88	-119.33	-95.36	-8.9400			
	0.10	383.02	-117.92	-95.36	-12.2174			
	0.20	371.31	-116.25	-95.36	-15.3075			
	0.30	359.77	-114.34	-95.36	-18.2161			
	0.40	348.45	-112.20	-95.36	-20.9489			
	0.50	337.34	-109.86	-95.36	-23.5112			
13	0.00	337.34	-109.86	-95.36	-7.8371			
	0.10	326.42	-108.46	-95.36	-8.6362			
	0.20	315.65	-107.01	-95.36	-9.3822			
	0.30	305.02	-105.49	-95.36	-10.0767			
	0.40	294.55	-103.93	-95.36	-10.7215			
	0.50	284.24	-102.31	-95.36	-11.3183			
14	0.00	284.24	-102.31	-95.36	-11.3183			
	0.10	274.09	-100.65	-95.36	-11.8688			
	0.20	264.11	-98.94	-95.36	-12.3746			
	0.30	254.31	-97.20	-95.36	-12.8374			
	0.40	244.67	-95.42	-95.36	-13.2588			
	0.50	235.22	-93.61	-95.36	-13.6402			
15	0.00	235.22	-93.61	-95.36	-13.6402			
	0.10	225.95	-91.77	-95.36	-13.9834			
	0.20	216.87	-89.90	-95.36	-14.2897			
	0.30	207.97	-88.02	-95.36	-14.5606			
	0.40	199.27	-86.11	-95.36	-14.7977			
	0.50	190.75	-84.18	-95.36	-15.0023			
16	0.00	190.75	-84.18	-95.36	-15.0023			
	0.10	182.43	-82.24	-95.36	-15.1758			
	0.20	174.31	-80.29	-95.36	-15.3196			
	0.30	166.37	-78.32	-95.36	-15.4350			
	0.40	158.64	-76.35	-95.36	-15.5232			
	0.50	151.11	-74.37	-95.36	-15.5856			
17	0.00	151.11	-74.37	-95.36	-15.5856			
	0.10	143.77	-72.39	-95.36	-15.6234			
	0.20	136.63	-70.40	-95.36	-15.6378			
	0.30	129.69	-68.42	-95.36	-15.6298			
	0.40	122.94	-66.44	-95.36	-15.6008			
	0.50	116.40	-64.45	-95.36	-15.5517			
18	0.00	116.40	-64.45	-95.36	-15.5517			
	0.10	110.05	-62.48	-95.36	-15.4836			
	0.20	103.90	-60.51	-95.36	-15.3976			
	0.30	97.95	-58.55	-95.36	-15.2947			
	0.40	92.19	-56.60	-95.36	-15.1758			
	0.50	86.63	-54.65	-95.36	-15.0419			
19	0.00	86.63	-54.65	-95.36	-15.0419			
	0.10	81.26	-52.72	-95.36	-14.8938			
	0.20	76.09	-50.80	-95.36	-14.7326			
	0.30	71.10	-48.90	-95.36	-14.5589			
	0.40	66.31	-47.00	-95.36	-14.3736			
	0.50	61.70	-45.13	-95.36	-14.1775			
20	0.00	61.70	-45.13	-95.36	-14.1775			
	0.10	57.28	-43.27	-95.36	-13.9714			
	0.20	53.05	-41.42	-95.36	-13.7559			
	0.30	49.00	-39.60	-95.36	-13.5318			
	0.40	45.13	-37.79	-95.36	-13.2997			
	0.50	41.44	-36.00	-95.36	-13.0602			
21	0.00	41.44	-36.00	-95.36	-13.0602			
	0.10	37.92	-34.23	-95.36	-12.8140			
	0.20	34.59	-32.48	-95.36	-12.5616			
	0.30	31.43	-30.75	-95.36	-12.3035			
	0.40	28.44	-29.04	-95.36	-12.0403			
	0.50	25.62	-27.36	-95.36	-11.7725			
22	0.00	25.62	-27.36	-95.36	-11.7725			
	0.10	22.97	-25.69	-95.36	-11.5006			
	0.20	20.48	-24.05	-95.36	-11.2248			
	0.30	18.16	-22.43	-95.36	-10.9458			
	0.40	15.99	-20.83	-95.36	-10.6637			
	0.50	13.99	-19.25	-95.36	-10.3791			
23	0.00	13.99	-19.25	-95.36	-10.3791			
	0.10	12.14	-17.70	-95.36	-10.0922			
	0.20	10.45	-16.16	-95.36	-9.8033			
	0.30	8.91	-14.66	-95.36	-9.5127			
	0.40	7.52	-13.17	-95.36	-9.2206			
	0.50	6.27	-11.71	-95.36	-8.9274			
24	0.00	6.27	-11.71	-95.36	-8.9274			
	0.10	5.17	-10.27	-95.36	-8.6331			
	0.20	4.22	-8.86	-95.36	-8.3381			
	0.30	3.40	-7.47	-95.36	-8.0424			
	0.40	2.72	-6.10	-95.36	-7.7463			

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	0.50	2.18	-4.76	-95.36	-7.4498
25	0.00	2.18	-4.76	-95.36	-7.4498
	0.10	1.73	-4.17	-95.36	-7.1529
	0.20	1.35	-3.62	-95.36	-6.8558
	0.30	1.01	-3.08	-95.36	-6.5585
	0.40	0.73	-2.57	-95.36	-6.2610
	0.50	0.50	-2.08	-95.36	-5.9635
26	0.00	0.50	-2.08	-95.36	-5.9635
	0.10	0.31	-1.62	-95.36	-5.6658
	0.20	0.17	-1.18	-95.36	-5.3682
	0.30	0.07	-0.76	-95.36	-5.0704
	0.40	0.02	-0.37	-95.36	-4.7727
	0.50	0.00	0.00	-95.36	-4.4750
Combinazione : SLE RARA					
asta	x	M	T	N	P
1	0.00	241.83	81.98	-63.57	0.0000
	0.10	250.05	82.36	-63.57	0.0000
	0.20	258.30	82.74	-63.57	0.0000
	0.30	266.60	83.12	-63.57	0.0000
	0.40	274.93	83.50	-63.57	0.0000
	0.50	283.30	83.88	-63.57	0.0000
2	0.00	283.30	83.88	-63.57	0.0000
	0.10	291.70	84.27	-63.57	0.0000
	0.20	300.15	84.65	-63.57	0.0000
	0.30	308.63	85.03	-63.57	0.0000
	0.40	317.15	85.41	-63.57	0.0000
	0.50	325.71	85.79	-63.57	0.0000
3	0.00	325.71	85.79	-63.57	0.0000
	0.10	334.14	82.64	-63.57	0.0000
	0.20	342.23	79.15	-63.57	0.0000
	0.30	349.96	75.33	-63.57	0.0000
	0.40	357.28	71.17	-63.57	0.0000
	0.50	364.18	66.67	-63.57	0.0000
4	0.00	364.18	66.67	-63.58	0.0000
	0.10	370.61	61.84	-63.58	0.0000
	0.20	376.54	56.67	-63.58	0.0000
	0.30	381.93	51.17	-63.58	0.0000
	0.40	386.76	45.33	-63.58	0.0000
	0.50	390.99	39.15	-63.58	0.0000
5	0.00	390.99	39.15	-63.58	0.0000
	0.10	394.58	32.64	-63.58	0.0000
	0.20	397.50	25.79	-63.58	0.0000
	0.30	399.72	18.60	-63.58	0.0000
	0.40	401.21	11.08	-63.58	0.0000
	0.50	401.93	3.22	-63.58	0.0000
6	0.00	401.93	3.22	-63.58	108.3752
	0.10	401.85	-4.78	-63.58	101.8532
	0.20	400.99	-12.27	-63.58	95.5276
	0.30	399.41	-19.27	-63.58	89.3980
	0.40	397.15	-25.78	-63.58	83.4637
	0.50	394.27	-31.83	-63.58	77.7235
7	0.00	394.27	-31.83	-63.58	77.7235
	0.10	390.80	-37.43	-63.58	72.1760
	0.20	386.80	-42.59	-63.58	66.8195
	0.30	382.30	-47.33	-63.58	61.6521
	0.40	377.35	-51.67	-63.58	56.6715
	0.50	371.98	-55.62	-63.58	51.8755
8	0.00	371.98	-55.62	-63.58	51.8755
	0.10	366.23	-59.19	-63.58	47.2612
	0.20	360.15	-62.40	-63.58	42.8260
	0.30	353.77	-65.27	-63.58	38.5668
	0.40	347.11	-67.80	-63.58	34.4806
	0.50	340.22	-70.01	-63.58	30.5641
9	0.00	340.22	-70.01	-63.57	30.5641
	0.10	333.12	-71.92	-63.57	26.8138
	0.20	325.84	-73.53	-63.57	23.2264
	0.30	318.42	-74.87	-63.57	19.7983
	0.40	310.88	-75.93	-63.57	16.5259
	0.50	303.24	-76.75	-63.57	13.4054
10	0.00	303.24	-76.75	-63.57	13.4054
	0.10	295.54	-77.32	-63.57	10.4332
	0.20	287.79	-77.65	-63.57	7.6055
	0.30	280.01	-77.77	-63.57	4.9184
	0.40	272.24	-77.68	-63.57	2.3682
	0.50	264.49	-77.39	-63.57	-0.0489
11	0.00	264.49	-77.39	-63.57	-0.0489
	0.10	256.77	-76.91	-63.57	-2.3366
	0.20	249.11	-76.26	-63.57	-4.4989
	0.30	241.52	-75.44	-63.57	-6.5394
	0.40	234.03	-74.46	-63.57	-8.4617
	0.50	226.64	-73.33	-63.57	-10.2697
12	0.00	226.64	-73.33	-63.57	-10.2697
	0.10	219.36	-72.06	-63.57	-11.9669
	0.20	212.23	-70.66	-63.57	-13.5568
	0.30	205.24	-69.14	-63.57	-15.0430
	0.40	198.40	-67.50	-63.57	-16.4289
	0.50	191.74	-65.76	-63.57	-17.7177
13	0.00	191.74	-65.76	-63.58	-5.9059
	0.10	185.21	-64.78	-63.58	-6.3043
	0.20	178.78	-63.77	-63.58	-6.6725
	0.30	172.46	-62.73	-63.58	-7.0115
	0.40	166.24	-61.67	-63.58	-7.3224
	0.50	160.12	-60.58	-63.58	-7.6063

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14	0.00	160.12	-60.58	-63.58		-7.6063		
	0.10	154.12	-59.48	-63.58		-7.8641		
	0.20	148.23	-58.35	-63.58		-8.0967		
	0.30	142.45	-57.20	-63.58		-8.3052		
	0.40	136.79	-56.04	-63.58		-8.4905		
	0.50	131.24	-54.86	-63.58		-8.6534		
15	0.00	131.24	-54.86	-63.58		-8.6534		
	0.10	125.82	-53.68	-63.58		-8.7950		
	0.20	120.51	-52.48	-63.58		-8.9161		
	0.30	115.32	-51.27	-63.58		-9.0176		
	0.40	110.26	-50.06	-63.58		-9.1002		
	0.50	105.31	-48.84	-63.58		-9.1649		
16	0.00	105.31	-48.84	-63.57		-9.1649		
	0.10	100.49	-47.61	-63.57		-9.2124		
	0.20	95.79	-46.38	-63.57		-9.2436		
	0.30	91.21	-45.15	-63.57		-9.2591		
	0.40	86.76	-43.92	-63.57		-9.2598		
	0.50	82.43	-42.69	-63.57		-9.2463		
17	0.00	82.43	-42.69	-63.57		-9.2463		
	0.10	78.22	-41.46	-63.57		-9.2194		
	0.20	74.13	-40.24	-63.57		-9.1797		
	0.30	70.17	-39.02	-63.57		-9.1280		
	0.40	66.33	-37.80	-63.57		-9.0648		
	0.50	62.61	-36.59	-63.57		-8.9908		
18	0.00	62.61	-36.59	-63.58		-8.9908		
	0.10	59.01	-35.38	-63.58		-8.9067		
	0.20	55.54	-34.18	-63.58		-8.8128		
	0.30	52.18	-32.99	-63.58		-8.7100		
	0.40	48.94	-31.81	-63.58		-8.5986		
	0.50	45.81	-30.64	-63.58		-8.4793		
19	0.00	45.81	-30.64	-63.57		-8.4793		
	0.10	42.81	-29.48	-63.57		-8.3525		
	0.20	39.92	-28.32	-63.57		-8.2187		
	0.30	37.14	-27.18	-63.57		-8.0784		
	0.40	34.48	-26.05	-63.57		-7.9321		
	0.50	31.93	-24.93	-63.57		-7.7801		
20	0.00	31.93	-24.93	-63.57		-7.7801		
	0.10	29.49	-23.83	-63.57		-7.6229		
	0.20	27.17	-22.73	-63.57		-7.4610		
	0.30	24.95	-21.65	-63.57		-7.2946		
	0.40	22.84	-20.59	-63.57		-7.1241		
	0.50	20.83	-19.53	-63.57		-6.9499		
21	0.00	20.83	-19.53	-63.58		-6.9499		
	0.10	18.93	-18.49	-63.58		-6.7723		
	0.20	17.13	-17.47	-63.58		-6.5916		
	0.30	15.43	-16.46	-63.58		-6.4082		
	0.40	13.84	-15.46	-63.58		-6.2222		
	0.50	12.34	-14.48	-63.58		-6.0339		
22	0.00	12.34	-14.48	-63.57		-6.0339		
	0.10	10.94	-13.52	-63.57		-5.8437		
	0.20	9.64	-12.57	-63.57		-5.6516		
	0.30	8.43	-11.63	-63.57		-5.4580		
	0.40	7.31	-10.71	-63.57		-5.2631		
	0.50	6.28	-9.81	-63.57		-5.0669		
23	0.00	6.28	-9.81	-63.57		-5.0669		
	0.10	5.35	-8.92	-63.57		-4.8697		
	0.20	4.50	-8.05	-63.57		-4.6716		
	0.30	3.74	-7.19	-63.57		-4.4728		
	0.40	3.06	-6.35	-63.57		-4.2734		
	0.50	2.47	-5.53	-63.57		-4.0735		
24	0.00	2.47	-5.53	-63.58		-4.0735		
	0.10	1.95	-4.72	-63.58		-3.8731		
	0.20	1.52	-3.93	-63.58		-3.6726		
	0.30	1.17	-3.15	-63.58		-3.4717		
	0.40	0.89	-2.39	-63.58		-3.2708		
	0.50	0.69	-1.65	-63.58		-3.0696		
25	0.00	0.69	-1.65	-63.58		-3.0696		
	0.10	0.54	-1.41	-63.58		-2.8684		
	0.20	0.41	-1.19	-63.58		-2.6671		
	0.30	0.30	-0.98	-63.58		-2.4658		
	0.40	0.21	-0.79	-63.58		-2.2644		
	0.50	0.14	-0.62	-63.58		-2.0629		
26	0.00	0.14	-0.62	-63.58		-2.0629		
	0.10	0.08	-0.47	-63.58		-1.8615		
	0.20	0.05	-0.32	-63.58		-1.6600		
	0.30	0.02	-0.20	-63.58		-1.4586		
	0.40	0.00	-0.09	-63.58		-1.2571		
	0.50	0.00	0.00	-63.58		-1.0556		

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**ALLEGATO N°8. Fondazioni su pali per Barriere di h=6.75m con rilevato di H=7.0m
Effetti indotti dal ritiro e dalla diminuzione di temperatura.
Calcolo agli elementi finiti con il programma di calcolo "ENG"**

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nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	0	0
26	0.00	-12.50	0	0	0
27	0.00	-13.00	0	1	0

Caratteristiche delle aste**Elemento strutturale :**

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
25	25	26	0.50
26	26	27	0.50

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
6	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
19	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
20	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
21	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
22	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
23	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
24	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
25	2	0.4952	0.019514	3.1447E7	10000.0000	0.80
26	2	0.4952	0.019514	3.1447E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Sezione 2 : diametro =0.80

Carichi applicati alla struttura**RITIRO+AT****Spostamenti imposti :**

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

SPINTA PASSIVA**Carichi distribuiti :**

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descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-16.81	LL
	2	0.00	0.00	-16.81	-33.63	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

Resultati

Condizioni di carico
Condizione : RITIRO+AT

Spostamenti e reazioni

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0041	0.0000	0.00000	146.15	0.00	380.04
2	0.0040	0.0000	-0.00028	0.00	0.00	0.00
3	0.0038	0.0000	-0.00050	0.00	0.00	0.00
4	0.0035	0.0000	-0.00066	0.00	0.00	0.00
5	0.0032	0.0000	-0.00076	0.00	0.00	0.00
6	0.0028	0.0000	-0.00081	0.00	0.00	0.00
7	0.0024	0.0000	-0.00081	0.00	0.00	0.00
8	0.0020	0.0000	-0.00077	0.00	0.00	0.00
9	0.0016	0.0000	-0.00072	0.00	0.00	0.00
10	0.0013	0.0000	-0.00065	0.00	0.00	0.00
11	0.0010	0.0000	-0.00057	0.00	0.00	0.00
12	0.0007	0.0000	-0.00050	0.00	0.00	0.00
13	0.0005	0.0000	-0.00043	0.00	0.00	0.00
14	0.0003	0.0000	-0.00036	0.00	0.00	0.00
15	0.0001	0.0000	-0.00030	0.00	0.00	0.00
16	0.0000	0.0000	-0.00025	0.00	0.00	0.00
17	-0.0001	0.0000	-0.00020	0.00	0.00	0.00
18	-0.0002	0.0000	-0.00017	0.00	0.00	0.00
19	-0.0003	0.0000	-0.00013	0.00	0.00	0.00
20	-0.0004	0.0000	-0.00011	0.00	0.00	0.00
21	-0.0004	0.0000	-0.00009	0.00	0.00	0.00
22	-0.0005	0.0000	-0.00008	0.00	0.00	0.00
23	-0.0005	0.0000	-0.00007	0.00	0.00	0.00
24	-0.0005	0.0000	-0.00006	0.00	0.00	0.00
25	-0.0006	0.0000	-0.00006	0.00	0.00	0.00
26	-0.0006	0.0000	-0.00006	0.00	0.00	0.00
27	-0.0006	0.0000	-0.00006	0.00	0.00	0.00
Reazioni totali				146.15	0.00	380.04

Sollecitazioni

asta	x	M	T	N	P
1	0.00	-380.04	146.15	0.00	0.0000
	0.25	-343.50	146.15	0.00	0.0000
	0.50	-306.96	146.15	0.00	0.0000
2	0.00	-306.96	146.15	0.00	0.0000
	0.25	-270.42	146.15	0.00	0.0000
	0.50	-233.89	146.15	0.00	0.0000
3	0.00	-233.89	146.15	0.00	0.0000
	0.25	-197.35	146.15	0.00	0.0000
	0.50	-160.81	146.15	0.00	0.0000
4	0.00	-160.81	146.15	0.00	0.0000
	0.25	-124.27	146.15	0.00	0.0000
	0.50	-87.73	146.15	0.00	0.0000
5	0.00	-87.73	146.15	0.00	95.3689
	0.25	-53.52	127.71	0.00	89.5359
	0.50	-23.78	110.45	0.00	83.5383
6	0.00	-23.78	110.45	0.00	83.5383
	0.25	1.80	94.39	0.00	77.4669
	0.50	23.52	79.55	0.00	71.4001
7	0.00	23.52	79.55	0.00	71.4001
	0.25	41.68	65.91	0.00	65.4042
	0.50	56.57	53.45	0.00	59.5349
8	0.00	56.57	53.45	0.00	59.5349
	0.25	68.50	42.15	0.00	53.8376
	0.50	77.74	31.96	0.00	48.3490
9	0.00	77.74	31.96	0.00	48.3490
	0.25	84.57	22.85	0.00	43.0972
	0.50	89.25	14.76	0.00	38.1034
10	0.00	89.25	14.76	0.00	38.1034
	0.25	92.03	7.63	0.00	33.3817
	0.50	93.14	1.42	0.00	28.9408
11	0.00	93.14	1.42	0.00	28.9408
	0.25	92.81	-3.93	0.00	24.7841
	0.50	91.24	-8.48	0.00	20.9107
12	0.00	91.24	-8.48	0.00	20.9107
	0.25	88.63	-12.29	0.00	17.3159
	0.50	85.16	-15.41	0.00	13.9916
13	0.00	85.16	-15.41	0.00	4.6639
	0.25	81.20	-16.23	0.00	3.6425
	0.50	77.06	-16.87	0.00	2.7037
14	0.00	77.06	-16.87	0.00	2.7037
	0.25	72.78	-17.32	0.00	1.8435
	0.50	68.41	-17.61	0.00	1.0573
15	0.00	68.41	-17.61	0.00	1.0573
	0.25	63.99	-17.74	0.00	0.3409
	0.50	59.55	-17.75	0.00	-0.3104

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16	0.00	59.55	-17.75	0.00		-0.3104		
	0.25	55.13	-17.62	0.00		-0.9011		
	0.50	50.75	-17.39	0.00		-1.4356		
17	0.00	50.75	-17.39	0.00		-1.4356		
	0.25	46.44	-17.06	0.00		-1.9184		
	0.50	42.23	-16.63	0.00		-2.3539		
18	0.00	42.23	-16.63	0.00		-2.3539		
	0.25	38.13	-16.12	0.00		-2.7464		
	0.50	34.17	-15.54	0.00		-3.1000		
19	0.00	34.17	-15.54	0.00		-3.1000		
	0.25	30.37	-14.89	0.00		-3.4188		
	0.50	26.74	-14.17	0.00		-3.7067		
20	0.00	26.74	-14.17	0.00		-3.7067		
	0.25	23.29	-13.41	0.00		-3.9674		
	0.50	20.03	-12.59	0.00		-4.2043		
21	0.00	20.03	-12.59	0.00		-4.2043		
	0.25	16.99	-11.73	0.00		-4.4207		
	0.50	14.17	-10.83	0.00		-4.6199		
22	0.00	14.17	-10.83	0.00		-4.6199		
	0.25	11.58	-9.89	0.00		-4.8046		
	0.50	9.23	-8.92	0.00		-4.9775		
23	0.00	9.23	-8.92	0.00		-4.9775		
	0.25	7.13	-7.91	0.00		-5.1409		
	0.50	5.28	-6.87	0.00		-5.2971		
24	0.00	5.28	-6.87	0.00		-5.2971		
	0.25	3.70	-5.79	0.00		-5.4479		
	0.50	2.38	-4.69	0.00		-5.5949		
25	0.00	2.38	-4.69	0.00		-5.5949		
	0.25	1.35	-3.56	0.00		-5.7395		
	0.50	0.61	-2.40	0.00		-5.8826		
26	0.00	0.61	-2.40	0.00		-5.8826		
	0.25	0.15	-1.22	0.00		-6.0251		
	0.50	0.00	0.00	0.00		-6.1674		

Condizione : SPINTA PASSIVA**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	-0.0017	0.0000	0.00000	0.00	0.00	-97.69
2	-0.0016	0.0000	0.00008	0.00	0.00	0.00
3	-0.0016	0.0000	0.00016	0.00	0.00	0.00
4	-0.0015	0.0000	0.00023	0.00	0.00	0.00
5	-0.0014	0.0000	0.00028	0.00	0.00	0.00
6	-0.0012	0.0000	0.00031	0.00	0.00	0.00
7	-0.0010	0.0000	0.00032	0.00	0.00	0.00
8	-0.0009	0.0000	0.00032	0.00	0.00	0.00
9	-0.0007	0.0000	0.00030	0.00	0.00	0.00
10	-0.0006	0.0000	0.00027	0.00	0.00	0.00
11	-0.0005	0.0000	0.00024	0.00	0.00	0.00
12	-0.0003	0.0000	0.00022	0.00	0.00	0.00
13	-0.0002	0.0000	0.00019	0.00	0.00	0.00
14	-0.0002	0.0000	0.00016	0.00	0.00	0.00
15	-0.0001	0.0000	0.00014	0.00	0.00	0.00
16	0.0000	0.0000	0.00011	0.00	0.00	0.00
17	0.0000	0.0000	0.00010	0.00	0.00	0.00
18	0.0001	0.0000	0.00008	0.00	0.00	0.00
19	0.0001	0.0000	0.00007	0.00	0.00	0.00
20	0.0001	0.0000	0.00006	0.00	0.00	0.00
21	0.0002	0.0000	0.00005	0.00	0.00	0.00
22	0.0002	0.0000	0.00004	0.00	0.00	0.00
23	0.0002	0.0000	0.00004	0.00	0.00	0.00
24	0.0002	0.0000	0.00003	0.00	0.00	0.00
25	0.0002	0.0000	0.00003	0.00	0.00	0.00
26	0.0003	0.0000	0.00003	0.00	0.00	0.00
27	0.0003	0.0000	0.00003	0.00	0.00	0.00
Reazioni totali				0.00	0.00	-97.69

Sollecitazioni

asta	x	M	T	N	P
1	0.00	97.69	0.00	0.00	0.0000
	0.25	97.60	-1.05	0.00	0.0000
	0.50	96.99	-4.20	0.00	0.0000
2	0.00	96.99	-4.20	0.00	0.0000
	0.25	95.33	-9.46	0.00	0.0000
	0.50	92.09	-16.81	0.00	0.0000
3	0.00	92.09	-16.81	0.00	0.0000
	0.25	86.75	-26.27	0.00	0.0000
	0.50	78.78	-37.83	0.00	0.0000
4	0.00	78.78	-37.83	0.00	0.0000
	0.25	67.65	-51.49	0.00	0.0000
	0.50	52.86	-67.26	0.00	0.0000
5	0.00	52.86	-67.26	0.00	-40.6913
	0.25	37.04	-59.36	0.00	-38.5050
	0.50	23.14	-51.90	0.00	-36.2050
6	0.00	23.14	-51.90	0.00	-36.2050
	0.25	11.05	-44.92	0.00	-33.8338
	0.50	0.64	-38.41	0.00	-31.4284
7	0.00	0.64	-38.41	0.00	-31.4284
	0.25	-8.20	-32.38	0.00	-29.0207
	0.50	-15.59	-26.83	0.00	-26.6377

GENERAL CONTRACTOR



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8	0.00	-15.59	-26.83	0.00		-26.6377		
	0.25	-21.65	-21.75	0.00		-24.3019		
	0.50	-26.50	-17.13	0.00		-22.0320		
9	0.00	-26.50	-17.13	0.00		-22.0320		
	0.25	-30.26	-12.96	0.00		-19.8429		
	0.50	-33.02	-9.21	0.00		-17.7459		
10	0.00	-33.02	-9.21	0.00		-17.7459		
	0.25	-34.90	-5.88	0.00		-15.7495		
	0.50	-35.99	-2.92	0.00		-13.8596		
11	0.00	-35.99	-2.92	0.00		-13.8596		
	0.25	-36.39	-0.34	0.00		-12.0795		
	0.50	-36.19	1.90	0.00		-10.4105		
12	0.00	-36.19	1.90	0.00		-10.4105		
	0.25	-35.47	3.82	0.00		-8.8518		
	0.50	-34.30	5.44	0.00		-7.4015		
13	0.00	-34.30	5.44	0.00		-2.4672		
	0.25	-32.89	5.89	0.00		-2.0186		
	0.50	-31.37	6.25	0.00		-1.6036		
14	0.00	-31.37	6.25	0.00		-1.6036		
	0.25	-29.77	6.53	0.00		-1.2204		
	0.50	-28.11	6.74	0.00		-0.8676		
15	0.00	-28.11	6.74	0.00		-0.8676		
	0.25	-26.41	6.88	0.00		-0.5435		
	0.50	-24.68	6.95	0.00		-0.2462		
16	0.00	-24.68	6.95	0.00		-0.2462		
	0.25	-22.93	6.98	0.00		0.0260		
	0.50	-21.19	6.95	0.00		0.2748		
17	0.00	-21.19	6.95	0.00		0.2748		
	0.25	-19.47	6.87	0.00		0.5020		
	0.50	-17.76	6.75	0.00		0.7094		
18	0.00	-17.76	6.75	0.00		0.7094		
	0.25	-16.10	6.59	0.00		0.8986		
	0.50	-14.47	6.39	0.00		1.0715		
19	0.00	-14.47	6.39	0.00		1.0715		
	0.25	-12.90	6.16	0.00		1.2297		
	0.50	-11.40	5.90	0.00		1.3747		
20	0.00	-11.40	5.90	0.00		1.3747		
	0.25	-9.96	5.61	0.00		1.5080		
	0.50	-8.59	5.30	0.00		1.6313		
21	0.00	-8.59	5.30	0.00		1.6313		
	0.25	-7.31	4.96	0.00		1.7457		
	0.50	-6.11	4.60	0.00		1.8528		
22	0.00	-6.11	4.60	0.00		1.8528		
	0.25	-5.01	4.22	0.00		1.9535		
	0.50	-4.00	3.82	0.00		2.0492		
23	0.00	-4.00	3.82	0.00		2.0492		
	0.25	-3.10	3.41	0.00		2.1408		
	0.50	-2.30	2.97	0.00		2.2292		
24	0.00	-2.30	2.97	0.00		2.2292		
	0.25	-1.62	2.52	0.00		2.3153		
	0.50	-1.05	2.05	0.00		2.3997		
25	0.00	-1.05	2.05	0.00		2.3997		
	0.25	-0.59	1.56	0.00		2.4831		
	0.50	-0.27	1.06	0.00		2.5658		
26	0.00	-0.27	1.06	0.00		2.5658		
	0.25	-0.07	0.54	0.00		2.6482		
	0.50	0.00	0.00	0.00		2.7306		

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLE RARA	1.00	1.00
SLU	1.50	1.00

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	-282.35	146.15	0.00	0.0000
	0.25	-245.90	145.10	0.00	0.0000
	0.50	-209.97	141.95	0.00	0.0000
2	0.00	-209.97	141.95	0.00	0.0000
	0.25	-175.10	136.70	0.00	0.0000
	0.50	-141.80	129.34	0.00	0.0000
3	0.00	-141.80	129.34	0.00	0.0000
	0.25	-110.60	119.88	0.00	0.0000
	0.50	-82.03	108.32	0.00	0.0000
4	0.00	-82.03	108.32	0.00	0.0000
	0.25	-56.62	94.66	0.00	0.0000
	0.50	-34.88	78.90	0.00	0.0000
5	0.00	-34.88	78.90	0.00	54.6776
	0.25	-16.48	68.36	0.00	51.0309
	0.50	-0.64	58.55	0.00	47.3333
6	0.00	-0.64	58.55	0.00	47.3333

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	0.25	12.85	49.48	0.00	43.6331
	0.50	24.16	41.14	0.00	39.9717
7	0.00	24.16	41.14	0.00	39.9717
	0.25	33.48	33.53	0.00	36.3835
	0.50	40.98	26.62	0.00	32.8972
8	0.00	40.98	26.62	0.00	32.8972
	0.25	46.85	20.40	0.00	29.5357
	0.50	51.24	14.83	0.00	26.3169
9	0.00	51.24	14.83	0.00	26.3169
	0.25	54.31	9.89	0.00	23.2544
	0.50	56.23	5.54	0.00	20.3575
10	0.00	56.23	5.54	0.00	20.3575
	0.25	57.13	1.76	0.00	17.6322
	0.50	57.15	-1.50	0.00	15.0812
11	0.00	57.15	-1.50	0.00	15.0812
	0.25	56.42	-4.27	0.00	12.7046
	0.50	55.06	-6.58	0.00	10.5003
12	0.00	55.06	-6.58	0.00	10.5003
	0.25	53.17	-8.47	0.00	8.4640
	0.50	50.85	-9.97	0.00	6.5901
13	0.00	50.85	-9.97	0.00	2.1967
	0.25	48.31	-10.35	0.00	1.6238
	0.50	45.69	-10.62	0.00	1.1002
14	0.00	45.69	-10.62	0.00	1.1002
	0.25	43.01	-10.79	0.00	0.6230
	0.50	40.30	-10.87	0.00	0.1897
15	0.00	40.30	-10.87	0.00	0.1897
	0.25	37.58	-10.87	0.00	-0.2026
	0.50	34.87	-10.79	0.00	-0.5566
16	0.00	34.87	-10.79	0.00	-0.5566
	0.25	32.19	-10.65	0.00	-0.8751
	0.50	29.55	-10.45	0.00	-1.1608
17	0.00	29.55	-10.45	0.00	-1.1608
	0.25	26.97	-10.19	0.00	-1.4164
	0.50	24.46	-9.88	0.00	-1.6445
18	0.00	24.46	-9.88	0.00	-1.6445
	0.25	22.03	-9.53	0.00	-1.8477
	0.50	19.70	-9.15	0.00	-2.0285
19	0.00	19.70	-9.15	0.00	-2.0285
	0.25	17.46	-8.73	0.00	-2.1892
	0.50	15.34	-8.27	0.00	-2.3321
20	0.00	15.34	-8.27	0.00	-2.3321
	0.25	13.33	-7.80	0.00	-2.4593
	0.50	11.44	-7.29	0.00	-2.5730
21	0.00	11.44	-7.29	0.00	-2.5730
	0.25	9.68	-6.77	0.00	-2.6750
	0.50	8.06	-6.23	0.00	-2.7671
22	0.00	8.06	-6.23	0.00	-2.7671
	0.25	6.57	-5.67	0.00	-2.8510
	0.50	5.23	-5.09	0.00	-2.9283
23	0.00	5.23	-5.09	0.00	-2.9283
	0.25	4.03	-4.50	0.00	-3.0001
	0.50	2.98	-3.90	0.00	-3.0679
24	0.00	2.98	-3.90	0.00	-3.0679
	0.25	2.08	-3.28	0.00	-3.1326
	0.50	1.34	-2.65	0.00	-3.1952
25	0.00	1.34	-2.65	0.00	-3.1952
	0.25	0.76	-2.00	0.00	-3.2564
	0.50	0.34	-1.35	0.00	-3.3168
26	0.00	0.34	-1.35	0.00	-3.3168
	0.25	0.09	-0.68	0.00	-3.3769
	0.50	0.00	0.00	0.00	-3.4369

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	-472.37	219.23	0.00	0.0000
	0.25	-417.65	218.18	0.00	0.0000
	0.50	-363.45	215.03	0.00	0.0000
2	0.00	-363.45	215.03	0.00	0.0000
	0.25	-310.31	209.77	0.00	0.0000
	0.50	-258.74	202.42	0.00	0.0000
3	0.00	-258.74	202.42	0.00	0.0000
	0.25	-209.28	192.96	0.00	0.0000
	0.50	-162.44	181.40	0.00	0.0000
4	0.00	-162.44	181.40	0.00	0.0000
	0.25	-118.75	167.74	0.00	0.0000
	0.50	-78.74	151.98	0.00	0.0000
5	0.00	-78.74	151.98	0.00	102.3620
	0.25	-43.25	132.21	0.00	95.7989
	0.50	-12.53	113.77	0.00	89.1025
6	0.00	-12.53	113.77	0.00	89.1025
	0.25	13.75	96.67	0.00	82.3666
	0.50	35.92	80.91	0.00	75.6717

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7	0.00	35.92	80.91	0.00	75.6717			
	0.25	54.32	66.48	0.00	69.0856			
	0.50	69.27	53.35	0.00	62.6646			
8	0.00	69.27	53.35	0.00	62.6646			
	0.25	81.10	41.47	0.00	56.4545			
	0.50	90.11	30.81	0.00	50.4914			
9	0.00	90.11	30.81	0.00	50.4914			
	0.25	96.60	21.31	0.00	44.8030			
	0.50	100.86	12.92	0.00	39.4092			
10	0.00	100.86	12.92	0.00	39.4092			
	0.25	103.15	5.57	0.00	34.3230			
	0.50	103.72	-0.79	0.00	29.5516			
11	0.00	103.72	-0.79	0.00	29.5516			
	0.25	102.83	-6.24	0.00	25.0967			
	0.50	100.68	-10.82	0.00	20.9557			
12	0.00	100.68	-10.82	0.00	20.9557			
	0.25	97.48	-14.61	0.00	17.1220			
	0.50	93.43	-17.67	0.00	13.5859			
13	0.00	93.43	-17.67	0.00	4.5286			
	0.25	88.91	-18.47	0.00	3.4451			
	0.50	84.22	-19.05	0.00	2.4520			
14	0.00	84.22	-19.05	0.00	2.4520			
	0.25	79.40	-19.45	0.00	1.5448			
	0.50	74.51	-19.67	0.00	0.7184			
15	0.00	74.51	-19.67	0.00	0.7184			
	0.25	69.58	-19.74	0.00	-0.0322			
	0.50	64.65	-19.67	0.00	-0.7118			
16	0.00	64.65	-19.67	0.00	-0.7118			
	0.25	59.75	-19.46	0.00	-1.3256			
	0.50	54.93	-19.14	0.00	-1.8786			
17	0.00	54.93	-19.14	0.00	-1.8786			
	0.25	50.19	-18.72	0.00	-2.3756			
	0.50	45.58	-18.20	0.00	-2.8215			
18	0.00	45.58	-18.20	0.00	-2.8215			
	0.25	41.10	-17.59	0.00	-3.2209			
	0.50	36.79	-16.91	0.00	-3.5785			
19	0.00	36.79	-16.91	0.00	-3.5785			
	0.25	32.65	-16.17	0.00	-3.8986			
	0.50	28.71	-15.36	0.00	-4.1854			
20	0.00	28.71	-15.36	0.00	-4.1854			
	0.25	24.97	-14.50	0.00	-4.4430			
	0.50	21.46	-13.59	0.00	-4.6751			
21	0.00	21.46	-13.59	0.00	-4.6751			
	0.25	18.18	-12.64	0.00	-4.8854			
	0.50	15.14	-11.64	0.00	-5.0771			
22	0.00	15.14	-11.64	0.00	-5.0771			
	0.25	12.36	-10.61	0.00	-5.2533			
	0.50	9.84	-9.55	0.00	-5.4170			
23	0.00	9.84	-9.55	0.00	-5.4170			
	0.25	7.59	-8.45	0.00	-5.5706			
	0.50	5.62	-7.33	0.00	-5.7165			
24	0.00	5.62	-7.33	0.00	-5.7165			
	0.25	3.93	-6.17	0.00	-5.8566			
	0.50	2.53	-4.99	0.00	-5.9927			
25	0.00	2.53	-4.99	0.00	-5.9927			
	0.25	1.43	-3.78	0.00	-6.1261			
	0.50	0.64	-2.55	0.00	-6.2581			
26	0.00	0.64	-2.55	0.00	-6.2581			
	0.25	0.16	-1.29	0.00	-6.3895			
	0.50	0.00	0.00	0.00	-6.5206			

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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ALLEGATO N°9
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"

Doc. N.

Progetto
INORLotto
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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	1	0

Caratteristiche delle aste**Elemento strutturale :**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.4952	0.019514	3.1447E7	0.0000	0.00
2	1	0.4952	0.019514	3.1447E7	0.0000	0.00
3	1	0.4952	0.019514	3.1447E7	0.0000	0.00
4	1	0.4952	0.019514	3.1447E7	0.0000	0.00
5	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
6	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
7	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
8	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
9	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
10	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
11	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
12	1	0.4952	0.019514	3.1447E7	30000.0000	0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000	0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000	0.80

Geometria delle sezioni

Sezione 1 : diametro =0.80

Carichi applicati alla struttura**Nppm****Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

Mppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Tppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Mbp=Mb+Tb*(H+s)**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-122.02

Tbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	35.63	0.00	0.00

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263 di 313**qs****Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	3.81	3.81	LL
	2	0.00	0.00	3.81	3.81	LL
	3	0.00	0.00	3.81	3.81	LL
	4	0.00	0.00	3.81	3.81	LL
	5	0.00	0.00	3.81	3.81	LL
	6	0.00	0.00	3.81	3.81	LL
	7	0.00	0.00	3.81	3.81	LL
	8	0.00	0.00	3.81	3.81	LL
	9	0.00	0.00	3.81	3.81	LL
	10	0.00	0.00	3.81	3.81	LL
	11	0.00	0.00	3.81	3.81	LL
	12	0.00	0.00	3.81	3.81	LL
	13	0.00	0.00	4.92	4.92	LL
	14	0.00	0.00	4.92	4.92	LL
	15	0.00	0.00	4.92	4.92	LL
	16	0.00	0.00	4.92	4.92	LL
	17	0.00	0.00	4.92	4.92	LL
	18	0.00	0.00	4.92	4.92	LL

Tsacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

Mqpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

Msacpv**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

Nbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-54.83	0.00

Risultati**Condizioni di carico****Condizione : Nppm****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
2	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
3	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
4	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
5	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000

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	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
6	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
7	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
8	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
9	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
10	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
11	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
12	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
13	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
14	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
15	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
16	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
17	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
18	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

Condizione : Mppm
Sollecitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000

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	0.40	8.30	0.00	0.00	0.0000			
	0.50	8.30	0.00	0.00	0.0000			
3	0.00	8.30	0.00	0.00	0.0000			
	0.10	8.30	0.00	0.00	0.0000			
	0.20	8.30	0.00	0.00	0.0000			
	0.30	8.30	0.00	0.00	0.0000			
	0.40	8.30	0.00	0.00	0.0000			
	0.50	8.30	0.00	0.00	0.0000			
4	0.00	8.30	0.00	0.00	0.0000			
	0.10	8.30	0.00	0.00	0.0000			
	0.20	8.30	0.00	0.00	0.0000			
	0.30	8.30	0.00	0.00	0.0000			
	0.40	8.30	0.00	0.00	0.0000			
	0.50	8.30	0.00	0.00	0.0000			
5	0.00	8.30	0.00	0.00	2.5272			
	0.10	8.29	-0.20	0.00	2.3755			
	0.20	8.26	-0.38	0.00	2.2278			
	0.30	8.21	-0.55	0.00	2.0841			
	0.40	8.15	-0.71	0.00	1.9445			
	0.50	8.07	-0.86	0.00	1.8088			
6	0.00	8.07	-0.86	0.00	1.8088			
	0.10	7.98	-1.00	0.00	1.6771			
	0.20	7.87	-1.13	0.00	1.5493			
	0.30	7.75	-1.25	0.00	1.4253			
	0.40	7.62	-1.36	0.00	1.3051			
	0.50	7.48	-1.46	0.00	1.1886			
7	0.00	7.48	-1.46	0.00	1.1886			
	0.10	7.33	-1.55	0.00	1.0758			
	0.20	7.17	-1.63	0.00	0.9666			
	0.30	7.01	-1.70	0.00	0.8609			
	0.40	6.83	-1.77	0.00	0.7586			
	0.50	6.65	-1.82	0.00	0.6597			
8	0.00	6.65	-1.82	0.00	0.6597			
	0.10	6.47	-1.87	0.00	0.5640			
	0.20	6.28	-1.91	0.00	0.4715			
	0.30	6.09	-1.95	0.00	0.3820			
	0.40	5.89	-1.97	0.00	0.2956			
	0.50	5.69	-1.99	0.00	0.2120			
9	0.00	5.69	-1.99	0.00	0.2120			
	0.10	5.49	-2.01	0.00	0.1311			
	0.20	5.29	-2.01	0.00	0.0530			
	0.30	5.09	-2.02	0.00	-0.0225			
	0.40	4.89	-2.01	0.00	-0.0956			
	0.50	4.69	-2.00	0.00	-0.1662			
10	0.00	4.69	-2.00	0.00	-0.1662			
	0.10	4.49	-1.98	0.00	-0.2346			
	0.20	4.29	-1.96	0.00	-0.3008			
	0.30	4.10	-1.94	0.00	-0.3649			
	0.40	3.91	-1.90	0.00	-0.4269			
	0.50	3.72	-1.87	0.00	-0.4871			
11	0.00	3.72	-1.87	0.00	-0.4871			
	0.10	3.53	-1.83	0.00	-0.5454			
	0.20	3.35	-1.78	0.00	-0.6021			
	0.30	3.18	-1.73	0.00	-0.6570			
	0.40	3.01	-1.68	0.00	-0.7105			
	0.50	2.84	-1.62	0.00	-0.7624			
12	0.00	2.84	-1.62	0.00	-0.7624			
	0.10	2.68	-1.55	0.00	-0.8130			
	0.20	2.53	-1.49	0.00	-0.8623			
	0.30	2.38	-1.42	0.00	-0.9103			
	0.40	2.25	-1.34	0.00	-0.9571			
	0.50	2.12	-1.26	0.00	-1.0029			
13	0.00	2.12	-1.26	0.00	-0.3343			
	0.10	1.99	-1.24	0.00	-0.3492			
	0.20	1.87	-1.21	0.00	-0.3638			
	0.30	1.75	-1.18	0.00	-0.3781			
	0.40	1.63	-1.15	0.00	-0.3921			
	0.50	1.52	-1.12	0.00	-0.4058			
14	0.00	1.52	-1.12	0.00	-0.4058			
	0.10	1.41	-1.08	0.00	-0.4193			
	0.20	1.30	-1.05	0.00	-0.4325			
	0.30	1.20	-1.01	0.00	-0.4456			
	0.40	1.10	-0.98	0.00	-0.4584			
	0.50	1.00	-0.94	0.00	-0.4711			
15	0.00	1.00	-0.94	0.00	-0.4711			
	0.10	0.91	-0.90	0.00	-0.4836			
	0.20	0.82	-0.86	0.00	-0.4959			
	0.30	0.74	-0.82	0.00	-0.5081			
	0.40	0.66	-0.78	0.00	-0.5202			
	0.50	0.58	-0.74	0.00	-0.5322			
16	0.00	0.58	-0.74	0.00	-0.5322			
	0.10	0.51	-0.70	0.00	-0.5441			
	0.20	0.44	-0.65	0.00	-0.5559			
	0.30	0.38	-0.61	0.00	-0.5677			
	0.40	0.32	-0.56	0.00	-0.5793			
	0.50	0.27	-0.52	0.00	-0.5910			
17	0.00	0.27	-0.52	0.00	-0.5910			
	0.10	0.22	-0.47	0.00	-0.6025			
	0.20	0.17	-0.42	0.00	-0.6141			
	0.30	0.13	-0.37	0.00	-0.6256			
	0.40	0.10	-0.32	0.00	-0.6371			
	0.50	0.07	-0.27	0.00	-0.6486			
18	0.00	0.07	-0.27	0.00	-0.6486			
	0.10	0.04	-0.22	0.00	-0.6601			

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0.20	0.02	-0.16	0.00	-0.6715
0.30	0.01	-0.11	0.00	-0.6830
0.40	0.00	-0.06	0.00	-0.6944
0.50	0.00	0.00	0.00	-0.7059

Condizione : Tppm**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000
	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000
2	0.00	1.50	3.00	0.00	0.0000
	0.10	1.80	3.00	0.00	0.0000
	0.20	2.10	3.00	0.00	0.0000
	0.30	2.40	3.00	0.00	0.0000
	0.40	2.70	3.00	0.00	0.0000
	0.50	3.00	3.00	0.00	0.0000
3	0.00	3.00	3.00	0.00	0.0000
	0.10	3.30	3.00	0.00	0.0000
	0.20	3.60	3.00	0.00	0.0000
	0.30	3.90	3.00	0.00	0.0000
	0.40	4.20	3.00	0.00	0.0000
	0.50	4.50	3.00	0.00	0.0000
4	0.00	4.50	3.00	0.00	0.0000
	0.10	4.80	3.00	0.00	0.0000
	0.20	5.10	3.00	0.00	0.0000
	0.30	5.40	3.00	0.00	0.0000
	0.40	5.70	3.00	0.00	0.0000
	0.50	6.00	3.00	0.00	0.0000
5	0.00	6.00	3.00	0.00	4.6149
	0.10	6.28	2.64	0.00	4.4139
	0.20	6.53	2.30	0.00	4.2159
	0.30	6.74	1.97	0.00	4.0211
	0.40	6.92	1.65	0.00	3.8297
	0.50	7.07	1.36	0.00	3.6416
6	0.00	7.07	1.36	0.00	3.6416
	0.10	7.19	1.07	0.00	3.4570
	0.20	7.29	0.80	0.00	3.2758
	0.30	7.36	0.55	0.00	3.0983
	0.40	7.40	0.31	0.00	2.9243
	0.50	7.42	0.08	0.00	2.7540
7	0.00	7.42	0.08	0.00	2.7540
	0.10	7.42	-0.13	0.00	2.5873
	0.20	7.39	-0.33	0.00	2.4242
	0.30	7.35	-0.52	0.00	2.2647
	0.40	7.29	-0.69	0.00	2.1088
	0.50	7.21	-0.85	0.00	1.9565
8	0.00	7.21	-0.85	0.00	1.9565
	0.10	7.12	-1.00	0.00	1.8077
	0.20	7.01	-1.14	0.00	1.6624
	0.30	6.89	-1.27	0.00	1.5205
	0.40	6.76	-1.38	0.00	1.3819
	0.50	6.61	-1.49	0.00	1.2467
9	0.00	6.61	-1.49	0.00	1.2467
	0.10	6.46	-1.58	0.00	1.1147
	0.20	6.30	-1.67	0.00	0.9859
	0.30	6.13	-1.74	0.00	0.8601
	0.40	5.95	-1.80	0.00	0.7374
	0.50	5.77	-1.86	0.00	0.6175
10	0.00	5.77	-1.86	0.00	0.6175
	0.10	5.58	-1.90	0.00	0.5005
	0.20	5.39	-1.94	0.00	0.3862
	0.30	5.19	-1.96	0.00	0.2746
	0.40	4.99	-1.98	0.00	0.1654
	0.50	4.80	-1.99	0.00	0.0587
11	0.00	4.80	-1.99	0.00	0.0587
	0.10	4.60	-1.99	0.00	-0.0456
	0.20	4.40	-1.98	0.00	-0.1477
	0.30	4.20	-1.97	0.00	-0.2476
	0.40	4.00	-1.94	0.00	-0.3455
	0.50	3.81	-1.91	0.00	-0.4415
12	0.00	3.81	-1.91	0.00	-0.4415
	0.10	3.62	-1.87	0.00	-0.5355
	0.20	3.44	-1.83	0.00	-0.6278
	0.30	3.26	-1.77	0.00	-0.7184
	0.40	3.08	-1.71	0.00	-0.8075
	0.50	2.91	-1.65	0.00	-0.8950
13	0.00	2.91	-1.65	0.00	-0.2983
	0.10	2.75	-1.62	0.00	-0.3270
	0.20	2.59	-1.59	0.00	-0.3553
	0.30	2.43	-1.56	0.00	-0.3831
	0.40	2.28	-1.53	0.00	-0.4105
	0.50	2.13	-1.50	0.00	-0.4376
14	0.00	2.13	-1.50	0.00	-0.4376
	0.10	1.98	-1.46	0.00	-0.4643
	0.20	1.83	-1.42	0.00	-0.4907
	0.30	1.69	-1.38	0.00	-0.5168
	0.40	1.56	-1.34	0.00	-0.5426
	0.50	1.43	-1.30	0.00	-0.5682
15	0.00	1.43	-1.30	0.00	-0.5682

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	0.10	1.30	-1.25	0.00	-0.5935
	0.20	1.18	-1.20	0.00	-0.6186
	0.30	1.06	-1.15	0.00	-0.6435
	0.40	0.95	-1.10	0.00	-0.6683
	0.50	0.84	-1.05	0.00	-0.6929
16	0.00	0.84	-1.05	0.00	-0.6929
	0.10	0.74	-0.99	0.00	-0.7173
	0.20	0.64	-0.93	0.00	-0.7417
	0.30	0.55	-0.87	0.00	-0.7659
	0.40	0.47	-0.81	0.00	-0.7901
	0.50	0.39	-0.74	0.00	-0.8141
17	0.00	0.39	-0.74	0.00	-0.8141
	0.10	0.32	-0.68	0.00	-0.8381
	0.20	0.25	-0.61	0.00	-0.8621
	0.30	0.19	-0.54	0.00	-0.8860
	0.40	0.14	-0.47	0.00	-0.9099
	0.50	0.10	-0.40	0.00	-0.9338
18	0.00	0.10	-0.40	0.00	-0.9338
	0.10	0.07	-0.32	0.00	-0.9576
	0.20	0.04	-0.24	0.00	-0.9814
	0.30	0.02	-0.16	0.00	-1.0053
	0.40	0.00	-0.08	0.00	-1.0291
	0.50	0.00	0.00	0.00	-1.0529

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

Sollecitazioni

asta	x	M	T	N	P
1	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
2	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
3	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
4	0.00	122.02	0.00	0.00	0.0000
	0.10	122.02	0.00	0.00	0.0000
	0.20	122.02	0.00	0.00	0.0000
	0.30	122.02	0.00	0.00	0.0000
	0.40	122.02	0.00	0.00	0.0000
	0.50	122.02	0.00	0.00	0.0000
5	0.00	122.02	0.00	0.00	37.1522
	0.10	121.87	-2.87	0.00	34.9213
	0.20	121.45	-5.57	0.00	32.7500
	0.30	120.76	-8.10	0.00	30.6379
	0.40	119.83	-10.46	0.00	28.5850
	0.50	118.67	-12.66	0.00	26.5906
6	0.00	118.67	-12.66	0.00	26.5906
	0.10	117.30	-14.71	0.00	24.6542
	0.20	115.74	-16.60	0.00	22.7751
	0.30	113.99	-18.34	0.00	20.9526
	0.40	112.07	-19.94	0.00	19.1859
	0.50	110.01	-21.41	0.00	17.4739
7	0.00	110.01	-21.41	0.00	17.4739
	0.10	107.80	-22.73	0.00	15.8157
	0.20	105.46	-23.93	0.00	14.2102
	0.30	103.02	-25.00	0.00	12.6562
	0.40	100.47	-25.95	0.00	11.1526
	0.50	97.83	-26.78	0.00	9.6981
8	0.00	97.83	-26.78	0.00	9.6981
	0.10	95.11	-27.50	0.00	8.2914
	0.20	92.33	-28.11	0.00	6.9312
	0.30	89.50	-28.61	0.00	5.6162
	0.40	86.62	-29.00	0.00	4.3449
	0.50	83.70	-29.30	0.00	3.1160
9	0.00	83.70	-29.30	0.00	3.1160
	0.10	80.76	-29.50	0.00	1.9279
	0.20	77.80	-29.61	0.00	0.7794
	0.30	74.84	-29.63	0.00	-0.3311
	0.40	71.88	-29.56	0.00	-1.4051
	0.50	68.93	-29.40	0.00	-2.4438
10	0.00	68.93	-29.40	0.00	-2.4438
	0.10	66.00	-29.17	0.00	-3.4489
	0.20	63.10	-28.85	0.00	-4.4218
	0.30	60.23	-28.46	0.00	-5.3637
	0.40	57.41	-28.00	0.00	-6.2763
	0.50	54.64	-27.46	0.00	-7.1607
11	0.00	54.64	-27.46	0.00	-7.1607
	0.10	51.92	-26.86	0.00	-8.0185
	0.20	49.27	-26.18	0.00	-8.8508
	0.30	46.68	-25.45	0.00	-9.6591
	0.40	44.18	-24.64	0.00	-10.4446
	0.50	41.76	-23.78	0.00	-11.2084

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12	0.00	41.76	-23.78	0.00		-11.2084		
	0.10	39.43	-22.86	0.00		-11.9518		
	0.20	37.19	-21.87	0.00		-12.6760		
	0.30	35.05	-20.83	0.00		-13.3820		
	0.40	33.02	-19.74	0.00		-14.0708		
	0.50	31.11	-18.59	0.00		-14.7435		
13	0.00	31.11	-18.59	0.00		-4.9145		
	0.10	29.27	-18.19	0.00		-5.1336		
	0.20	27.47	-17.77	0.00		-5.3480		
	0.30	25.71	-17.34	0.00		-5.5579		
	0.40	24.00	-16.88	0.00		-5.7637		
	0.50	22.34	-16.42	0.00		-5.9655		
14	0.00	22.34	-16.42	0.00		-5.9655		
	0.10	20.72	-15.93	0.00		-6.1636		
	0.20	19.15	-15.43	0.00		-6.3584		
	0.30	17.63	-14.92	0.00		-6.5501		
	0.40	16.17	-14.39	0.00		-6.7389		
	0.50	14.76	-13.84	0.00		-6.9250		
15	0.00	14.76	-13.84	0.00		-6.9250		
	0.10	13.40	-13.28	0.00		-7.1088		
	0.20	12.10	-12.71	0.00		-7.2904		
	0.30	10.86	-12.12	0.00		-7.4700		
	0.40	9.68	-11.52	0.00		-7.6478		
	0.50	8.56	-10.90	0.00		-7.8240		
16	0.00	8.56	-10.90	0.00		-7.8240		
	0.10	7.50	-10.27	0.00		-7.9989		
	0.20	6.50	-9.62	0.00		-8.1725		
	0.30	5.57	-8.96	0.00		-8.3451		
	0.40	4.71	-8.29	0.00		-8.5168		
	0.50	3.92	-7.61	0.00		-8.6876		
17	0.00	3.92	-7.61	0.00		-8.6876		
	0.10	3.19	-6.91	0.00		-8.8579		
	0.20	2.53	-6.19	0.00		-9.0276		
	0.30	1.95	-5.47	0.00		-9.1970		
	0.40	1.44	-4.73	0.00		-9.3660		
	0.50	1.01	-3.97	0.00		-9.5347		
18	0.00	1.01	-3.97	0.00		-9.5347		
	0.10	0.65	-3.20	0.00		-9.7033		
	0.20	0.37	-2.42	0.00		-9.8718		
	0.30	0.16	-1.63	0.00		-10.0402		
	0.40	0.04	-0.82	0.00		-10.2086		
	0.50	0.00	0.00	0.00		-10.3770		

Condizione : Tbp**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	35.63	0.00	0.0000
	0.10	3.56	35.63	0.00	0.0000
	0.20	7.13	35.63	0.00	0.0000
	0.30	10.69	35.63	0.00	0.0000
	0.40	14.25	35.63	0.00	0.0000
	0.50	17.81	35.63	0.00	0.0000
2	0.00	17.81	35.63	0.00	0.0000
	0.10	21.38	35.63	0.00	0.0000
	0.20	24.94	35.63	0.00	0.0000
	0.30	28.50	35.63	0.00	0.0000
	0.40	32.06	35.63	0.00	0.0000
	0.50	35.63	35.63	0.00	0.0000
3	0.00	35.63	35.62	0.00	0.0000
	0.10	39.19	35.62	0.00	0.0000
	0.20	42.75	35.62	0.00	0.0000
	0.30	46.31	35.62	0.00	0.0000
	0.40	49.87	35.62	0.00	0.0000
	0.50	53.44	35.62	0.00	0.0000
4	0.00	53.44	35.62	0.00	0.0000
	0.10	57.00	35.62	0.00	0.0000
	0.20	60.56	35.62	0.00	0.0000
	0.30	64.13	35.62	0.00	0.0000
	0.40	67.69	35.62	0.00	0.0000
	0.50	71.25	35.62	0.00	0.0000
5	0.00	71.25	35.62	0.00	54.8018
	0.10	74.60	31.35	0.00	52.4146
	0.20	77.53	27.26	0.00	50.0639
	0.30	80.06	23.36	0.00	47.7511
	0.40	82.20	19.64	0.00	45.4773
	0.50	83.99	16.10	0.00	43.2438
6	0.00	83.99	16.10	0.00	43.2438
	0.10	85.43	12.74	0.00	41.0513
	0.20	86.54	9.55	0.00	38.9005
	0.30	87.35	6.53	0.00	36.7921
	0.40	87.86	3.68	0.00	34.7263
	0.50	88.09	0.99	0.00	32.7035
7	0.00	88.09	0.99	0.00	32.7035
	0.10	88.06	-1.54	0.00	30.7237
	0.20	87.79	-3.91	0.00	28.7870
	0.30	87.28	-6.13	0.00	26.8931
	0.40	86.56	-8.20	0.00	25.0420
	0.50	85.65	-10.13	0.00	23.2331
8	0.00	85.65	-10.13	0.00	23.2331
	0.10	84.54	-11.91	0.00	21.4661
	0.20	83.27	-13.56	0.00	19.7404
	0.30	81.84	-15.06	0.00	18.0554
	0.40	80.26	-16.44	0.00	16.4105
	0.50	78.55	-17.68	0.00	14.8047

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9	0.00	78.55	-17.68	0.00	14.8047			
	0.10	76.73	-18.80	0.00	13.2374			
	0.20	74.80	-19.80	0.00	11.7075			
	0.30	72.77	-20.67	0.00	10.2142			
	0.40	70.67	-21.43	0.00	8.7565			
	0.50	68.49	-22.07	0.00	7.3334			
10	0.00	68.49	-22.07	0.00	7.3334			
	0.10	66.26	-22.60	0.00	5.9437			
	0.20	63.98	-23.02	0.00	4.5864			
	0.30	61.66	-23.33	0.00	3.2604			
	0.40	59.31	-23.54	0.00	1.9645			
	0.50	56.95	-23.64	0.00	0.6976			
11	0.00	56.95	-23.64	0.00	0.6976			
	0.10	54.59	-23.65	0.00	-0.5414			
	0.20	52.23	-23.56	0.00	-1.7538			
	0.30	49.88	-23.37	0.00	-2.9406			
	0.40	47.56	-23.09	0.00	-4.1030			
	0.50	45.26	-22.72	0.00	-5.2422			
12	0.00	45.26	-22.72	0.00	-5.2422			
	0.10	43.01	-22.25	0.00	-6.3593			
	0.20	40.82	-21.70	0.00	-7.4553			
	0.30	38.68	-21.06	0.00	-8.5314			
	0.40	36.61	-20.34	0.00	-9.5885			
	0.50	34.61	-19.54	0.00	-10.6278			
13	0.00	34.61	-19.54	0.00	-3.5426			
	0.10	32.67	-19.24	0.00	-3.8834			
	0.20	30.76	-18.92	0.00	-4.2188			
	0.30	28.89	-18.57	0.00	-4.5493			
	0.40	27.05	-18.19	0.00	-4.8750			
	0.50	25.25	-17.79	0.00	-5.1963			
14	0.00	25.25	-17.79	0.00	-5.1963			
	0.10	23.50	-17.36	0.00	-5.5135			
	0.20	21.78	-16.91	0.00	-5.8269			
	0.30	20.11	-16.43	0.00	-6.1367			
	0.40	18.50	-15.93	0.00	-6.4433			
	0.50	16.93	-15.40	0.00	-6.7468			
15	0.00	16.93	-15.40	0.00	-6.7468			
	0.10	15.42	-14.85	0.00	-7.0476			
	0.20	13.96	-14.28	0.00	-7.3459			
	0.30	12.56	-13.68	0.00	-7.6419			
	0.40	11.22	-13.06	0.00	-7.9358			
	0.50	9.95	-12.42	0.00	-8.2279			
16	0.00	9.95	-12.42	0.00	-8.2279			
	0.10	8.74	-11.75	0.00	-8.5184			
	0.20	7.60	-11.06	0.00	-8.8075			
	0.30	6.53	-10.34	0.00	-9.0953			
	0.40	5.53	-9.61	0.00	-9.3820			
	0.50	4.61	-8.85	0.00	-9.6679			
17	0.00	4.61	-8.85	0.00	-9.6679			
	0.10	3.77	-8.06	0.00	-9.9530			
	0.20	3.00	-7.26	0.00	-10.2375			
	0.30	2.31	-6.43	0.00	-10.5215			
	0.40	1.71	-5.58	0.00	-10.8051			
	0.50	1.20	-4.71	0.00	-11.0884			
18	0.00	1.20	-4.71	0.00	-11.0884			
	0.10	0.77	-3.81	0.00	-11.3716			
	0.20	0.44	-2.89	0.00	-11.6546			
	0.30	0.20	-1.95	0.00	-11.9375			
	0.40	0.05	-0.99	0.00	-12.2204			
	0.50	0.00	0.00	0.00	-12.5033			

Condizione : qs

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.02	0.38	0.00	0.0000
	0.20	0.08	0.76	0.00	0.0000
	0.30	0.17	1.14	0.00	0.0000
	0.40	0.30	1.52	0.00	0.0000
	0.50	0.48	1.90	0.00	0.0000
2	0.00	0.48	1.90	0.00	0.0000
	0.10	0.69	2.28	0.00	0.0000
	0.20	0.93	2.66	0.00	0.0000
	0.30	1.22	3.04	0.00	0.0000
	0.40	1.54	3.43	0.00	0.0000
	0.50	1.90	3.81	0.00	0.0000
3	0.00	1.90	3.81	0.00	0.0000
	0.10	2.30	4.19	0.00	0.0000
	0.20	2.74	4.57	0.00	0.0000
	0.30	3.22	4.95	0.00	0.0000
	0.40	3.73	5.33	0.00	0.0000
	0.50	4.28	5.71	0.00	0.0000
4	0.00	4.28	5.71	0.00	0.0000
	0.10	4.87	6.09	0.00	0.0000
	0.20	5.50	6.47	0.00	0.0000
	0.30	6.17	6.85	0.00	0.0000
	0.40	6.87	7.23	0.00	0.0000
	0.50	7.61	7.61	0.00	0.0000
5	0.00	7.61	7.61	0.00	10.8210
	0.10	8.35	7.14	0.00	10.6591
	0.20	9.04	6.67	0.00	10.5012
	0.30	9.68	6.22	0.00	10.3478
	0.40	10.28	5.78	0.00	10.1991

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.50	10.84	5.36	0.00	10.0554			
6	0.00	10.84	5.36	0.00	10.0554			
	0.10	11.36	4.94	0.00	9.9171			
	0.20	11.83	4.53	0.00	9.7842			
	0.30	12.26	4.14	0.00	9.6572			
	0.40	12.66	3.75	0.00	9.5361			
	0.50	13.01	3.38	0.00	9.4213			
7	0.00	13.01	3.38	0.00	9.4213			
	0.10	13.33	3.01	0.00	9.3128			
	0.20	13.62	2.65	0.00	9.2108			
	0.30	13.86	2.30	0.00	9.1155			
	0.40	14.08	1.96	0.00	9.0269			
	0.50	14.26	1.62	0.00	8.9452			
8	0.00	14.26	1.62	0.00	8.9452			
	0.10	14.40	1.29	0.00	8.8705			
	0.20	14.52	0.97	0.00	8.8029			
	0.30	14.60	0.65	0.00	8.7423			
	0.40	14.65	0.34	0.00	8.6889			
	0.50	14.66	0.03	0.00	8.6426			
9	0.00	14.66	0.03	0.00	8.6426			
	0.10	14.65	-0.28	0.00	8.6035			
	0.20	14.61	-0.59	0.00	8.5715			
	0.30	14.53	-0.89	0.00	8.5467			
	0.40	14.43	-1.19	0.00	8.5290			
	0.50	14.30	-1.49	0.00	8.5184			
10	0.00	14.30	-1.49	0.00	8.5184			
	0.10	14.13	-1.79	0.00	8.5147			
	0.20	13.94	-2.09	0.00	8.5180			
	0.30	13.72	-2.38	0.00	8.5281			
	0.40	13.46	-2.69	0.00	8.5448			
	0.50	13.18	-2.99	0.00	8.5682			
11	0.00	13.18	-2.99	0.00	8.5682			
	0.10	12.87	-3.29	0.00	8.5980			
	0.20	12.52	-3.60	0.00	8.6340			
	0.30	12.15	-3.91	0.00	8.6762			
	0.40	11.74	-4.22	0.00	8.7244			
	0.50	11.30	-4.54	0.00	8.7782			
12	0.00	11.30	-4.54	0.00	8.7782			
	0.10	10.83	-4.86	0.00	8.8376			
	0.20	10.33	-5.19	0.00	8.9023			
	0.30	9.79	-5.52	0.00	8.9721			
	0.40	9.23	-5.86	0.00	9.0466			
	0.50	8.62	-6.20	0.00	9.1256			
13	0.00	8.62	-6.20	0.00	3.0419			
	0.10	8.01	-5.95	0.00	3.0696			
	0.20	7.43	-5.71	0.00	3.0987			
	0.30	6.87	-5.47	0.00	3.1289			
	0.40	6.34	-5.22	0.00	3.1603			
	0.50	5.83	-4.99	0.00	3.1928			
14	0.00	5.83	-4.99	0.00	3.1928			
	0.10	5.34	-4.75	0.00	3.2261			
	0.20	4.88	-4.52	0.00	3.2604			
	0.30	4.44	-4.29	0.00	3.2954			
	0.40	4.02	-4.06	0.00	3.3312			
	0.50	3.62	-3.84	0.00	3.3676			
15	0.00	3.62	-3.84	0.00	3.3676			
	0.10	3.25	-3.61	0.00	3.4046			
	0.20	2.90	-3.40	0.00	3.4421			
	0.30	2.57	-3.18	0.00	3.4801			
	0.40	2.27	-2.97	0.00	3.5186			
	0.50	1.98	-2.76	0.00	3.5574			
16	0.00	1.98	-2.76	0.00	3.5574			
	0.10	1.71	-2.55	0.00	3.5965			
	0.20	1.47	-2.35	0.00	3.6359			
	0.30	1.24	-2.15	0.00	3.6755			
	0.40	1.04	-1.95	0.00	3.7154			
	0.50	0.85	-1.76	0.00	3.7554			
17	0.00	0.85	-1.76	0.00	3.7554			
	0.10	0.69	-1.57	0.00	3.7955			
	0.20	0.54	-1.38	0.00	3.8358			
	0.30	0.41	-1.20	0.00	3.8761			
	0.40	0.30	-1.02	0.00	3.9166			
	0.50	0.21	-0.84	0.00	3.9570			
18	0.00	0.21	-0.84	0.00	3.9570			
	0.10	0.13	-0.66	0.00	3.9975			
	0.20	0.07	-0.49	0.00	4.0380			
	0.30	0.03	-0.33	0.00	4.0786			
	0.40	0.01	-0.16	0.00	4.1191			
	0.50	0.00	0.00	0.00	4.1597			

Condizione : Tsacpv

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000
	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.40	6.42	7.14	0.00	0.0000
	0.50	7.14	7.14	0.00	0.0000
3	0.00	7.14	7.14	0.00	0.0000
	0.10	7.85	7.14	0.00	0.0000
	0.20	8.56	7.14	0.00	0.0000
	0.30	9.28	7.14	0.00	0.0000
	0.40	9.99	7.14	0.00	0.0000
	0.50	10.70	7.14	0.00	0.0000
4	0.00	10.70	7.14	0.00	0.0000
	0.10	11.42	7.14	0.00	0.0000
	0.20	12.13	7.14	0.00	0.0000
	0.30	12.85	7.14	0.00	0.0000
	0.40	13.56	7.14	0.00	0.0000
	0.50	14.27	7.14	0.00	0.0000
5	0.00	14.27	7.14	0.00	10.9781
	0.10	14.94	6.28	0.00	10.4998
	0.20	15.53	5.46	0.00	10.0289
	0.30	16.04	4.68	0.00	9.5656
	0.40	16.47	3.93	0.00	9.1101
	0.50	16.83	3.23	0.00	8.6627
6	0.00	16.83	3.23	0.00	8.6627
	0.10	17.11	2.55	0.00	8.2235
	0.20	17.34	1.91	0.00	7.7927
	0.30	17.50	1.31	0.00	7.3703
	0.40	17.60	0.74	0.00	6.9565
	0.50	17.65	0.20	0.00	6.5513
7	0.00	17.65	0.20	0.00	6.5513
	0.10	17.64	-0.31	0.00	6.1547
	0.20	17.59	-0.78	0.00	5.7667
	0.30	17.48	-1.23	0.00	5.3873
	0.40	17.34	-1.64	0.00	5.0165
	0.50	17.16	-2.03	0.00	4.6541
8	0.00	17.16	-2.03	0.00	4.6541
	0.10	16.94	-2.39	0.00	4.3001
	0.20	16.68	-2.72	0.00	3.9545
	0.30	16.39	-3.02	0.00	3.6169
	0.40	16.08	-3.29	0.00	3.2874
	0.50	15.74	-3.54	0.00	2.9657
9	0.00	15.74	-3.54	0.00	2.9657
	0.10	15.37	-3.77	0.00	2.6517
	0.20	14.98	-3.97	0.00	2.3453
	0.30	14.58	-4.14	0.00	2.0461
	0.40	14.16	-4.29	0.00	1.7541
	0.50	13.72	-4.42	0.00	1.4690
10	0.00	13.72	-4.42	0.00	1.4690
	0.10	13.27	-4.53	0.00	1.1907
	0.20	12.82	-4.61	0.00	0.9188
	0.30	12.35	-4.67	0.00	0.6531
	0.40	11.88	-4.72	0.00	0.3935
	0.50	11.41	-4.74	0.00	0.1397
11	0.00	11.41	-4.74	0.00	0.1397
	0.10	10.94	-4.74	0.00	-0.1085
	0.20	10.46	-4.72	0.00	-0.3513
	0.30	9.99	-4.68	0.00	-0.5891
	0.40	9.53	-4.63	0.00	-0.8219
	0.50	9.07	-4.55	0.00	-1.0501
12	0.00	9.07	-4.55	0.00	-1.0501
	0.10	8.62	-4.46	0.00	-1.2739
	0.20	8.18	-4.35	0.00	-1.4935
	0.30	7.75	-4.22	0.00	-1.7090
	0.40	7.33	-4.07	0.00	-1.9208
	0.50	6.93	-3.91	0.00	-2.1290
13	0.00	6.93	-3.91	0.00	-0.7097
	0.10	6.55	-3.85	0.00	-0.7779
	0.20	6.16	-3.79	0.00	-0.8451
	0.30	5.79	-3.72	0.00	-0.9113
	0.40	5.42	-3.64	0.00	-0.9766
	0.50	5.06	-3.56	0.00	-1.0409
14	0.00	5.06	-3.56	0.00	-1.0409
	0.10	4.71	-3.48	0.00	-1.1045
	0.20	4.36	-3.39	0.00	-1.1673
	0.30	4.03	-3.29	0.00	-1.2293
	0.40	3.71	-3.19	0.00	-1.2907
	0.50	3.39	-3.09	0.00	-1.3515
15	0.00	3.39	-3.09	0.00	-1.3515
	0.10	3.09	-2.98	0.00	-1.4118
	0.20	2.80	-2.86	0.00	-1.4715
	0.30	2.52	-2.74	0.00	-1.5308
	0.40	2.25	-2.62	0.00	-1.5897
	0.50	1.99	-2.49	0.00	-1.6482
16	0.00	1.99	-2.49	0.00	-1.6482
	0.10	1.75	-2.35	0.00	-1.7064
	0.20	1.52	-2.21	0.00	-1.7643
	0.30	1.31	-2.07	0.00	-1.8220
	0.40	1.11	-1.92	0.00	-1.8794
	0.50	0.92	-1.77	0.00	-1.9367
17	0.00	0.92	-1.77	0.00	-1.9367
	0.10	0.75	-1.62	0.00	-1.9938
	0.20	0.60	-1.45	0.00	-2.0508
	0.30	0.46	-1.29	0.00	-2.1077
	0.40	0.34	-1.12	0.00	-2.1645
	0.50	0.24	-0.94	0.00	-2.2213
18	0.00	0.24	-0.94	0.00	-2.2213
	0.10	0.16	-0.76	0.00	-2.2780

GENERAL CONTRACTOR



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GRUPPO FERROVIE DELLO STATO ITALIANE

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0.20	0.09	-0.58	0.00	-2.3347
0.30	0.04	-0.39	0.00	-2.3914
0.40	0.01	-0.20	0.00	-2.4480
0.50	0.00	0.00	0.00	-2.5047

Condizione : Tqpy**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000
2	0.00	7.14	14.27	0.00	0.0000
	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.84	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.12	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.41	14.27	0.00	0.0000
4	0.00	21.41	14.27	0.00	0.0000
	0.10	22.83	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.11	14.27	0.00	0.0000
	0.50	28.54	14.27	0.00	0.0000
5	0.00	28.54	14.27	0.00	21.9515
	0.10	29.88	12.56	0.00	20.9953
	0.20	31.05	10.92	0.00	20.0537
	0.30	32.07	9.36	0.00	19.1272
	0.40	32.93	7.87	0.00	18.2165
	0.50	33.64	6.45	0.00	17.3218
6	0.00	33.64	6.45	0.00	17.3218
	0.10	34.22	5.10	0.00	16.4436
	0.20	34.67	3.83	0.00	15.5821
	0.30	34.99	2.62	0.00	14.7375
	0.40	35.19	1.47	0.00	13.9100
	0.50	35.28	0.40	0.00	13.0997
7	0.00	35.28	0.40	0.00	13.0997
	0.10	35.27	-0.62	0.00	12.3067
	0.20	35.16	-1.57	0.00	11.5309
	0.30	34.96	-2.46	0.00	10.7723
	0.40	34.67	-3.29	0.00	10.0308
	0.50	34.31	-4.06	0.00	9.3063
8	0.00	34.31	-4.06	0.00	9.3063
	0.10	33.86	-4.77	0.00	8.5985
	0.20	33.35	-5.43	0.00	7.9072
	0.30	32.78	-6.03	0.00	7.2323
	0.40	32.15	-6.58	0.00	6.5734
	0.50	31.47	-7.08	0.00	5.9302
9	0.00	31.47	-7.08	0.00	5.9302
	0.10	30.73	-7.53	0.00	5.3024
	0.20	29.96	-7.93	0.00	4.6896
	0.30	29.15	-8.28	0.00	4.0914
	0.40	28.31	-8.58	0.00	3.5075
	0.50	27.43	-8.84	0.00	2.9375
10	0.00	27.43	-8.84	0.00	2.9375
	0.10	26.54	-9.05	0.00	2.3808
	0.20	25.63	-9.22	0.00	1.8371
	0.30	24.70	-9.34	0.00	1.3060
	0.40	23.76	-9.43	0.00	0.7869
	0.50	22.81	-9.47	0.00	0.2794
11	0.00	22.81	-9.47	0.00	0.2794
	0.10	21.87	-9.47	0.00	-0.2169
	0.20	20.92	-9.44	0.00	-0.7025
	0.30	19.98	-9.36	0.00	-1.1779
	0.40	19.05	-9.25	0.00	-1.6435
	0.50	18.13	-9.10	0.00	-2.0998
12	0.00	18.13	-9.10	0.00	-2.0998
	0.10	17.23	-8.91	0.00	-2.5473
	0.20	16.35	-8.69	0.00	-2.9863
	0.30	15.49	-8.44	0.00	-3.4173
	0.40	14.66	-8.15	0.00	-3.8408
	0.50	13.86	-7.83	0.00	-4.2571
13	0.00	13.86	-7.83	0.00	-4.2571
	0.10	13.09	-7.71	0.00	-4.6555
	0.20	12.32	-7.58	0.00	-5.0399
	0.30	11.57	-7.44	0.00	-5.4123
	0.40	10.84	-7.29	0.00	-5.7727
	0.50	10.12	-7.13	0.00	-6.1214
14	0.00	10.12	-7.13	0.00	-6.1214
	0.10	9.41	-6.95	0.00	-6.4585
	0.20	8.72	-6.77	0.00	-6.7840
	0.30	8.06	-6.58	0.00	-7.0981
	0.40	7.41	-6.38	0.00	-7.4009
	0.50	6.78	-6.17	0.00	-7.7025
15	0.00	6.78	-6.17	0.00	-7.7025

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.10	6.18	-5.95	0.00	-2.8230
	0.20	5.59	-5.72	0.00	-2.9425
	0.30	5.03	-5.48	0.00	-3.0610
	0.40	4.50	-5.23	0.00	-3.1788
	0.50	3.99	-4.97	0.00	-3.2958
16	0.00	3.99	-4.97	0.00	-3.2958
	0.10	3.50	-4.71	0.00	-3.4121
	0.20	3.04	-4.43	0.00	-3.5279
	0.30	2.62	-4.14	0.00	-3.6432
	0.40	2.22	-3.85	0.00	-3.7581
	0.50	1.85	-3.54	0.00	-3.8726
17	0.00	1.85	-3.54	0.00	-3.8726
	0.10	1.51	-3.23	0.00	-3.9868
	0.20	1.20	-2.91	0.00	-4.1007
	0.30	0.93	-2.58	0.00	-4.2145
	0.40	0.69	-2.23	0.00	-4.3281
	0.50	0.48	-1.88	0.00	-4.4416
18	0.00	0.48	-1.88	0.00	-4.4416
	0.10	0.31	-1.53	0.00	-4.5550
	0.20	0.18	-1.16	0.00	-4.6684
	0.30	0.08	-0.78	0.00	-4.7817
	0.40	0.02	-0.40	0.00	-4.8950
	0.50	0.00	0.00	0.00	-5.0084

Condizione : Mqpv**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	2.1728
	0.10	7.13	-0.17	0.00	2.0423
	0.20	7.10	-0.33	0.00	1.9154
	0.30	7.06	-0.47	0.00	1.7918
	0.40	7.01	-0.61	0.00	1.6718
	0.50	6.94	-0.74	0.00	1.5551
6	0.00	6.94	-0.74	0.00	1.5551
	0.10	6.86	-0.86	0.00	1.4419
	0.20	6.77	-0.97	0.00	1.3320
	0.30	6.67	-1.07	0.00	1.2254
	0.40	6.55	-1.17	0.00	1.1221
	0.50	6.43	-1.25	0.00	1.0219
7	0.00	6.43	-1.25	0.00	1.0219
	0.10	6.30	-1.33	0.00	0.9250
	0.20	6.17	-1.40	0.00	0.8311
	0.30	6.02	-1.46	0.00	0.7402
	0.40	5.88	-1.52	0.00	0.6522
	0.50	5.72	-1.57	0.00	0.5672
8	0.00	5.72	-1.57	0.00	0.5672
	0.10	5.56	-1.61	0.00	0.4849
	0.20	5.40	-1.64	0.00	0.4054
	0.30	5.23	-1.67	0.00	0.3285
	0.40	5.07	-1.70	0.00	0.2541
	0.50	4.90	-1.71	0.00	0.1822
9	0.00	4.90	-1.71	0.00	0.1822
	0.10	4.72	-1.73	0.00	0.1128
	0.20	4.55	-1.73	0.00	0.0456
	0.30	4.38	-1.73	0.00	-0.0194
	0.40	4.20	-1.73	0.00	-0.0822
	0.50	4.03	-1.72	0.00	-0.1429
10	0.00	4.03	-1.72	0.00	-0.1429
	0.10	3.86	-1.71	0.00	-0.2017
	0.20	3.69	-1.69	0.00	-0.2586
	0.30	3.52	-1.66	0.00	-0.3137
	0.40	3.36	-1.64	0.00	-0.3671
	0.50	3.20	-1.61	0.00	-0.4188
11	0.00	3.20	-1.61	0.00	-0.4188
	0.10	3.04	-1.57	0.00	-0.4690
	0.20	2.88	-1.53	0.00	-0.5176
	0.30	2.73	-1.49	0.00	-0.5649
	0.40	2.58	-1.44	0.00	-0.6108
	0.50	2.44	-1.39	0.00	-0.6555

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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12	0.00	2.44	-1.39	0.00				
	0.10	2.31	-1.34	0.00				
	0.20	2.17	-1.28	0.00				
	0.30	2.05	-1.22	0.00				
	0.40	1.93	-1.15	0.00				
	0.50	1.82	-1.09	0.00				
13	0.00	1.82	-1.09	0.00				
	0.10	1.71	-1.06	0.00				
	0.20	1.61	-1.04	0.00				
	0.30	1.50	-1.01	0.00				
	0.40	1.40	-0.99	0.00				
	0.50	1.31	-0.96	0.00				
14	0.00	1.31	-0.96	0.00				
	0.10	1.21	-0.93	0.00				
	0.20	1.12	-0.90	0.00				
	0.30	1.03	-0.87	0.00				
	0.40	0.95	-0.84	0.00				
	0.50	0.86	-0.81	0.00				
15	0.00	0.86	-0.81	0.00				
	0.10	0.78	-0.78	0.00				
	0.20	0.71	-0.74	0.00				
	0.30	0.64	-0.71	0.00				
	0.40	0.57	-0.67	0.00				
	0.50	0.50	-0.64	0.00				
16	0.00	0.50	-0.64	0.00				
	0.10	0.44	-0.60	0.00				
	0.20	0.38	-0.56	0.00				
	0.30	0.33	-0.52	0.00				
	0.40	0.28	-0.48	0.00				
	0.50	0.23	-0.44	0.00				
17	0.00	0.23	-0.44	0.00				
	0.10	0.19	-0.40	0.00				
	0.20	0.15	-0.36	0.00				
	0.30	0.11	-0.32	0.00				
	0.40	0.08	-0.28	0.00				
	0.50	0.06	-0.23	0.00				
18	0.00	0.06	-0.23	0.00				
	0.10	0.04	-0.19	0.00				
	0.20	0.02	-0.14	0.00				
	0.30	0.01	-0.10	0.00				
	0.40	0.00	-0.05	0.00				
	0.50	0.00	0.00	0.00				

Condizione : Msacpv**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
2	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
3	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
4	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
5	0.00	2.38	0.00	0.00	0.7243
	0.10	2.38	-0.06	0.00	0.6808
	0.20	2.37	-0.11	0.00	0.6385
	0.30	2.35	-0.16	0.00	0.5973
	0.40	2.34	-0.20	0.00	0.5573
	0.50	2.31	-0.25	0.00	0.5184
6	0.00	2.31	-0.25	0.00	0.5184
	0.10	2.29	-0.29	0.00	0.4807
	0.20	2.26	-0.32	0.00	0.4440
	0.30	2.22	-0.36	0.00	0.4085
	0.40	2.18	-0.39	0.00	0.3740
	0.50	2.14	-0.42	0.00	0.3407
7	0.00	2.14	-0.42	0.00	0.3407
	0.10	2.10	-0.44	0.00	0.3083
	0.20	2.06	-0.47	0.00	0.2770
	0.30	2.01	-0.49	0.00	0.2467
	0.40	1.96	-0.51	0.00	0.2174
	0.50	1.91	-0.52	0.00	0.1891
8	0.00	1.91	-0.52	0.00	0.1891
	0.10	1.85	-0.54	0.00	0.1616
	0.20	1.80	-0.55	0.00	0.1351
	0.30	1.74	-0.56	0.00	0.1095
	0.40	1.69	-0.57	0.00	0.0847
	0.50	1.63	-0.57	0.00	0.0607

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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9	0.00	1.63	-0.57	0.00	0.0607
	0.10	1.57	-0.58	0.00	0.0376
	0.20	1.52	-0.58	0.00	0.0152
	0.30	1.46	-0.58	0.00	-0.0065
	0.40	1.40	-0.58	0.00	-0.0274
	0.50	1.34	-0.57	0.00	-0.0476
10	0.00	1.34	-0.57	0.00	-0.0476
	0.10	1.29	-0.57	0.00	-0.0672
	0.20	1.23	-0.56	0.00	-0.0862
	0.30	1.17	-0.55	0.00	-0.1046
	0.40	1.12	-0.55	0.00	-0.1224
	0.50	1.07	-0.54	0.00	-0.1396
11	0.00	1.07	-0.54	0.00	-0.1396
	0.10	1.01	-0.52	0.00	-0.1563
	0.20	0.96	-0.51	0.00	-0.1726
	0.30	0.91	-0.50	0.00	-0.1883
	0.40	0.86	-0.48	0.00	-0.2036
	0.50	0.81	-0.46	0.00	-0.2185
12	0.00	0.81	-0.46	0.00	-0.2185
	0.10	0.77	-0.45	0.00	-0.2330
	0.20	0.73	-0.43	0.00	-0.2471
	0.30	0.68	-0.41	0.00	-0.2609
	0.40	0.64	-0.38	0.00	-0.2743
	0.50	0.61	-0.36	0.00	-0.2874
13	0.00	0.61	-0.36	0.00	-0.0958
	0.10	0.57	-0.35	0.00	-0.1001
	0.20	0.54	-0.35	0.00	-0.1043
	0.30	0.50	-0.34	0.00	-0.1084
	0.40	0.47	-0.33	0.00	-0.1124
	0.50	0.44	-0.32	0.00	-0.1163
14	0.00	0.44	-0.32	0.00	-0.1163
	0.10	0.40	-0.31	0.00	-0.1202
	0.20	0.37	-0.30	0.00	-0.1240
	0.30	0.34	-0.29	0.00	-0.1277
	0.40	0.32	-0.28	0.00	-0.1314
	0.50	0.29	-0.27	0.00	-0.1350
15	0.00	0.29	-0.27	0.00	-0.1350
	0.10	0.26	-0.26	0.00	-0.1386
	0.20	0.24	-0.25	0.00	-0.1421
	0.30	0.21	-0.24	0.00	-0.1456
	0.40	0.19	-0.22	0.00	-0.1491
	0.50	0.17	-0.21	0.00	-0.1525
16	0.00	0.17	-0.21	0.00	-0.1525
	0.10	0.15	-0.20	0.00	-0.1559
	0.20	0.13	-0.19	0.00	-0.1593
	0.30	0.11	-0.17	0.00	-0.1627
	0.40	0.09	-0.16	0.00	-0.1660
	0.50	0.08	-0.15	0.00	-0.1694
17	0.00	0.08	-0.15	0.00	-0.1694
	0.10	0.06	-0.13	0.00	-0.1727
	0.20	0.05	-0.12	0.00	-0.1760
	0.30	0.04	-0.11	0.00	-0.1793
	0.40	0.03	-0.09	0.00	-0.1826
	0.50	0.02	-0.08	0.00	-0.1859
18	0.00	0.02	-0.08	0.00	-0.1859
	0.10	0.01	-0.06	0.00	-0.1892
	0.20	0.01	-0.05	0.00	-0.1925
	0.30	0.00	-0.03	0.00	-0.1957
	0.40	0.00	-0.02	0.00	-0.1990
	0.50	0.00	0.00	0.00	-0.2023

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.17	-3.53	0.00	0.0000
	0.20	-0.72	-7.40	0.00	0.0000
	0.30	-1.66	-11.60	0.00	0.0000
	0.40	-3.05	-16.14	0.00	0.0000
	0.50	-4.90	-21.02	0.00	0.0000
4	0.00	-4.90	-21.02	0.00	0.0000
	0.10	-7.26	-26.23	0.00	0.0000
	0.20	-10.16	-31.78	0.00	0.0000
	0.30	-13.63	-37.66	0.00	0.0000
	0.40	-17.71	-43.88	0.00	0.0000
	0.50	-22.42	-50.44	0.00	0.0000
5	0.00	-22.42	-50.44	0.00	-53.7036
	0.10	-27.25	-46.24	0.00	-51.7582
	0.20	-31.67	-42.18	0.00	-49.8261
	0.30	-35.69	-38.29	0.00	-47.9095
	0.40	-39.33	-34.54	0.00	-46.0103

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.50	-42.61	-30.94	0.00		-44.1303		
6	0.00	-42.61	-30.94	0.00		-44.1303		
	0.10	-45.53	-27.50	0.00		-42.2711		
	0.20	-48.11	-24.20	0.00		-40.4342		
	0.30	-50.37	-21.05	0.00		-38.6207		
	0.40	-52.32	-18.04	0.00		-36.8319		
	0.50	-53.98	-15.17	0.00		-35.0687		
7	0.00	-53.98	-15.17	0.00		-35.0687		
	0.10	-55.36	-12.44	0.00		-33.3318		
	0.20	-56.48	-9.85	0.00		-31.6220		
	0.30	-57.34	-7.39	0.00		-29.9398		
	0.40	-57.96	-5.07	0.00		-28.2856		
	0.50	-58.36	-2.88	0.00		-26.6598		
8	0.00	-58.36	-2.88	0.00		-26.6598		
	0.10	-58.54	-0.82	0.00		-25.0624		
	0.20	-58.52	1.12	0.00		-23.4937		
	0.30	-58.32	2.93	0.00		-21.9536		
	0.40	-57.94	4.62	0.00		-20.4419		
	0.50	-57.40	6.19	0.00		-18.9586		
9	0.00	-57.40	6.19	0.00		-18.9586		
	0.10	-56.71	7.65	0.00		-17.5034		
	0.20	-55.87	8.99	0.00		-16.0758		
	0.30	-54.91	10.21	0.00		-14.6756		
	0.40	-53.83	11.33	0.00		-13.3022		
	0.50	-52.65	12.34	0.00		-11.9551		
10	0.00	-52.65	12.34	0.00		-11.9551		
	0.10	-51.37	13.24	0.00		-10.6338		
	0.20	-50.01	14.03	0.00		-9.3376		
	0.30	-48.57	14.73	0.00		-8.0658		
	0.40	-47.06	15.32	0.00		-6.8177		
	0.50	-45.51	15.82	0.00		-5.5927		
11	0.00	-45.51	15.82	0.00		-5.5927		
	0.10	-43.90	16.21	0.00		-4.3899		
	0.20	-42.27	16.52	0.00		-3.2086		
	0.30	-40.60	16.73	0.00		-2.0479		
	0.40	-38.92	16.85	0.00		-0.9071		
	0.50	-37.24	16.87	0.00		0.2147		
12	0.00	-37.24	16.87	0.00		0.2147		
	0.10	-35.55	16.81	0.00		1.3183		
	0.20	-33.88	16.66	0.00		2.4045		
	0.30	-32.22	16.43	0.00		3.4741		
	0.40	-30.60	16.11	0.00		4.5280		
	0.50	-29.00	15.71	0.00		5.5670		
13	0.00	-29.00	15.71	0.00		1.8557		
	0.10	-27.44	15.54	0.00		2.1972		
	0.20	-25.90	15.36	0.00		2.5343		
	0.30	-24.37	15.14	0.00		2.8672		
	0.40	-22.87	14.90	0.00		3.1962		
	0.50	-21.39	14.63	0.00		3.5214		
14	0.00	-21.39	14.63	0.00		3.5214		
	0.10	-19.94	14.34	0.00		3.8431		
	0.20	-18.53	14.02	0.00		4.1615		
	0.30	-17.14	13.67	0.00		4.4770		
	0.40	-15.79	13.30	0.00		4.7896		
	0.50	-14.48	12.91	0.00		5.0997		
15	0.00	-14.48	12.91	0.00		5.0997		
	0.10	-13.21	12.49	0.00		5.4074		
	0.20	-11.98	12.05	0.00		5.7129		
	0.30	-10.80	11.58	0.00		6.0165		
	0.40	-9.67	11.09	0.00		6.3184		
	0.50	-8.59	10.57	0.00		6.6186		
16	0.00	-8.59	10.57	0.00		6.6186		
	0.10	-7.56	10.03	0.00		6.9175		
	0.20	-6.58	9.47	0.00		7.2151		
	0.30	-5.66	8.88	0.00		7.5117		
	0.40	-4.81	8.27	0.00		7.8073		
	0.50	-4.01	7.63	0.00		8.1022		
17	0.00	-4.01	7.63	0.00		8.1022		
	0.10	-3.28	6.97	0.00		8.3964		
	0.20	-2.62	6.29	0.00		8.6900		
	0.30	-2.02	5.59	0.00		8.9833		
	0.40	-1.50	4.86	0.00		9.2762		
	0.50	-1.05	4.11	0.00		9.5688		
18	0.00	-1.05	4.11	0.00		9.5688		
	0.10	-0.68	3.33	0.00		9.8613		
	0.20	-0.39	2.54	0.00		10.1537		
	0.30	-0.17	1.71	0.00		10.4460		
	0.40	-0.04	0.87	0.00		10.7383		
	0.50	0.00	0.00	0.00		11.0306		

Condizione : Nbp**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
2	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
3	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
4	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
5	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
6	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
7	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
8	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
9	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
10	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
11	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
12	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
13	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
14	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
15	0.00	0.00	0.00	-54.82	0.0000
	0.10	0.00	0.00	-54.82	0.0000
	0.20	0.00	0.00	-54.82	0.0000
	0.30	0.00	0.00	-54.82	0.0000
	0.40	0.00	0.00	-54.82	0.0000
	0.50	0.00	0.00	-54.82	0.0000
16	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
17	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000
	0.20	0.00	0.00	-54.83	0.0000
	0.30	0.00	0.00	-54.83	0.0000
	0.40	0.00	0.00	-54.83	0.0000
	0.50	0.00	0.00	-54.83	0.0000
18	0.00	0.00	0.00	-54.83	0.0000
	0.10	0.00	0.00	-54.83	0.0000

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0.20	0.00	0.00	-54.83	0.0000
0.30	0.00	0.00	-54.83	0.0000
0.40	0.00	0.00	-54.83	0.0000
0.50	0.00	0.00	-54.83	0.0000

Combinazioni di carico

combinazione	Nppm	Mppm	Tppm	Mbp=Mb+Tb*(H+S)	Tbp	qs	Tsacpv	Tqpv	Mqpv	Msacpv	Spinta passiva	Nbp
SLE RARA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SLU	1.50	1.50	1.50	1.50	1.50	1.50	1.35	1.50	1.50	1.35	1.00	1.50

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	139.83	60.03	-60.82	0.0000
	0.10	145.85	60.41	-60.82	0.0000
	0.20	151.91	60.79	-60.82	0.0000
	0.30	158.01	61.17	-60.82	0.0000
	0.40	164.15	61.55	-60.82	0.0000
	0.50	170.32	61.93	-60.82	0.0000
2	0.00	170.32	61.93	-60.83	0.0000
	0.10	176.53	62.32	-60.83	0.0000
	0.20	182.79	62.70	-60.83	0.0000
	0.30	189.07	63.08	-60.83	0.0000
	0.40	195.40	63.46	-60.83	0.0000
	0.50	201.77	63.84	-60.83	0.0000
3	0.00	201.77	63.84	-60.82	0.0000
	0.10	207.99	60.69	-60.82	0.0000
	0.20	213.89	57.20	-60.82	0.0000
	0.30	219.42	53.38	-60.82	0.0000
	0.40	224.56	49.22	-60.82	0.0000
	0.50	229.26	44.72	-60.82	0.0000
4	0.00	229.26	44.72	-60.82	0.0000
	0.10	233.49	39.89	-60.82	0.0000
	0.20	237.22	34.72	-60.82	0.0000
	0.30	240.42	29.22	-60.82	0.0000
	0.40	243.06	23.38	-60.82	0.0000
	0.50	245.09	17.20	-60.82	0.0000
5	0.00	245.09	17.20	-60.83	92.0403
	0.10	246.47	10.43	-60.83	87.2445
	0.20	247.19	4.04	-60.83	82.5691
	0.30	247.29	-1.98	-60.83	78.0146
	0.40	246.80	-7.65	-60.83	73.5810
	0.50	245.77	-12.97	-60.83	69.2679
6	0.00	245.77	-12.97	-60.82	69.2679
	0.10	244.22	-17.94	-60.82	65.0750
	0.20	242.19	-22.59	-60.82	61.0015
	0.30	239.71	-26.92	-60.82	57.0464
	0.40	236.82	-30.94	-60.82	53.2084
	0.50	233.53	-34.65	-60.82	49.4862
7	0.00	233.53	-34.65	-60.82	49.4862
	0.10	229.90	-38.07	-60.82	45.8781
	0.20	225.93	-41.21	-60.82	42.3824
	0.30	221.66	-44.08	-60.82	38.9972
	0.40	217.12	-46.68	-60.82	35.7203
	0.50	212.34	-49.02	-60.82	32.5495
8	0.00	212.34	-49.02	-60.83	32.5495
	0.10	207.33	-51.11	-60.83	29.4825
	0.20	202.12	-52.96	-60.83	26.5169
	0.30	196.74	-54.58	-60.83	23.6501
	0.40	191.21	-55.98	-60.83	20.8794
	0.50	185.55	-57.16	-60.83	18.2022
9	0.00	185.55	-57.16	-60.82	18.2022
	0.10	179.79	-58.12	-60.82	15.6158
	0.20	173.94	-58.89	-60.82	13.1172
	0.30	168.02	-59.46	-60.82	10.7036
	0.40	162.05	-59.84	-60.82	8.3722
	0.50	156.06	-60.03	-60.82	6.1200
10	0.00	156.06	-60.03	-60.83	6.1200
	0.10	150.05	-60.05	-60.83	3.9441
	0.20	144.05	-59.90	-60.83	1.8416
	0.30	138.07	-59.59	-60.83	-0.1906
	0.40	132.14	-59.11	-60.83	-2.1552
	0.50	126.26	-58.49	-60.83	-4.0552
11	0.00	126.26	-58.49	-60.82	-4.0552
	0.10	120.45	-57.71	-60.82	-5.8935
	0.20	114.72	-56.79	-60.82	-7.6729
	0.30	109.09	-55.72	-60.82	-9.3962
	0.40	103.58	-54.53	-60.82	-11.0662
	0.50	98.19	-53.20	-60.82	-12.6856
12	0.00	98.19	-53.20	-60.82	-12.6856
	0.10	92.94	-51.74	-60.82	-14.2569
	0.20	87.85	-50.16	-60.82	-15.7828
	0.30	82.92	-48.46	-60.82	-17.2657
	0.40	78.16	-46.65	-60.82	-18.7081
	0.50	73.59	-44.72	-60.82	-20.1123
13	0.00	73.59	-44.72	-60.82	-6.7041
	0.10	69.17	-43.67	-60.82	-7.1602
	0.20	64.86	-42.59	-60.82	-7.6050
	0.30	60.65	-41.48	-60.82	-8.0392
	0.40	56.56	-40.33	-60.82	-8.4635
	0.50	52.59	-39.14	-60.82	-8.8787
14	0.00	52.59	-39.14	-60.82	-8.8787
	0.10	48.73	-37.93	-60.82	-9.2852

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	0.20	45.00	-36.68	-60.82	-9.6838
	0.30	41.40	-35.40	-60.82	-10.0751
	0.40	37.92	-34.09	-60.82	-10.4596
	0.50	34.58	-32.75	-60.82	-10.8379
15	0.00	34.58	-32.75	-60.82	-10.8379
	0.10	31.38	-31.38	-60.82	-11.2106
	0.20	28.31	-29.98	-60.82	-11.5782
	0.30	25.38	-28.55	-60.82	-11.9412
	0.40	22.60	-27.09	-60.82	-12.3000
	0.50	19.96	-25.60	-60.82	-12.6552
16	0.00	19.96	-25.60	-60.83	-12.6552
	0.10	17.48	-24.09	-60.83	-13.0071
	0.20	15.15	-22.54	-60.83	-13.3561
	0.30	12.97	-20.97	-60.83	-13.7027
	0.40	10.95	-19.37	-60.83	-14.0472
	0.50	9.10	-17.75	-60.83	-14.3898
17	0.00	9.10	-17.75	-60.82	-14.3898
	0.10	7.41	-16.09	-60.82	-14.7310
	0.20	5.88	-14.41	-60.82	-15.0710
	0.30	4.52	-12.71	-60.82	-15.4100
	0.40	3.34	-10.97	-60.82	-15.7483
	0.50	2.33	-9.21	-60.82	-16.0860
18	0.00	2.33	-9.21	-60.82	-16.0860
	0.10	1.50	-7.42	-60.82	-16.4234
	0.20	0.85	-5.61	-60.82	-16.7605
	0.30	0.38	-3.76	-60.82	-17.0974
	0.40	0.10	-1.90	-60.82	-17.4343
	0.50	0.00	0.00	-60.82	-17.7712
Combinazione : SLU					
asta	x	M	T	N	P
1	0.00	209.39	88.98	-91.24	0.0000
	0.10	218.32	89.55	-91.24	0.0000
	0.20	227.30	90.12	-91.24	0.0000
	0.30	236.34	90.69	-91.24	0.0000
	0.40	245.44	91.26	-91.24	0.0000
	0.50	254.59	91.83	-91.24	0.0000
2	0.00	254.59	91.83	-91.24	0.0000
	0.10	263.80	92.40	-91.24	0.0000
	0.20	273.07	92.97	-91.24	0.0000
	0.30	282.40	93.54	-91.24	0.0000
	0.40	291.78	94.12	-91.24	0.0000
	0.50	301.22	94.69	-91.24	0.0000
3	0.00	301.22	94.69	-91.24	0.0000
	0.10	310.54	91.73	-91.24	0.0000
	0.20	319.55	88.43	-91.24	0.0000
	0.30	328.22	84.80	-91.24	0.0000
	0.40	336.50	80.83	-91.24	0.0000
	0.50	344.37	76.52	-91.24	0.0000
4	0.00	344.37	76.52	-91.24	0.0000
	0.10	351.80	71.88	-91.24	0.0000
	0.20	358.74	66.90	-91.24	0.0000
	0.30	365.17	61.59	-91.24	0.0000
	0.40	371.05	55.94	-91.24	0.0000
	0.50	376.34	49.95	-91.24	0.0000
5	0.00	376.34	49.95	-91.24	163.1569
	0.10	380.73	37.83	-91.24	155.0687
	0.20	383.93	26.35	-91.24	147.1666
	0.30	386.02	15.49	-91.24	139.4522
	0.40	387.05	5.23	-91.24	131.9265
	0.50	387.08	-4.43	-91.24	124.5899
6	0.00	387.08	-4.43	-91.24	124.5899
	0.10	386.18	-13.51	-91.24	117.4425
	0.20	384.40	-22.03	-91.24	110.4839
	0.30	381.79	-30.00	-91.24	103.7131
	0.40	378.42	-37.44	-91.24	97.1290
	0.50	374.32	-44.36	-91.24	90.7298
7	0.00	374.32	-44.36	-91.24	90.7298
	0.10	369.56	-50.78	-91.24	84.5136
	0.20	364.19	-56.71	-91.24	78.4781
	0.30	358.24	-62.16	-91.24	72.6205
	0.40	351.77	-67.16	-91.24	66.9381
	0.50	344.82	-71.70	-91.24	61.4276
8	0.00	344.82	-71.70	-91.24	61.4276
	0.10	337.44	-75.82	-91.24	56.0857
	0.20	329.67	-79.51	-91.24	50.9087
	0.30	321.55	-82.80	-91.24	45.8929
	0.40	313.12	-85.70	-91.24	41.0343
	0.50	304.43	-88.21	-91.24	36.3287
9	0.00	304.43	-88.21	-91.24	36.3287
	0.10	295.49	-90.36	-91.24	31.7719
	0.20	286.37	-92.14	-91.24	27.3596
	0.30	277.08	-93.59	-91.24	23.0873
	0.40	267.66	-94.69	-91.24	18.9504
	0.50	258.15	-95.47	-91.24	14.9444
10	0.00	258.15	-95.47	-91.24	14.9444
	0.10	248.58	-95.94	-91.24	11.0646
	0.20	238.97	-96.10	-91.24	7.3063
	0.30	229.37	-95.96	-91.24	3.6648
	0.40	219.79	-95.54	-91.24	0.1354
	0.50	210.27	-94.85	-91.24	-3.2865
11	0.00	210.27	-94.85	-91.24	-3.2865
	0.10	200.83	-93.88	-91.24	-6.6056
	0.20	191.50	-92.65	-91.24	-9.8265

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	0.30	182.31	-91.17	-91.24	-12.9538
	0.40	173.27	-89.45	-91.24	-15.9920
	0.50	164.43	-87.48	-91.24	-18.9454
12	0.00	164.43	-87.48	-91.24	-18.9454
	0.10	155.79	-85.28	-91.24	-21.8185
	0.20	147.38	-82.86	-91.24	-24.6154
	0.30	139.22	-80.22	-91.24	-27.3402
	0.40	131.34	-77.36	-91.24	-29.9970
	0.50	123.76	-74.29	-91.24	-32.5895
13	0.00	123.76	-74.29	-91.24	-10.8632
	0.10	116.41	-72.65	-91.24	-11.7072
	0.20	109.23	-70.95	-91.24	-12.5322
	0.30	102.22	-69.18	-91.24	-13.3395
	0.40	95.39	-67.35	-91.24	-14.1300
	0.50	88.75	-65.45	-91.24	-14.9051
14	0.00	88.75	-65.45	-91.24	-14.9051
	0.10	82.31	-63.49	-91.24	-15.6656
	0.20	76.06	-61.48	-91.24	-16.4128
	0.30	70.01	-59.40	-91.24	-17.1475
	0.40	64.18	-57.27	-91.24	-17.8709
	0.50	58.56	-55.07	-91.24	-18.5838
15	0.00	58.56	-55.07	-91.24	-18.5838
	0.10	53.17	-52.83	-91.24	-19.2871
	0.20	48.00	-50.52	-91.24	-19.9818
	0.30	43.06	-48.16	-91.24	-20.6686
	0.40	38.37	-45.75	-91.24	-21.3484
	0.50	33.92	-43.28	-91.24	-22.0220
16	0.00	33.92	-43.28	-91.24	-22.0220
	0.10	29.71	-40.76	-91.24	-22.6900
	0.20	25.77	-38.19	-91.24	-23.3532
	0.30	22.08	-35.56	-91.24	-24.0122
	0.40	18.66	-32.88	-91.24	-24.6676
	0.50	15.50	-30.15	-91.24	-25.3199
17	0.00	15.50	-30.15	-91.24	-25.3199
	0.10	12.63	-27.37	-91.24	-25.9697
	0.20	10.03	-24.53	-91.24	-26.6175
	0.30	7.72	-21.64	-91.24	-27.2636
	0.40	5.70	-18.71	-91.24	-27.9085
	0.50	3.98	-15.72	-91.24	-28.5524
18	0.00	3.98	-15.72	-91.24	-28.5524
	0.10	2.56	-12.68	-91.24	-29.1956
	0.20	1.45	-9.58	-91.24	-29.8385
	0.30	0.65	-6.44	-91.24	-30.4811
	0.40	0.16	-3.25	-91.24	-31.1236
	0.50	0.00	0.00	-91.24	-31.7660

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ALLEGATO N°10
Fondazioni su pali per Barriere di h=4.75m con rilevato di H=7.0m
Effetti indotti dal ritiro e dalla diminuzione di temperatura.
Calcolo agli elementi finiti con il programma di calcolo "ENG"

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282 di 313**Geometria struttura****Coordinate nodali e vincoli fissi**

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	1	0

Caratteristiche delle aste**Elemento strutturale:**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base	app.
1	1	0.4952	0.019514	3.1447E7	0.0000		0.00
2	1	0.4952	0.019514	3.1447E7	0.0000		0.00
3	1	0.4952	0.019514	3.1447E7	0.0000		0.00
4	1	0.4952	0.019514	3.1447E7	0.0000		0.00
5	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
6	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
7	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
8	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
9	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
10	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
11	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
12	1	0.4952	0.019514	3.1447E7	30000.0000		0.80
13	1	0.4952	0.019514	3.1447E7	10000.0000		0.80
14	1	0.4952	0.019514	3.1447E7	10000.0000		0.80
15	1	0.4952	0.019514	3.1447E7	10000.0000		0.80
16	1	0.4952	0.019514	3.1447E7	10000.0000		0.80
17	1	0.4952	0.019514	3.1447E7	10000.0000		0.80
18	1	0.4952	0.019514	3.1447E7	10000.0000		0.80

Geometria delle sezioni

Sezione I : diametro =0.80

Carichi applicati alla struttura**RITIRO+AT****Spostamenti imposti :**

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-16.81	LL
	2	0.00	0.00	-16.81	-33.63	LL
	3	0.00	0.00	-33.63	-50.44	LL
	4	0.00	0.00	-50.44	-67.26	LL

MRisultati**Condizioni di carico****Condizione : RITIRO+AT****Sollecitazioni**

asta	x	M	T	N	P
1	0.00	-369.56	135.35	0.00	0.0000
	0.25	-335.72	135.35	0.00	0.0000
	0.50	-301.88	135.35	0.00	0.0000
2	0.00	-301.88	135.35	0.00	0.0000
	0.25	-268.04	135.35	0.00	0.0000
	0.50	-234.20	135.35	0.00	0.0000

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3	0.00	-234.20	135.35	0.00	0.0000			
	0.25	-200.36	135.35	0.00	0.0000			
	0.50	-166.52	135.35	0.00	0.0000			
4	0.00	-166.52	135.35	0.00	0.0000			
	0.25	-132.69	135.35	0.00	0.0000			
	0.50	-98.85	135.35	0.00	0.0000			
5	0.00	-98.85	135.35	0.00	95.6899			
	0.25	-67.35	116.85	0.00	89.8309			
	0.50	-40.32	99.54	0.00	83.7649			
6	0.00	-40.32	99.54	0.00	83.7649			
	0.25	-17.48	83.45	0.00	77.5747			
	0.50	1.50	68.60	0.00	71.3300			
7	0.00	1.50	68.60	0.00	71.3300			
	0.25	16.93	54.99	0.00	65.0891			
	0.50	29.10	42.63	0.00	58.8990			
8	0.00	29.10	42.63	0.00	58.8990			
	0.25	38.34	31.49	0.00	52.7972			
	0.50	44.95	21.56	0.00	46.8118			
9	0.00	44.95	21.56	0.00	46.8118			
	0.25	49.22	12.81	0.00	40.9631			
	0.50	51.45	5.21	0.00	35.2644			
10	0.00	51.45	5.21	0.00	35.2644			
	0.25	51.92	-1.26	0.00	29.7223			
	0.50	50.91	-6.65	0.00	24.3386			
11	0.00	50.91	-6.65	0.00	24.3386			
	0.25	48.68	-10.98	0.00	19.1101			
	0.50	45.50	-14.29	0.00	14.0301			
12	0.00	45.50	-14.29	0.00	14.0301			
	0.25	41.62	-16.59	0.00	9.0890			
	0.50	37.29	-17.92	0.00	4.2749			
13	0.00	37.29	-17.92	0.00	1.4250			
	0.25	32.79	-18.05	0.00	-0.1418			
	0.50	28.29	-17.87	0.00	-1.6751			
14	0.00	28.29	-17.87	0.00	-1.6751			
	0.25	23.88	-17.38	0.00	-3.1796			
	0.50	19.63	-16.60	0.00	-4.6598			
15	0.00	19.63	-16.60	0.00	-4.6598			
	0.25	15.61	-15.52	0.00	-6.1199			
	0.50	11.89	-14.16	0.00	-7.5641			
16	0.00	11.89	-14.16	0.00	-7.5641			
	0.25	8.55	-12.51	0.00	-8.9962			
	0.50	5.66	-10.57	0.00	-10.4196			
17	0.00	5.66	-10.57	0.00	-10.4196			
	0.25	3.29	-8.35	0.00	-11.8371			
	0.50	1.51	-5.85	0.00	-13.2513			
18	0.00	1.51	-5.85	0.00	-13.2513			
	0.25	0.39	-3.07	0.00	-14.6638			
	0.50	0.00	0.00	0.00	-16.0759			

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	105.57	0.00	0.00	0.0000
	0.25	105.48	-1.05	0.00	0.0000
	0.50	104.87	-4.20	0.00	0.0000
2	0.00	104.87	-4.20	0.00	0.0000
	0.25	103.20	-9.46	0.00	0.0000
	0.50	99.96	-16.81	0.00	0.0000
3	0.00	99.96	-16.81	0.00	0.0000
	0.25	94.62	-26.27	0.00	0.0000
	0.50	86.65	-37.83	0.00	0.0000
4	0.00	86.65	-37.83	0.00	0.0000
	0.25	75.53	-51.49	0.00	0.0000
	0.50	60.73	-67.26	0.00	0.0000
5	0.00	60.73	-67.26	0.00	-44.0097
	0.25	45.00	-58.71	0.00	-41.6188
	0.50	31.33	-50.66	0.00	-39.0898
6	0.00	31.33	-50.66	0.00	-39.0898
	0.25	19.62	-43.13	0.00	-36.4647
	0.50	9.73	-36.12	0.00	-33.7791
7	0.00	9.73	-36.12	0.00	-33.7791
	0.25	1.51	-29.66	0.00	-31.0633
	0.50	-5.15	-23.73	0.00	-28.3426
8	0.00	-5.15	-23.73	0.00	-28.3426
	0.25	-10.40	-18.35	0.00	-25.6372
	0.50	-14.37	-13.50	0.00	-22.9633
9	0.00	-14.37	-13.50	0.00	-22.9633
	0.25	-17.19	-9.19	0.00	-20.3329
	0.50	-19.00	-5.39	0.00	-17.7549
10	0.00	-19.00	-5.39	0.00	-17.7549
	0.25	-19.93	-2.10	0.00	-15.2346
	0.50	-20.10	0.69	0.00	-12.7751

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11	0.00	-20.10	0.69	0.00	-12.7751
	0.25	-19.62	3.00	0.00	-10.3768
	0.50	-18.64	4.83	0.00	-8.0383
12	0.00	-18.64	4.83	0.00	-8.0383
	0.25	-17.25	6.21	0.00	-5.7567
	0.50	-15.57	7.13	0.00	-3.5277
13	0.00	-15.57	7.13	0.00	-1.1759
	0.25	-13.76	7.30	0.00	-0.4487
	0.50	-11.93	7.31	0.00	0.2644
14	0.00	-11.93	7.31	0.00	0.2644
	0.25	-10.12	7.19	0.00	0.9654
	0.50	-8.35	6.93	0.00	1.6561
15	0.00	-8.35	6.93	0.00	1.6561
	0.25	-6.66	6.53	0.00	2.3383
	0.50	-5.09	6.00	0.00	3.0136
16	0.00	-5.09	6.00	0.00	3.0136
	0.25	-3.68	5.33	0.00	3.6838
	0.50	-2.44	4.53	0.00	4.3502
17	0.00	-2.44	4.53	0.00	4.3502
	0.25	-1.42	3.59	0.00	5.0142
	0.50	-0.65	2.53	0.00	5.6766
18	0.00	-0.65	2.53	0.00	5.6766
	0.25	-0.17	1.33	0.00	6.3384
	0.50	0.00	0.00	0.00	6.9999

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLE RARA	1.00	1.00
SLU	1.50	1.00

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	-263.99	135.35	0.00	0.0000
	0.25	-230.24	134.30	0.00	0.0000
	0.50	-197.01	131.15	0.00	0.0000
2	0.00	-197.01	131.15	0.00	0.0000
	0.25	-164.84	125.90	0.00	0.0000
	0.50	-134.24	118.54	0.00	0.0000
3	0.00	-134.24	118.54	0.00	0.0000
	0.25	-105.74	109.08	0.00	0.0000
	0.50	-79.87	97.52	0.00	0.0000
4	0.00	-79.87	97.52	0.00	0.0000
	0.25	-57.16	83.86	0.00	0.0000
	0.50	-38.12	68.10	0.00	0.0000
5	0.00	-38.12	68.10	0.00	51.6802
	0.25	-22.35	58.14	0.00	48.2121
	0.50	-8.99	48.87	0.00	44.6751
6	0.00	-8.99	48.87	0.00	44.6751
	0.25	2.14	40.32	0.00	41.1100
	0.50	11.23	32.47	0.00	37.5510
7	0.00	11.23	32.47	0.00	37.5510
	0.25	18.44	25.34	0.00	34.0257
	0.50	23.96	18.90	0.00	30.5564
8	0.00	23.96	18.90	0.00	30.5564
	0.25	27.95	13.14	0.00	27.1599
	0.50	30.58	8.06	0.00	23.8485
9	0.00	30.58	8.06	0.00	23.8485
	0.25	32.03	3.63	0.00	20.6302
	0.50	32.45	-0.18	0.00	17.5095
10	0.00	32.45	-0.18	0.00	17.5095
	0.25	31.99	-3.37	0.00	14.4877
	0.50	30.82	-5.96	0.00	11.5635
11	0.00	30.82	-5.96	0.00	11.5635
	0.25	29.06	-7.98	0.00	8.7333
	0.50	26.87	-9.45	0.00	5.9918
12	0.00	26.87	-9.45	0.00	5.9918
	0.25	24.38	-10.38	0.00	3.3323
	0.50	21.72	-10.79	0.00	0.7472
13	0.00	21.72	-10.79	0.00	0.2491
	0.25	19.03	-10.75	0.00	-0.5905
	0.50	16.36	-10.55	0.00	-1.4107
14	0.00	16.36	-10.55	0.00	-1.4107
	0.25	13.77	-10.19	0.00	-2.2142
	0.50	11.28	-9.67	0.00	-3.0037
15	0.00	11.28	-9.67	0.00	-3.0037
	0.25	8.94	-8.99	0.00	-3.7817
	0.50	6.80	-8.16	0.00	-4.5505
16	0.00	6.80	-8.16	0.00	-4.5505
	0.25	4.88	-7.18	0.00	-5.3124
	0.50	3.22	-6.04	0.00	-6.0693
17	0.00	3.22	-6.04	0.00	-6.0693

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	0.25	1.87	-4.76	0.00	-6.8230
	0.50	0.86	-3.32	0.00	-7.5747
18	0.00	0.86	-3.32	0.00	-7.5747
	0.25	0.22	-1.74	0.00	-8.3254
	0.50	0.00	0.00	0.00	-9.0760

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	-448.77	203.03	0.00	0.0000
	0.25	-398.10	201.98	0.00	0.0000
	0.50	-347.95	198.83	0.00	0.0000
2	0.00	-347.95	198.83	0.00	0.0000
	0.25	-298.86	193.57	0.00	0.0000
	0.50	-251.34	186.22	0.00	0.0000
3	0.00	-251.34	186.22	0.00	0.0000
	0.25	-205.92	176.76	0.00	0.0000
	0.50	-163.13	165.20	0.00	0.0000
4	0.00	-163.13	165.20	0.00	0.0000
	0.25	-123.50	151.54	0.00	0.0000
	0.50	-87.54	135.78	0.00	0.0000
5	0.00	-87.54	135.78	0.00	99.5252
	0.25	-56.02	116.56	0.00	93.1275
	0.50	-29.15	98.64	0.00	86.5575
6	0.00	-29.15	98.64	0.00	86.5575
	0.25	-6.59	82.04	0.00	79.8973
	0.50	11.98	66.77	0.00	73.2160
7	0.00	11.98	66.77	0.00	73.2160
	0.25	26.90	52.83	0.00	66.5703
	0.50	38.51	40.21	0.00	60.0060
8	0.00	38.51	40.21	0.00	60.0060
	0.25	47.12	28.89	0.00	53.5585
	0.50	53.06	18.84	0.00	47.2544
9	0.00	53.06	18.84	0.00	47.2544
	0.25	56.64	10.03	0.00	41.1118
	0.50	58.17	2.43	0.00	35.1417
10	0.00	58.17	2.43	0.00	35.1417
	0.25	57.95	-4.00	0.00	29.3489
	0.50	56.27	-9.29	0.00	23.7328
11	0.00	56.27	-9.29	0.00	23.7328
	0.25	53.40	-13.48	0.00	18.2883
	0.50	49.62	-16.59	0.00	13.0068
12	0.00	49.62	-16.59	0.00	13.0068
	0.25	45.19	-18.67	0.00	7.8767
	0.50	40.37	-19.74	0.00	2.8847
13	0.00	40.37	-19.74	0.00	0.9616
	0.25	35.42	-19.77	0.00	-0.6614
	0.50	30.51	-19.48	0.00	-2.2482
14	0.00	30.51	-19.48	0.00	-2.2482
	0.25	25.71	-18.88	0.00	-3.8040
	0.50	21.09	-17.97	0.00	-5.3335
15	0.00	21.09	-17.97	0.00	-5.3335
	0.25	16.75	-16.75	0.00	-6.8416
	0.50	12.74	-15.24	0.00	-8.3326
16	0.00	12.74	-15.24	0.00	-8.3326
	0.25	9.15	-13.43	0.00	-9.8105
	0.50	6.05	-11.33	0.00	-11.2791
17	0.00	6.05	-11.33	0.00	-11.2791
	0.25	3.51	-8.93	0.00	-12.7415
	0.50	1.61	-6.25	0.00	-14.2003
18	0.00	1.61	-6.25	0.00	-14.2003
	0.25	0.41	-3.27	0.00	-15.6573
	0.50	0.00	0.00	0.00	-17.1139

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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"

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287 di 313**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	1	0

2.2 Caratteristiche delle aste**Elemento strutturale:**

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.5E7	0.0000	0.00
2	1	0.2785	0.006174	3.5E7	0.0000	0.00
3	1	0.2785	0.006174	3.1447E7	0.0000	0.00
4	1	0.2785	0.006174	3.1447E7	0.0000	0.00
5	1	0.2785	0.006174	3.1447E7	0.0000	0.00
6	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
7	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
8	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
9	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
10	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
11	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
12	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
13	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
14	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
15	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
16	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
17	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
18	1	0.2785	0.006174	3.1447E7	10000.0000	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura**Nppm****Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-6.00	0.00

Tppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	3.00	0.00	0.00

Mppm**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-8.30

Mbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-82.27

Tbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	28.13	0.00	0.00

qs**Carichi distribuiti :**

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descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	2.85	2.85	LL
	2	0.00	0.00	2.85	2.85	LL
	3	0.00	0.00	2.85	2.85	LL
	4	0.00	0.00	2.85	2.85	LL
	5	0.00	0.00	2.85	2.85	LL
	6	0.00	0.00	2.85	2.85	LL
	7	0.00	0.00	2.85	2.85	LL
	8	0.00	0.00	2.85	2.85	LL
	9	0.00	0.00	2.85	2.85	LL
	10	0.00	0.00	2.85	2.85	LL
	11	0.00	0.00	2.85	2.85	LL
	12	0.00	0.00	2.85	2.85	LL
	13	0.00	0.00	3.69	3.69	LL
	14	0.00	0.00	3.69	3.69	LL
	15	0.00	0.00	3.69	3.69	LL
	16	0.00	0.00	3.69	3.69	LL
	17	0.00	0.00	3.69	3.69	LL
	18	0.00	0.00	3.69	3.69	LL

Tsacp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	7.14	0.00	0.00

Tqp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	14.27	0.00	0.00

Mqp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-7.14

M sacp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	0.00	-2.38

SPINTA PASSIVA**Carichi distribuiti :**

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	0.00	LL
	2	0.00	0.00	0.00	0.00	LL
	3	0.00	0.00	-25.22	-37.83	LL
	4	0.00	0.00	-37.83	-50.44	LL
	5	0.00	0.00	-50.44	-63.06	LL

Nbp**Carichi nodali :**

descrizione	nodo	Fx	Fy	M
	1	0.00	-48.95	0.00

Risultati**Condizioni di carico****Condizione : Nppm****Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0000	0.0000	0.00000	0.00	0.00	0.00
2	0.0000	0.0000	0.00000	0.00	0.00	0.00
3	0.0000	0.0000	0.00000	0.00	0.00	0.00
4	0.0000	0.0000	0.00000	0.00	0.00	0.00
5	0.0000	0.0000	0.00000	0.00	0.00	0.00
6	0.0000	0.0000	0.00000	0.00	0.00	0.00
7	0.0000	0.0000	0.00000	0.00	0.00	0.00
8	0.0000	0.0000	0.00000	0.00	0.00	0.00
9	0.0000	0.0000	0.00000	0.00	0.00	0.00
10	0.0000	0.0000	0.00000	0.00	0.00	0.00
11	0.0000	0.0000	0.00000	0.00	0.00	0.00
12	0.0000	0.0000	0.00000	0.00	0.00	0.00
13	0.0000	0.0000	0.00000	0.00	0.00	0.00
14	0.0000	0.0000	0.00000	0.00	0.00	0.00
15	0.0000	0.0000	0.00000	0.00	0.00	0.00
16	0.0000	0.0000	0.00000	0.00	0.00	0.00
17	0.0000	0.0000	0.00000	0.00	0.00	0.00
18	0.0000	0.0000	0.00000	0.00	0.00	0.00
19	0.0000	0.0000	0.00000	0.00	6.00	0.00
Reazioni totali				0.00	6.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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2	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
3	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
4	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
5	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
6	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
7	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
8	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
9	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
10	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
11	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
12	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
13	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
14	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
15	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
16	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			
	0.40	0.00	0.00	-6.00	0.0000			
	0.50	0.00	0.00	-6.00	0.0000			
17	0.00	0.00	0.00	-6.00	0.0000			
	0.10	0.00	0.00	-6.00	0.0000			
	0.20	0.00	0.00	-6.00	0.0000			
	0.30	0.00	0.00	-6.00	0.0000			

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	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000
18	0.00	0.00	0.00	-6.00	0.0000
	0.10	0.00	0.00	-6.00	0.0000
	0.20	0.00	0.00	-6.00	0.0000
	0.30	0.00	0.00	-6.00	0.0000
	0.40	0.00	0.00	-6.00	0.0000
	0.50	0.00	0.00	-6.00	0.0000

Condizione : Tppm**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0008	0.0000	-0.00021	0.00	0.00	0.00
2	0.0007	0.0000	-0.00021	0.00	0.00	0.00
3	0.0006	0.0000	-0.00021	0.00	0.00	0.00
4	0.0005	0.0000	-0.00020	0.00	0.00	0.00
5	0.0004	0.0000	-0.00018	0.00	0.00	0.00
6	0.0003	0.0000	-0.00017	0.00	0.00	0.00
7	0.0002	0.0000	-0.00014	0.00	0.00	0.00
8	0.0001	0.0000	-0.00012	0.00	0.00	0.00
9	0.0001	0.0000	-0.00010	0.00	0.00	0.00
10	0.0000	0.0000	-0.00008	0.00	0.00	0.00
11	0.0000	0.0000	-0.00007	0.00	0.00	0.00
12	0.0000	0.0000	-0.00005	0.00	0.00	0.00
13	-0.0001	0.0000	-0.00004	0.00	0.00	0.00
14	-0.0001	0.0000	-0.00004	0.00	0.00	0.00
15	-0.0001	0.0000	-0.00003	0.00	0.00	0.00
16	-0.0001	0.0000	-0.00003	0.00	0.00	0.00
17	-0.0001	0.0000	-0.00003	0.00	0.00	0.00
18	-0.0001	0.0000	-0.00003	0.00	0.00	0.00
19	-0.0002	0.0000	-0.00003	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	3.00	0.00	0.0000
	0.10	0.30	3.00	0.00	0.0000
	0.20	0.60	3.00	0.00	0.0000
	0.30	0.90	3.00	0.00	0.0000
	0.40	1.20	3.00	0.00	0.0000
	0.50	1.50	3.00	0.00	0.0000
2	0.00	1.50	3.00	0.00	0.0000
	0.10	1.80	3.00	0.00	0.0000
	0.20	2.10	3.00	0.00	0.0000
	0.30	2.40	3.00	0.00	0.0000
	0.40	2.70	3.00	0.00	0.0000
	0.50	3.00	3.00	0.00	0.0000
3	0.00	3.00	3.00	0.00	0.0000
	0.10	3.30	3.00	0.00	0.0000
	0.20	3.60	3.00	0.00	0.0000
	0.30	3.90	3.00	0.00	0.0000
	0.40	4.20	3.00	0.00	0.0000
	0.50	4.50	3.00	0.00	0.0000
4	0.00	4.50	3.00	0.00	0.0000
	0.10	4.80	3.00	0.00	0.0000
	0.20	5.10	3.00	0.00	0.0000
	0.30	5.40	3.00	0.00	0.0000
	0.40	5.70	3.00	0.00	0.0000
	0.50	6.00	3.00	0.00	0.0000
5	0.00	6.00	3.00	0.00	0.0000
	0.10	6.30	3.00	0.00	0.0000
	0.20	6.60	3.00	0.00	0.0000
	0.30	6.90	3.00	0.00	0.0000
	0.40	7.20	3.00	0.00	0.0000
	0.50	7.50	3.00	0.00	0.0000
6	0.00	7.50	3.00	0.00	8.5384
	0.10	7.77	2.50	0.00	8.0476
	0.20	8.00	2.04	0.00	7.5689
	0.30	8.18	1.60	0.00	7.1025
	0.40	8.32	1.19	0.00	6.6488
	0.50	8.42	0.80	0.00	6.2079
7	0.00	8.42	0.80	0.00	6.2079
	0.10	8.48	0.44	0.00	5.7800
	0.20	8.51	0.11	0.00	5.3652
	0.30	8.51	-0.20	0.00	4.9636
	0.40	8.47	-0.48	0.00	4.5751
	0.50	8.41	-0.75	0.00	4.1997
8	0.00	8.41	-0.75	0.00	4.1997
	0.10	8.32	-0.99	0.00	3.8373
	0.20	8.21	-1.21	0.00	3.4877
	0.30	8.08	-1.40	0.00	3.1508
	0.40	7.93	-1.58	0.00	2.8264
	0.50	7.77	-1.74	0.00	2.5143
9	0.00	7.77	-1.74	0.00	2.5143
	0.10	7.59	-1.88	0.00	2.2142
	0.20	7.39	-2.01	0.00	1.9258
	0.30	7.18	-2.12	0.00	1.6488
	0.40	6.97	-2.21	0.00	1.3829
	0.50	6.74	-2.28	0.00	1.1277
10	0.00	6.74	-2.28	0.00	1.1277
	0.10	6.51	-2.34	0.00	0.8830
	0.20	6.28	-2.39	0.00	0.6484
	0.30	6.04	-2.42	0.00	0.4234
	0.40	5.79	-2.44	0.00	0.2078
	0.50	5.55	-2.44	0.00	0.0011

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11	0.00	5.55	-2.44	0.00	0.0011			
	0.10	5.30	-2.44	0.00	-0.1970			
	0.20	5.06	-2.42	0.00	-0.3869			
	0.30	4.82	-2.39	0.00	-0.5690			
	0.40	4.58	-2.35	0.00	-0.7437			
	0.50	4.35	-2.30	0.00	-0.9112			
12	0.00	4.35	-2.30	0.00	-0.9112			
	0.10	4.12	-2.24	0.00	-1.0721			
	0.20	3.90	-2.17	0.00	-1.2265			
	0.30	3.69	-2.10	0.00	-1.3750			
	0.40	3.48	-2.01	0.00	-1.5177			
	0.50	3.29	-1.92	0.00	-1.6551			
13	0.00	3.29	-1.92	0.00	-0.5517			
	0.10	3.10	-1.88	0.00	-0.5958			
	0.20	2.91	-1.84	0.00	-0.6383			
	0.30	2.73	-1.80	0.00	-0.6793			
	0.40	2.55	-1.76	0.00	-0.7189			
	0.50	2.38	-1.72	0.00	-0.7571			
14	0.00	2.38	-1.72	0.00	-0.7571			
	0.10	2.21	-1.67	0.00	-0.7942			
	0.20	2.04	-1.62	0.00	-0.8301			
	0.30	1.88	-1.57	0.00	-0.8650			
	0.40	1.73	-1.52	0.00	-0.8989			
	0.50	1.58	-1.47	0.00	-0.9319			
15	0.00	1.58	-1.47	0.00	-0.9319			
	0.10	1.43	-1.41	0.00	-0.9641			
	0.20	1.30	-1.35	0.00	-0.9955			
	0.30	1.16	-1.29	0.00	-1.0263			
	0.40	1.04	-1.23	0.00	-1.0565			
	0.50	0.92	-1.16	0.00	-1.0862			
16	0.00	0.92	-1.16	0.00	-1.0862			
	0.10	0.81	-1.10	0.00	-1.1154			
	0.20	0.70	-1.03	0.00	-1.1441			
	0.30	0.60	-0.96	0.00	-1.1725			
	0.40	0.51	-0.89	0.00	-1.2006			
	0.50	0.42	-0.82	0.00	-1.2285			
17	0.00	0.42	-0.82	0.00	-1.2285			
	0.10	0.34	-0.74	0.00	-1.2561			
	0.20	0.27	-0.67	0.00	-1.2835			
	0.30	0.21	-0.59	0.00	-1.3108			
	0.40	0.16	-0.51	0.00	-1.3380			
	0.50	0.11	-0.43	0.00	-1.3651			
18	0.00	0.11	-0.43	0.00	-1.3651			
	0.10	0.07	-0.35	0.00	-1.3922			
	0.20	0.04	-0.26	0.00	-1.4192			
	0.30	0.02	-0.18	0.00	-1.4462			
	0.40	0.00	-0.09	0.00	-1.4732			
	0.50	0.00	0.00	0.00	-1.5002			

Condizione : Mppm**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0006	0.0000	-0.00022	0.00	0.00	0.00
2	0.0005	0.0000	-0.00020	0.00	0.00	0.00
3	0.0004	0.0000	-0.00018	0.00	0.00	0.00
4	0.0003	0.0000	-0.00016	0.00	0.00	0.00
5	0.0002	0.0000	-0.00014	0.00	0.00	0.00
6	0.0002	0.0000	-0.00012	0.00	0.00	0.00
7	0.0001	0.0000	-0.00010	0.00	0.00	0.00
8	0.0001	0.0000	-0.00008	0.00	0.00	0.00
9	0.0000	0.0000	-0.00006	0.00	0.00	0.00
10	0.0000	0.0000	-0.00005	0.00	0.00	0.00
11	0.0000	0.0000	-0.00004	0.00	0.00	0.00
12	0.0000	0.0000	-0.00003	0.00	0.00	0.00
13	-0.0001	0.0000	-0.00002	0.00	0.00	0.00
14	-0.0001	0.0000	-0.00002	0.00	0.00	0.00
15	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
16	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
17	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
18	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
19	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
2	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
3	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
4	0.00	8.30	0.00	0.00	0.0000

GENERAL CONTRACTOR



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	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
5	0.00	8.30	0.00	0.00	0.0000
	0.10	8.30	0.00	0.00	0.0000
	0.20	8.30	0.00	0.00	0.0000
	0.30	8.30	0.00	0.00	0.0000
	0.40	8.30	0.00	0.00	0.0000
	0.50	8.30	0.00	0.00	0.0000
6	0.00	8.30	0.00	0.00	4.6988
	0.10	8.29	-0.27	0.00	4.3436
	0.20	8.25	-0.52	0.00	4.0012
	0.30	8.18	-0.75	0.00	3.6715
	0.40	8.10	-0.96	0.00	3.3545
	0.50	7.99	-1.15	0.00	3.0499
7	0.00	7.99	-1.15	0.00	3.0499
	0.10	7.87	-1.32	0.00	2.7577
	0.20	7.73	-1.48	0.00	2.4777
	0.30	7.57	-1.62	0.00	2.2096
	0.40	7.40	-1.75	0.00	1.9532
	0.50	7.22	-1.86	0.00	1.7083
8	0.00	7.22	-1.86	0.00	1.7083
	0.10	7.03	-1.95	0.00	1.4744
	0.20	6.83	-2.03	0.00	1.2515
	0.30	6.63	-2.10	0.00	1.0391
	0.40	6.41	-2.16	0.00	0.8370
	0.50	6.20	-2.20	0.00	0.6447
9	0.00	6.20	-2.20	0.00	0.6447
	0.10	5.97	-2.23	0.00	0.4621
	0.20	5.75	-2.26	0.00	0.2887
	0.30	5.52	-2.27	0.00	0.1241
	0.40	5.30	-2.27	0.00	-0.0319
	0.50	5.07	-2.27	0.00	-0.1797
10	0.00	5.07	-2.27	0.00	-0.1797
	0.10	4.84	-2.25	0.00	-0.3197
	0.20	4.62	-2.23	0.00	-0.4523
	0.30	4.40	-2.20	0.00	-0.5776
	0.40	4.18	-2.16	0.00	-0.6962
	0.50	3.97	-2.11	0.00	-0.8083
11	0.00	3.97	-2.11	0.00	-0.8083
	0.10	3.76	-2.06	0.00	-0.9143
	0.20	3.55	-2.00	0.00	-1.0145
	0.30	3.36	-1.94	0.00	-1.1092
	0.40	3.17	-1.87	0.00	-1.1987
	0.50	2.98	-1.80	0.00	-1.2834
12	0.00	2.98	-1.80	0.00	-1.2834
	0.10	2.81	-1.72	0.00	-1.3634
	0.20	2.64	-1.63	0.00	-1.4390
	0.30	2.48	-1.55	0.00	-1.5106
	0.40	2.33	-1.45	0.00	-1.5784
	0.50	2.19	-1.36	0.00	-1.6425
13	0.00	2.19	-1.36	0.00	-0.5475
	0.10	2.06	-1.32	0.00	-0.5678
	0.20	1.93	-1.29	0.00	-0.5869
	0.30	1.80	-1.25	0.00	-0.6052
	0.40	1.68	-1.22	0.00	-0.6224
	0.50	1.56	-1.18	0.00	-0.6388
14	0.00	1.56	-1.18	0.00	-0.6388
	0.10	1.44	-1.14	0.00	-0.6545
	0.20	1.33	-1.10	0.00	-0.6693
	0.30	1.22	-1.06	0.00	-0.6835
	0.40	1.12	-1.02	0.00	-0.6971
	0.50	1.02	-0.98	0.00	-0.7101
15	0.00	1.02	-0.98	0.00	-0.7101
	0.10	0.92	-0.93	0.00	-0.7225
	0.20	0.83	-0.89	0.00	-0.7345
	0.30	0.74	-0.85	0.00	-0.7461
	0.40	0.66	-0.80	0.00	-0.7572
	0.50	0.58	-0.76	0.00	-0.7681
16	0.00	0.58	-0.76	0.00	-0.7681
	0.10	0.51	-0.71	0.00	-0.7786
	0.20	0.44	-0.66	0.00	-0.7889
	0.30	0.38	-0.61	0.00	-0.7989
	0.40	0.32	-0.57	0.00	-0.8088
	0.50	0.26	-0.52	0.00	-0.8185
17	0.00	0.26	-0.52	0.00	-0.8185
	0.10	0.21	-0.47	0.00	-0.8280
	0.20	0.17	-0.42	0.00	-0.8375
	0.30	0.13	-0.37	0.00	-0.8468
	0.40	0.10	-0.32	0.00	-0.8561
	0.50	0.07	-0.27	0.00	-0.8653
18	0.00	0.07	-0.27	0.00	-0.8653
	0.10	0.04	-0.21	0.00	-0.8745
	0.20	0.02	-0.16	0.00	-0.8837
	0.30	0.01	-0.11	0.00	-0.8929
	0.40	0.00	-0.05	0.00	-0.9020
	0.50	0.00	0.00	0.00	-0.9112

Condizione : Mbp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0058	0.0000	-0.00221	0.00	0.00	0.00

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2	0.0048	0.0000	-0.00202	0.00	0.00	0.00
3	0.0038	0.0000	-0.00183	0.00	0.00	0.00
4	0.0030	0.0000	-0.00162	0.00	0.00	0.00
5	0.0022	0.0000	-0.00141	0.00	0.00	0.00
6	0.0016	0.0000	-0.00119	0.00	0.00	0.00
7	0.0010	0.0000	-0.00099	0.00	0.00	0.00
8	0.0006	0.0000	-0.00079	0.00	0.00	0.00
9	0.0002	0.0000	-0.00062	0.00	0.00	0.00
10	-0.0001	0.0000	-0.00048	0.00	0.00	0.00
11	-0.0003	0.0000	-0.00036	0.00	0.00	0.00
12	-0.0004	0.0000	-0.00027	0.00	0.00	0.00
13	-0.0005	0.0000	-0.00021	0.00	0.00	0.00
14	-0.0006	0.0000	-0.00016	0.00	0.00	0.00
15	-0.0007	0.0000	-0.00013	0.00	0.00	0.00
16	-0.0008	0.0000	-0.00011	0.00	0.00	0.00
17	-0.0008	0.0000	-0.00010	0.00	0.00	0.00
18	-0.0009	0.0000	-0.00009	0.00	0.00	0.00
19	-0.0009	0.0000	-0.00009	0.00	0.00	0.00

Reazioni totali 0.00 0.00 0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
2	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
3	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
4	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
5	0.00	82.27	0.00	0.00	0.0000
	0.10	82.27	0.00	0.00	0.0000
	0.20	82.27	0.00	0.00	0.0000
	0.30	82.27	0.00	0.00	0.0000
	0.40	82.27	0.00	0.00	0.0000
	0.50	82.27	0.00	0.00	0.0000
6	0.00	82.27	0.00	0.00	46.5728
	0.10	82.13	-2.68	0.00	43.0520
	0.20	81.74	-5.15	0.00	39.6581
	0.30	81.11	-7.43	0.00	36.3904
	0.40	80.26	-9.51	0.00	33.2480
	0.50	79.21	-11.41	0.00	30.2296
7	0.00	79.21	-11.41	0.00	30.2296
	0.10	77.98	-13.13	0.00	27.3336
	0.20	76.59	-14.68	0.00	24.5580
	0.30	75.05	-16.07	0.00	21.9007
	0.40	73.38	-17.31	0.00	19.3594
	0.50	71.59	-18.39	0.00	16.9314
8	0.00	71.59	-18.39	0.00	16.9314
	0.10	69.71	-19.33	0.00	14.6141
	0.20	67.73	-20.14	0.00	12.4044
	0.30	65.68	-20.82	0.00	10.2994
	0.40	63.57	-21.38	0.00	8.2958
	0.50	61.41	-21.82	0.00	6.3905
9	0.00	61.41	-21.82	0.00	6.3905
	0.10	59.21	-22.14	0.00	4.5800
	0.20	56.99	-22.37	0.00	2.8610
	0.30	54.74	-22.49	0.00	1.2301
	0.40	52.49	-22.51	0.00	-0.3163
	0.50	50.24	-22.45	0.00	-1.7815
10	0.00	50.24	-22.45	0.00	-1.7815
	0.10	48.00	-22.30	0.00	-3.1692
	0.20	45.78	-22.07	0.00	-4.4826
	0.30	43.59	-21.77	0.00	-5.7253
	0.40	41.43	-21.39	0.00	-6.9007
	0.50	39.32	-20.94	0.00	-8.0120
11	0.00	39.32	-20.94	0.00	-8.0120
	0.10	37.25	-20.43	0.00	-9.0626
	0.20	35.23	-19.86	0.00	-10.0556
	0.30	33.28	-19.23	0.00	-10.9942
	0.40	31.39	-18.55	0.00	-11.8814
	0.50	29.57	-17.81	0.00	-12.7200
12	0.00	29.57	-17.81	0.00	-12.7200
	0.10	27.83	-17.02	0.00	-13.5130
	0.20	26.17	-16.19	0.00	-14.2629
	0.30	24.59	-15.32	0.00	-14.9724
	0.40	23.10	-14.40	0.00	-15.6439
	0.50	21.71	-13.45	0.00	-16.2797
13	0.00	21.71	-13.45	0.00	-5.4266

GENERAL CONTRACTOR



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	0.10	20.38	-13.12	0.00	-5.6273
	0.20	19.09	-12.77	0.00	-5.8176
	0.30	17.83	-12.42	0.00	-5.9980
	0.40	16.60	-12.06	0.00	-6.1692
	0.50	15.42	-11.68	0.00	-6.3319
14	0.00	15.42	-11.68	0.00	-6.3319
	0.10	14.27	-11.30	0.00	-6.4866
	0.20	13.16	-10.91	0.00	-6.6340
	0.30	12.09	-10.50	0.00	-6.7746
	0.40	11.06	-10.10	0.00	-6.9090
	0.50	10.07	-9.68	0.00	-7.0377
15	0.00	10.07	-9.68	0.00	-7.0377
	0.10	9.12	-9.25	0.00	-7.1612
	0.20	8.22	-8.82	0.00	-7.2800
	0.30	7.36	-8.38	0.00	-7.3946
	0.40	6.54	-7.94	0.00	-7.5053
	0.50	5.77	-7.48	0.00	-7.6127
16	0.00	5.77	-7.48	0.00	-7.6127
	0.10	5.05	-7.03	0.00	-7.7172
	0.20	4.37	-6.56	0.00	-7.8190
	0.30	3.73	-6.09	0.00	-7.9186
	0.40	3.15	-5.61	0.00	-8.0162
	0.50	2.61	-5.13	0.00	-8.1122
17	0.00	2.61	-5.13	0.00	-8.1122
	0.10	2.12	-4.64	0.00	-8.2069
	0.20	1.68	-4.15	0.00	-8.3005
	0.30	1.29	-3.65	0.00	-8.3932
	0.40	0.95	-3.14	0.00	-8.4853
	0.50	0.66	-2.63	0.00	-8.5768
18	0.00	0.66	-2.63	0.00	-8.5768
	0.10	0.43	-2.12	0.00	-8.6680
	0.20	0.24	-1.60	0.00	-8.7590
	0.30	0.11	-1.07	0.00	-8.8499
	0.40	0.03	-0.54	0.00	-8.9407
	0.50	0.00	0.00	0.00	-9.0315

Condizione : Tbp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0073	0.0000	-0.00200	0.00	0.00	0.00
2	0.0063	0.0000	-0.00198	0.00	0.00	0.00
3	0.0053	0.0000	-0.00193	0.00	0.00	0.00
4	0.0044	0.0000	-0.00184	0.00	0.00	0.00
5	0.0035	0.0000	-0.00171	0.00	0.00	0.00
6	0.0027	0.0000	-0.00155	0.00	0.00	0.00
7	0.0019	0.0000	-0.00136	0.00	0.00	0.00
8	0.0013	0.0000	-0.00115	0.00	0.00	0.00
9	0.0008	0.0000	-0.00096	0.00	0.00	0.00
10	0.0004	0.0000	-0.00078	0.00	0.00	0.00
11	0.0000	0.0000	-0.00063	0.00	0.00	0.00
12	-0.0003	0.0000	-0.00051	0.00	0.00	0.00
13	-0.0005	0.0000	-0.00042	0.00	0.00	0.00
14	-0.0007	0.0000	-0.00035	0.00	0.00	0.00
15	-0.0009	0.0000	-0.00031	0.00	0.00	0.00
16	-0.0010	0.0000	-0.00028	0.00	0.00	0.00
17	-0.0012	0.0000	-0.00026	0.00	0.00	0.00
18	-0.0013	0.0000	-0.00025	0.00	0.00	0.00
19	-0.0014	0.0000	-0.00025	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	28.13	0.00	0.0000
	0.10	2.81	28.13	0.00	0.0000
	0.20	5.63	28.13	0.00	0.0000
	0.30	8.44	28.13	0.00	0.0000
	0.40	11.25	28.13	0.00	0.0000
	0.50	14.06	28.13	0.00	0.0000
2	0.00	14.06	28.13	0.00	0.0000
	0.10	16.87	28.13	0.00	0.0000
	0.20	19.69	28.13	0.00	0.0000
	0.30	22.50	28.13	0.00	0.0000
	0.40	25.31	28.13	0.00	0.0000
	0.50	28.13	28.13	0.00	0.0000
3	0.00	28.13	28.13	0.00	0.0000
	0.10	30.94	28.13	0.00	0.0000
	0.20	33.75	28.13	0.00	0.0000
	0.30	36.56	28.13	0.00	0.0000
	0.40	39.38	28.13	0.00	0.0000
	0.50	42.19	28.13	0.00	0.0000
4	0.00	42.19	28.12	0.00	0.0000
	0.10	45.00	28.12	0.00	0.0000
	0.20	47.81	28.12	0.00	0.0000
	0.30	50.63	28.12	0.00	0.0000
	0.40	53.44	28.12	0.00	0.0000
	0.50	56.25	28.12	0.00	0.0000
5	0.00	56.25	28.13	0.00	0.0000
	0.10	59.06	28.13	0.00	0.0000
	0.20	61.88	28.13	0.00	0.0000
	0.30	64.69	28.13	0.00	0.0000
	0.40	67.50	28.13	0.00	0.0000
	0.50	70.31	28.13	0.00	0.0000
6	0.00	70.31	28.13	0.00	80.0471
	0.10	72.89	23.47	0.00	75.4464
	0.20	75.02	19.09	0.00	70.9582

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



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	0.30	76.72	14.98	0.00	66.5859
	0.40	78.02	11.12	0.00	62.3321
	0.50	78.95	7.52	0.00	58.1987
7	0.00	78.95	7.52	0.00	58.1987
	0.10	79.53	4.16	0.00	54.1874
	0.20	79.79	1.03	0.00	50.2988
	0.30	79.75	-1.86	0.00	46.5335
	0.40	79.43	-4.54	0.00	42.8914
	0.50	78.85	-7.00	0.00	39.3719
8	0.00	78.85	-7.00	0.00	39.3719
	0.10	78.03	-9.25	0.00	35.9742
	0.20	77.00	-11.31	0.00	32.6971
	0.30	75.78	-13.17	0.00	29.5390
	0.40	74.38	-14.84	0.00	26.4978
	0.50	72.81	-16.34	0.00	23.5716
9	0.00	72.81	-16.34	0.00	23.5716
	0.10	71.11	-17.67	0.00	20.7579
	0.20	69.29	-18.83	0.00	18.0540
	0.30	67.35	-19.83	0.00	15.4572
	0.40	65.33	-20.68	0.00	12.9644
	0.50	63.22	-21.38	0.00	10.5725
10	0.00	63.22	-21.38	0.00	10.5725
	0.10	61.05	-21.95	0.00	8.2783
	0.20	58.84	-22.37	0.00	6.0785
	0.30	56.58	-22.67	0.00	3.9695
	0.40	54.31	-22.85	0.00	1.9479
	0.50	52.02	-22.91	0.00	0.0103
11	0.00	52.02	-22.91	0.00	0.0103
	0.10	49.73	-22.85	0.00	-1.8470
	0.20	47.45	-22.69	0.00	-3.6274
	0.30	45.19	-22.42	0.00	-5.3345
	0.40	42.97	-22.05	0.00	-6.9718
	0.50	40.79	-21.59	0.00	-8.5427
12	0.00	40.79	-21.59	0.00	-8.5427
	0.10	38.65	-21.03	0.00	-10.0505
	0.20	36.58	-20.39	0.00	-11.4987
	0.30	34.58	-19.66	0.00	-12.8903
	0.40	32.65	-18.85	0.00	-14.2284
	0.50	30.81	-17.96	0.00	-15.5161
13	0.00	30.81	-17.96	0.00	-15.5161
	0.10	29.03	-17.63	0.00	-13.8200
	0.20	27.29	-17.29	0.00	-12.1239
	0.30	25.58	-16.92	0.00	-10.4278
	0.40	23.90	-16.53	0.00	-8.7317
	0.50	22.27	-16.11	0.00	-7.0356
14	0.00	22.27	-16.11	0.00	-7.0356
	0.10	20.68	-15.68	0.00	-5.3395
	0.20	19.14	-15.22	0.00	-3.6434
	0.30	17.64	-14.75	0.00	-1.9473
	0.40	16.19	-14.25	0.00	-0.2512
	0.50	14.79	-13.74	0.00	1.4548
15	0.00	14.79	-13.74	0.00	1.4548
	0.10	13.44	-13.21	0.00	3.1587
	0.20	12.15	-12.66	0.00	4.8626
	0.30	10.91	-12.09	0.00	6.5665
	0.40	9.73	-11.50	0.00	8.2704
	0.50	8.61	-10.90	0.00	9.9743
16	0.00	8.61	-10.90	0.00	9.9743
	0.10	7.55	-10.29	0.00	11.6782
	0.20	6.55	-9.65	0.00	13.3821
	0.30	5.62	-9.00	0.00	15.0860
	0.40	4.75	-8.34	0.00	16.7899
	0.50	3.95	-7.66	0.00	18.4938
17	0.00	3.95	-7.66	0.00	18.4938
	0.10	3.22	-6.96	0.00	20.1977
	0.20	2.56	-6.25	0.00	21.9016
	0.30	1.98	-5.52	0.00	23.6055
	0.40	1.46	-4.78	0.00	25.3094
	0.50	1.02	-4.02	0.00	27.0133
18	0.00	1.02	-4.02	0.00	27.0133
	0.10	0.66	-3.24	0.00	28.7172
	0.20	0.37	-2.46	0.00	30.4211
	0.30	0.17	-1.65	0.00	32.1250
	0.40	0.04	-0.83	0.00	33.8289
	0.50	0.00	0.00	0.00	35.5328

Condizione : qs

Spostamenti e reazioni

nodo	Spост. Wx	Spост. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0011	0.0000	-0.00023	0.00	0.00	0.00
2	0.0010	0.0000	-0.00023	0.00	0.00	0.00
3	0.0009	0.0000	-0.00023	0.00	0.00	0.00
4	0.0008	0.0000	-0.00022	0.00	0.00	0.00
5	0.0007	0.0000	-0.00021	0.00	0.00	0.00
6	0.0006	0.0000	-0.00019	0.00	0.00	0.00
7	0.0005	0.0000	-0.00016	0.00	0.00	0.00
8	0.0004	0.0000	-0.00013	0.00	0.00	0.00
9	0.0003	0.0000	-0.00010	0.00	0.00	0.00
10	0.0003	0.0000	-0.00006	0.00	0.00	0.00
11	0.0003	0.0000	-0.00003	0.00	0.00	0.00
12	0.0003	0.0000	-0.00001	0.00	0.00	0.00
13	0.0003	0.0000	0.00002	0.00	0.00	0.00
14	0.0003	0.0000	0.00003	0.00	0.00	0.00
15	0.0003	0.0000	0.00004	0.00	0.00	0.00
16	0.0003	0.0000	0.00005	0.00	0.00	0.00
17	0.0003	0.0000	0.00005	0.00	0.00	0.00

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18	0.0004	0.0000	0.00005	0.00	0.00	0.00
19	0.0004	0.0000	0.00005	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.01	0.29	0.00	0.0000
	0.20	0.06	0.57	0.00	0.0000
	0.30	0.13	0.86	0.00	0.0000
	0.40	0.23	1.14	0.00	0.0000
	0.50	0.36	1.43	0.00	0.0000
2	0.00	0.36	1.43	0.00	0.0000
	0.10	0.51	1.71	0.00	0.0000
	0.20	0.70	2.00	0.00	0.0000
	0.30	0.91	2.28	0.00	0.0000
	0.40	1.16	2.57	0.00	0.0000
	0.50	1.43	2.85	0.00	0.0000
3	0.00	1.43	2.85	0.00	0.0000
	0.10	1.73	3.14	0.00	0.0000
	0.20	2.06	3.43	0.00	0.0000
	0.30	2.41	3.71	0.00	0.0000
	0.40	2.80	4.00	0.00	0.0000
	0.50	3.21	4.28	0.00	0.0000
4	0.00	3.21	4.28	0.00	0.0000
	0.10	3.65	4.57	0.00	0.0000
	0.20	4.12	4.85	0.00	0.0000
	0.30	4.62	5.14	0.00	0.0000
	0.40	5.15	5.42	0.00	0.0000
	0.50	5.71	5.71	0.00	0.0000
5	0.00	5.71	5.71	0.00	0.0000
	0.10	6.29	5.99	0.00	0.0000
	0.20	6.91	6.28	0.00	0.0000
	0.30	7.55	6.57	0.00	0.0000
	0.40	8.22	6.85	0.00	0.0000
	0.50	8.92	7.14	0.00	0.0000
6	0.00	8.92	7.14	0.00	16.8803
	0.10	9.60	6.43	0.00	16.3189
	0.20	10.21	5.75	0.00	15.7723
	0.30	10.75	5.11	0.00	15.2415
	0.40	11.23	4.50	0.00	14.7273
	0.50	11.65	3.92	0.00	14.2304
7	0.00	11.65	3.92	0.00	14.2304
	0.10	12.02	3.37	0.00	13.7515
	0.20	12.33	2.85	0.00	13.2912
	0.30	12.59	2.35	0.00	12.8499
	0.40	12.80	1.88	0.00	12.4280
	0.50	12.96	1.43	0.00	12.0259
8	0.00	12.96	1.43	0.00	12.0259
	0.10	13.08	1.01	0.00	11.6439
	0.20	13.17	0.61	0.00	11.2820
	0.30	13.21	0.23	0.00	10.9405
	0.40	13.21	-0.13	0.00	10.6194
	0.50	13.18	-0.47	0.00	10.3187
9	0.00	13.18	-0.47	0.00	10.3187
	0.10	13.12	-0.79	0.00	10.0383
	0.20	13.02	-1.10	0.00	9.7782
	0.30	12.90	-1.39	0.00	9.5383
	0.40	12.75	-1.67	0.00	9.3182
	0.50	12.56	-1.94	0.00	9.1179
10	0.00	12.56	-1.94	0.00	9.1179
	0.10	12.36	-2.19	0.00	8.9369
	0.20	12.13	-2.44	0.00	8.7751
	0.30	11.87	-2.67	0.00	8.6320
	0.40	11.59	-2.90	0.00	8.5072
	0.50	11.29	-3.12	0.00	8.4003
11	0.00	11.29	-3.12	0.00	8.4003
	0.10	10.97	-3.33	0.00	8.3109
	0.20	10.62	-3.54	0.00	8.2384
	0.30	10.26	-3.75	0.00	8.1823
	0.40	9.88	-3.95	0.00	8.1421
	0.50	9.47	-4.15	0.00	8.1172
12	0.00	9.47	-4.15	0.00	8.1172
	0.10	9.04	-4.35	0.00	8.1068
	0.20	8.60	-4.55	0.00	8.1105
	0.30	8.13	-4.75	0.00	8.1274
	0.40	7.65	-4.95	0.00	8.1569
	0.50	7.14	-5.16	0.00	8.1982
13	0.00	7.14	-5.16	0.00	2.7327
	0.10	6.64	-4.95	0.00	2.7502
	0.20	6.15	-4.75	0.00	2.7710
	0.30	5.69	-4.55	0.00	2.7951
	0.40	5.24	-4.35	0.00	2.8220
	0.50	4.82	-4.15	0.00	2.8517
14	0.00	4.82	-4.15	0.00	2.8517
	0.10	4.41	-3.95	0.00	2.8839
	0.20	4.03	-3.76	0.00	2.9183
	0.30	3.66	-3.56	0.00	2.9548
	0.40	3.32	-3.37	0.00	2.9932
	0.50	2.99	-3.18	0.00	3.0333
15	0.00	2.99	-3.18	0.00	3.0333
	0.10	2.68	-3.00	0.00	3.0749
	0.20	2.39	-2.81	0.00	3.1179

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	0.30	2.12	-2.63	0.00	3.1621
	0.40	1.86	-2.45	0.00	3.2075
	0.50	1.63	-2.28	0.00	3.2538
16	0.00	1.63	-2.28	0.00	3.2538
	0.10	1.41	-2.11	0.00	3.3009
	0.20	1.20	-1.94	0.00	3.3488
	0.30	1.02	-1.77	0.00	3.3973
	0.40	0.85	-1.61	0.00	3.4463
	0.50	0.70	-1.44	0.00	3.4957
17	0.00	0.70	-1.44	0.00	3.4957
	0.10	0.56	-1.29	0.00	3.5455
	0.20	0.44	-1.13	0.00	3.5956
	0.30	0.33	-0.98	0.00	3.6459
	0.40	0.24	-0.83	0.00	3.6964
	0.50	0.17	-0.68	0.00	3.7470
18	0.00	0.17	-0.68	0.00	3.7470
	0.10	0.11	-0.54	0.00	3.7977
	0.20	0.06	-0.40	0.00	3.8485
	0.30	0.03	-0.26	0.00	3.8993
	0.40	0.01	-0.13	0.00	3.9501
	0.50	0.00	0.00	0.00	4.0009

Condizione : Tsacp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0019	0.0000	-0.00051	0.00	0.00	0.00
2	0.0016	0.0000	-0.00050	0.00	0.00	0.00
3	0.0014	0.0000	-0.00049	0.00	0.00	0.00
4	0.0011	0.0000	-0.00047	0.00	0.00	0.00
5	0.0009	0.0000	-0.00044	0.00	0.00	0.00
6	0.0007	0.0000	-0.00039	0.00	0.00	0.00
7	0.0005	0.0000	-0.00034	0.00	0.00	0.00
8	0.0003	0.0000	-0.00029	0.00	0.00	0.00
9	0.0002	0.0000	-0.00024	0.00	0.00	0.00
10	0.0001	0.0000	-0.00020	0.00	0.00	0.00
11	0.0000	0.0000	-0.00016	0.00	0.00	0.00
12	-0.0001	0.0000	-0.00013	0.00	0.00	0.00
13	-0.0001	0.0000	-0.00011	0.00	0.00	0.00
14	-0.0002	0.0000	-0.00009	0.00	0.00	0.00
15	-0.0002	0.0000	-0.00008	0.00	0.00	0.00
16	-0.0003	0.0000	-0.00007	0.00	0.00	0.00
17	-0.0003	0.0000	-0.00007	0.00	0.00	0.00
18	-0.0003	0.0000	-0.00006	0.00	0.00	0.00
19	-0.0004	0.0000	-0.00006	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	7.14	0.00	0.0000
	0.10	0.71	7.14	0.00	0.0000
	0.20	1.43	7.14	0.00	0.0000
	0.30	2.14	7.14	0.00	0.0000
	0.40	2.85	7.14	0.00	0.0000
	0.50	3.57	7.14	0.00	0.0000
2	0.00	3.57	7.14	0.00	0.0000
	0.10	4.28	7.14	0.00	0.0000
	0.20	5.00	7.14	0.00	0.0000
	0.30	5.71	7.14	0.00	0.0000
	0.40	6.42	7.14	0.00	0.0000
	0.50	7.14	7.14	0.00	0.0000
3	0.00	7.14	7.14	0.00	0.0000
	0.10	7.85	7.14	0.00	0.0000
	0.20	8.56	7.14	0.00	0.0000
	0.30	9.28	7.14	0.00	0.0000
	0.40	9.99	7.14	0.00	0.0000
	0.50	10.70	7.14	0.00	0.0000
4	0.00	10.70	7.14	0.00	0.0000
	0.10	11.42	7.14	0.00	0.0000
	0.20	12.13	7.14	0.00	0.0000
	0.30	12.85	7.14	0.00	0.0000
	0.40	13.56	7.14	0.00	0.0000
	0.50	14.27	7.14	0.00	0.0000
5	0.00	14.27	7.14	0.00	0.0000
	0.10	14.99	7.14	0.00	0.0000
	0.20	15.70	7.14	0.00	0.0000
	0.30	16.41	7.14	0.00	0.0000
	0.40	17.13	7.14	0.00	0.0000
	0.50	17.84	7.14	0.00	0.0000
6	0.00	17.84	7.14	0.00	20.3113
	0.10	18.50	5.96	0.00	19.1439
	0.20	19.03	4.85	0.00	18.0051
	0.30	19.47	3.80	0.00	16.8957
	0.40	19.80	2.82	0.00	15.8163
	0.50	20.03	1.91	0.00	14.7675
7	0.00	20.03	1.91	0.00	14.7675
	0.10	20.18	1.05	0.00	13.7496
	0.20	20.25	0.26	0.00	12.7629
	0.30	20.24	-0.47	0.00	11.8075
	0.40	20.15	-1.15	0.00	10.8833
	0.50	20.01	-1.78	0.00	9.9903
8	0.00	20.01	-1.78	0.00	9.9903
	0.10	19.80	-2.35	0.00	9.1282
	0.20	19.54	-2.87	0.00	8.2966
	0.30	19.23	-3.34	0.00	7.4953
	0.40	18.87	-3.77	0.00	6.7236

GENERAL CONTRACTOR



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	0.50	18.48	-4.15	0.00	5.9811
9	0.00	18.48	-4.15	0.00	5.9811
	0.10	18.04	-4.48	0.00	5.2672
	0.20	17.58	-4.78	0.00	4.5811
	0.30	17.09	-5.03	0.00	3.9221
	0.40	16.58	-5.25	0.00	3.2896
	0.50	16.04	-5.43	0.00	2.6827
10	0.00	16.04	-5.43	0.00	2.6827
	0.10	15.49	-5.57	0.00	2.1006
	0.20	14.93	-5.68	0.00	1.5424
	0.30	14.36	-5.75	0.00	1.0072
	0.40	13.78	-5.80	0.00	0.4943
	0.50	13.20	-5.81	0.00	0.0026
11	0.00	13.20	-5.81	0.00	0.0026
	0.10	12.62	-5.80	0.00	-0.4687
	0.20	12.04	-5.76	0.00	-0.9204
	0.30	11.47	-5.69	0.00	-1.3536
	0.40	10.90	-5.60	0.00	-1.7690
	0.50	10.35	-5.48	0.00	-2.1676
12	0.00	10.35	-5.48	0.00	-2.1676
	0.10	9.81	-5.34	0.00	-2.5502
	0.20	9.28	-5.17	0.00	-2.9177
	0.30	8.77	-4.99	0.00	-3.2708
	0.40	8.29	-4.78	0.00	-3.6104
	0.50	7.82	-4.56	0.00	-3.9371
13	0.00	7.82	-4.56	0.00	-1.3124
	0.10	7.37	-4.47	0.00	-1.4173
	0.20	6.92	-4.39	0.00	-1.5183
	0.30	6.49	-4.29	0.00	-1.6159
	0.40	6.07	-4.19	0.00	-1.7101
	0.50	5.65	-4.09	0.00	-1.8011
14	0.00	5.65	-4.09	0.00	-1.8011
	0.10	5.25	-3.98	0.00	-1.8893
	0.20	4.86	-3.86	0.00	-1.9747
	0.30	4.48	-3.74	0.00	-2.0577
	0.40	4.11	-3.62	0.00	-2.1383
	0.50	3.75	-3.49	0.00	-2.2168
15	0.00	3.75	-3.49	0.00	-2.2168
	0.10	3.41	-3.35	0.00	-2.2934
	0.20	3.08	-3.21	0.00	-2.3682
	0.30	2.77	-3.07	0.00	-2.4415
	0.40	2.47	-2.92	0.00	-2.5133
	0.50	2.19	-2.77	0.00	-2.5838
16	0.00	2.19	-2.77	0.00	-2.5838
	0.10	1.92	-2.61	0.00	-2.6533
	0.20	1.66	-2.45	0.00	-2.7217
	0.30	1.43	-2.28	0.00	-2.7893
	0.40	1.21	-2.12	0.00	-2.8561
	0.50	1.00	-1.94	0.00	-2.9223
17	0.00	1.00	-1.94	0.00	-2.9223
	0.10	0.82	-1.77	0.00	-2.9880
	0.20	0.65	-1.59	0.00	-3.0533
	0.30	0.50	-1.40	0.00	-3.1182
	0.40	0.37	-1.21	0.00	-3.1829
	0.50	0.26	-1.02	0.00	-3.2474
18	0.00	0.26	-1.02	0.00	-3.2474
	0.10	0.17	-0.82	0.00	-3.3117
	0.20	0.09	-0.62	0.00	-3.3760
	0.30	0.04	-0.42	0.00	-3.4402
	0.40	0.01	-0.21	0.00	-3.5044
	0.50	0.00	0.00	0.00	-3.5686

Condizione : Tqp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0037	0.0000	-0.00101	0.00	0.00	0.00
2	0.0032	0.0000	-0.00101	0.00	0.00	0.00
3	0.0027	0.0000	-0.00098	0.00	0.00	0.00
4	0.0022	0.0000	-0.00093	0.00	0.00	0.00
5	0.0018	0.0000	-0.00087	0.00	0.00	0.00
6	0.0014	0.0000	-0.00079	0.00	0.00	0.00
7	0.0010	0.0000	-0.00069	0.00	0.00	0.00
8	0.0007	0.0000	-0.00059	0.00	0.00	0.00
9	0.0004	0.0000	-0.00049	0.00	0.00	0.00
10	0.0002	0.0000	-0.00040	0.00	0.00	0.00
11	0.0000	0.0000	-0.00032	0.00	0.00	0.00
12	-0.0001	0.0000	-0.00026	0.00	0.00	0.00
13	-0.0003	0.0000	-0.00021	0.00	0.00	0.00
14	-0.0004	0.0000	-0.00018	0.00	0.00	0.00
15	-0.0004	0.0000	-0.00016	0.00	0.00	0.00
16	-0.0005	0.0000	-0.00014	0.00	0.00	0.00
17	-0.0006	0.0000	-0.00013	0.00	0.00	0.00
18	-0.0006	0.0000	-0.00013	0.00	0.00	0.00
19	-0.0007	0.0000	-0.00013	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	14.27	0.00	0.0000
	0.10	1.43	14.27	0.00	0.0000
	0.20	2.85	14.27	0.00	0.0000
	0.30	4.28	14.27	0.00	0.0000
	0.40	5.71	14.27	0.00	0.0000
	0.50	7.14	14.27	0.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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2	0.00	7.14	14.27	0.00	0.0000
	0.10	8.56	14.27	0.00	0.0000
	0.20	9.99	14.27	0.00	0.0000
	0.30	11.42	14.27	0.00	0.0000
	0.40	12.85	14.27	0.00	0.0000
	0.50	14.27	14.27	0.00	0.0000
3	0.00	14.27	14.27	0.00	0.0000
	0.10	15.70	14.27	0.00	0.0000
	0.20	17.13	14.27	0.00	0.0000
	0.30	18.55	14.27	0.00	0.0000
	0.40	19.98	14.27	0.00	0.0000
	0.50	21.41	14.27	0.00	0.0000
4	0.00	21.41	14.27	0.00	0.0000
	0.10	22.84	14.27	0.00	0.0000
	0.20	24.26	14.27	0.00	0.0000
	0.30	25.69	14.27	0.00	0.0000
	0.40	27.12	14.27	0.00	0.0000
	0.50	28.55	14.27	0.00	0.0000
5	0.00	28.55	14.27	0.00	0.0000
	0.10	29.97	14.27	0.00	0.0000
	0.20	31.40	14.27	0.00	0.0000
	0.30	32.83	14.27	0.00	0.0000
	0.40	34.26	14.27	0.00	0.0000
	0.50	35.68	14.27	0.00	0.0000
6	0.00	35.68	14.27	0.00	40.6227
	0.10	36.99	11.91	0.00	38.2879
	0.20	38.07	9.69	0.00	36.0102
	0.30	38.93	7.60	0.00	33.7913
	0.40	39.59	5.65	0.00	31.6326
	0.50	40.07	3.82	0.00	29.5350
7	0.00	40.07	3.82	0.00	29.5350
	0.10	40.36	2.11	0.00	27.4992
	0.20	40.49	0.52	0.00	25.5259
	0.30	40.47	-0.95	0.00	23.6150
	0.40	40.31	-2.30	0.00	21.7667
	0.50	40.01	-3.55	0.00	19.9806
8	0.00	40.01	-3.55	0.00	19.9806
	0.10	39.60	-4.70	0.00	18.2564
	0.20	39.08	-5.74	0.00	16.5933
	0.30	38.46	-6.68	0.00	14.9906
	0.40	37.74	-7.53	0.00	13.4472
	0.50	36.95	-8.29	0.00	11.9622
9	0.00	36.95	-8.29	0.00	11.9622
	0.10	36.09	-8.97	0.00	10.5343
	0.20	35.16	-9.55	0.00	9.1621
	0.30	34.18	-10.06	0.00	7.8443
	0.40	33.15	-10.49	0.00	6.5792
	0.50	32.08	-10.85	0.00	5.3654
10	0.00	32.08	-10.85	0.00	5.3654
	0.10	30.98	-11.14	0.00	4.2011
	0.20	29.86	-11.35	0.00	3.0847
	0.30	28.72	-11.51	0.00	2.0145
	0.40	27.56	-11.60	0.00	0.9886
	0.50	26.40	-11.63	0.00	0.0052
11	0.00	26.40	-11.63	0.00	0.0052
	0.10	25.24	-11.60	0.00	-0.9373
	0.20	24.08	-11.51	0.00	-1.8408
	0.30	22.94	-11.38	0.00	-2.7072
	0.40	21.81	-11.19	0.00	-3.5381
	0.50	20.70	-10.96	0.00	-4.3353
12	0.00	20.70	-10.96	0.00	-4.3353
	0.10	19.62	-10.67	0.00	-5.1005
	0.20	18.57	-10.35	0.00	-5.8354
	0.30	17.55	-9.98	0.00	-6.5416
	0.40	16.57	-9.56	0.00	-7.2207
	0.50	15.64	-9.11	0.00	-7.8742
13	0.00	15.64	-9.11	0.00	-2.6247
	0.10	14.73	-8.95	0.00	-2.8345
	0.20	13.85	-8.77	0.00	-3.0367
	0.30	12.98	-8.59	0.00	-3.2317
	0.40	12.13	-8.39	0.00	-3.4201
	0.50	11.30	-8.18	0.00	-3.6022
14	0.00	11.30	-8.18	0.00	-3.6022
	0.10	10.50	-7.96	0.00	-3.7785
	0.20	9.71	-7.72	0.00	-3.9494
	0.30	8.95	-7.48	0.00	-4.1153
	0.40	8.22	-7.23	0.00	-4.2766
	0.50	7.51	-6.97	0.00	-4.4336
15	0.00	7.51	-6.97	0.00	-4.4336
	0.10	6.82	-6.70	0.00	-4.5868
	0.20	6.17	-6.42	0.00	-4.7365
	0.30	5.54	-6.13	0.00	-4.8829
	0.40	4.94	-5.84	0.00	-5.0266
	0.50	4.37	-5.53	0.00	-5.1677
16	0.00	4.37	-5.53	0.00	-5.1677
	0.10	3.83	-5.22	0.00	-5.3065
	0.20	3.33	-4.90	0.00	-5.4434
	0.30	2.85	-4.57	0.00	-5.5785
	0.40	2.41	-4.23	0.00	-5.7122
	0.50	2.01	-3.89	0.00	-5.8446
17	0.00	2.01	-3.89	0.00	-5.8446
	0.10	1.64	-3.53	0.00	-5.9760
	0.20	1.30	-3.17	0.00	-6.1066
	0.30	1.00	-2.80	0.00	-6.2364
	0.40	0.74	-2.42	0.00	-6.3658

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	0.50	0.52	-2.04	0.00	-6.4948
18	0.00	0.52	-2.04	0.00	-6.4948
	0.10	0.33	-1.65	0.00	-6.6235
	0.20	0.19	-1.25	0.00	-6.7520
	0.30	0.08	-0.84	0.00	-6.8805
	0.40	0.02	-0.42	0.00	-7.0089
	0.50	0.00	0.00	0.00	-7.1372

Condizione : Mqp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0005	0.0000	-0.00019	0.00	0.00	0.00
2	0.0004	0.0000	-0.00018	0.00	0.00	0.00
3	0.0003	0.0000	-0.00016	0.00	0.00	0.00
4	0.0003	0.0000	-0.00014	0.00	0.00	0.00
5	0.0002	0.0000	-0.00012	0.00	0.00	0.00
6	0.0001	0.0000	-0.00010	0.00	0.00	0.00
7	0.0001	0.0000	-0.00009	0.00	0.00	0.00
8	0.0000	0.0000	-0.00007	0.00	0.00	0.00
9	0.0000	0.0000	-0.00005	0.00	0.00	0.00
10	0.0000	0.0000	-0.00004	0.00	0.00	0.00
11	0.0000	0.0000	-0.00003	0.00	0.00	0.00
12	0.0000	0.0000	-0.00002	0.00	0.00	0.00
13	0.0000	0.0000	-0.00002	0.00	0.00	0.00
14	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
15	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
16	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
17	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
18	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
19	-0.0001	0.0000	-0.00001	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
2	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
3	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
4	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
5	0.00	7.14	0.00	0.00	0.0000
	0.10	7.14	0.00	0.00	0.0000
	0.20	7.14	0.00	0.00	0.0000
	0.30	7.14	0.00	0.00	0.0000
	0.40	7.14	0.00	0.00	0.0000
	0.50	7.14	0.00	0.00	0.0000
6	0.00	7.14	0.00	0.00	4.0401
	0.10	7.12	-0.23	0.00	3.7347
	0.20	7.09	-0.45	0.00	3.4403
	0.30	7.04	-0.64	0.00	3.1568
	0.40	6.96	-0.83	0.00	2.8842
	0.50	6.87	-0.99	0.00	2.6224
7	0.00	6.87	-0.99	0.00	2.6224
	0.10	6.76	-1.14	0.00	2.3712
	0.20	6.64	-1.27	0.00	2.1304
	0.30	6.51	-1.39	0.00	1.8999
	0.40	6.37	-1.50	0.00	1.6794
	0.50	6.21	-1.60	0.00	1.4688
8	0.00	6.21	-1.60	0.00	1.4688
	0.10	6.05	-1.68	0.00	1.2678
	0.20	5.88	-1.75	0.00	1.0761
	0.30	5.70	-1.81	0.00	0.8935
	0.40	5.51	-1.85	0.00	0.7197
	0.50	5.33	-1.89	0.00	0.5544
9	0.00	5.33	-1.89	0.00	0.5544
	0.10	5.14	-1.92	0.00	0.3973
	0.20	4.94	-1.94	0.00	0.2482
	0.30	4.75	-1.95	0.00	0.1067
	0.40	4.55	-1.95	0.00	-0.0274
	0.50	4.36	-1.95	0.00	-0.1545
10	0.00	4.36	-1.95	0.00	-0.1545
	0.10	4.16	-1.93	0.00	-0.2749
	0.20	3.97	-1.91	0.00	-0.3889
	0.30	3.78	-1.89	0.00	-0.4967
	0.40	3.59	-1.86	0.00	-0.5986
	0.50	3.41	-1.82	0.00	-0.6950

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11	0.00	3.41	-1.82	0.00	-0.6950
	0.10	3.23	-1.77	0.00	-0.7862
	0.20	3.06	-1.72	0.00	-0.8723
	0.30	2.89	-1.67	0.00	-0.9537
	0.40	2.72	-1.61	0.00	-1.0307
	0.50	2.57	-1.54	0.00	-1.1034
12	0.00	2.57	-1.54	0.00	-1.1034
	0.10	2.41	-1.48	0.00	-1.1722
	0.20	2.27	-1.40	0.00	-1.2373
	0.30	2.13	-1.33	0.00	-1.2988
	0.40	2.00	-1.25	0.00	-1.3571
	0.50	1.88	-1.17	0.00	-1.4123
13	0.00	1.88	-1.17	0.00	-0.4708
	0.10	1.77	-1.14	0.00	-0.4882
	0.20	1.66	-1.11	0.00	-0.5047
	0.30	1.55	-1.08	0.00	-0.5203
	0.40	1.44	-1.05	0.00	-0.5352
	0.50	1.34	-1.01	0.00	-0.5493
14	0.00	1.34	-1.01	0.00	-0.5493
	0.10	1.24	-0.98	0.00	-0.5627
	0.20	1.14	-0.95	0.00	-0.5755
	0.30	1.05	-0.91	0.00	-0.5877
	0.40	0.96	-0.88	0.00	-0.5994
	0.50	0.87	-0.84	0.00	-0.6105
15	0.00	0.87	-0.84	0.00	-0.6105
	0.10	0.79	-0.80	0.00	-0.6212
	0.20	0.71	-0.77	0.00	-0.6315
	0.30	0.64	-0.73	0.00	-0.6415
	0.40	0.57	-0.69	0.00	-0.6511
	0.50	0.50	-0.65	0.00	-0.6604
16	0.00	0.50	-0.65	0.00	-0.6604
	0.10	0.44	-0.61	0.00	-0.6695
	0.20	0.38	-0.57	0.00	-0.6783
	0.30	0.32	-0.53	0.00	-0.6869
	0.40	0.27	-0.49	0.00	-0.6954
	0.50	0.23	-0.45	0.00	-0.7037
17	0.00	0.23	-0.45	0.00	-0.7037
	0.10	0.18	-0.40	0.00	-0.7119
	0.20	0.15	-0.36	0.00	-0.7201
	0.30	0.11	-0.32	0.00	-0.7281
	0.40	0.08	-0.27	0.00	-0.7361
	0.50	0.06	-0.23	0.00	-0.7440
18	0.00	0.06	-0.23	0.00	-0.7440
	0.10	0.04	-0.18	0.00	-0.7519
	0.20	0.02	-0.14	0.00	-0.7598
	0.30	0.01	-0.09	0.00	-0.7677
	0.40	0.00	-0.05	0.00	-0.7756
	0.50	0.00	0.00	0.00	-0.7835

Condizione : M sacc**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0002	0.0000	-0.00006	0.00	0.00	0.00
2	0.0001	0.0000	-0.00006	0.00	0.00	0.00
3	0.0001	0.0000	-0.00005	0.00	0.00	0.00
4	0.0001	0.0000	-0.00005	0.00	0.00	0.00
5	0.0001	0.0000	-0.00004	0.00	0.00	0.00
6	0.0000	0.0000	-0.00003	0.00	0.00	0.00
7	0.0000	0.0000	-0.00003	0.00	0.00	0.00
8	0.0000	0.0000	-0.00002	0.00	0.00	0.00
9	0.0000	0.0000	-0.00002	0.00	0.00	0.00
10	0.0000	0.0000	-0.00001	0.00	0.00	0.00
11	0.0000	0.0000	-0.00001	0.00	0.00	0.00
12	0.0000	0.0000	-0.00001	0.00	0.00	0.00
13	0.0000	0.0000	-0.00001	0.00	0.00	0.00
14	0.0000	0.0000	0.00000	0.00	0.00	0.00
15	0.0000	0.0000	0.00000	0.00	0.00	0.00
16	0.0000	0.0000	0.00000	0.00	0.00	0.00
17	0.0000	0.0000	0.00000	0.00	0.00	0.00
18	0.0000	0.0000	0.00000	0.00	0.00	0.00
19	0.0000	0.0000	0.00000	0.00	0.00	0.00
Reazioni totali				0.00	0.00	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
2	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
3	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000
	0.20	2.38	0.00	0.00	0.0000
	0.30	2.38	0.00	0.00	0.0000
	0.40	2.38	0.00	0.00	0.0000
	0.50	2.38	0.00	0.00	0.0000
4	0.00	2.38	0.00	0.00	0.0000
	0.10	2.38	0.00	0.00	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
5	0.00	2.38	0.00	0.00	0.0000			
	0.10	2.38	0.00	0.00	0.0000			
	0.20	2.38	0.00	0.00	0.0000			
	0.30	2.38	0.00	0.00	0.0000			
	0.40	2.38	0.00	0.00	0.0000			
	0.50	2.38	0.00	0.00	0.0000			
6	0.00	2.38	0.00	0.00	1.3467			
	0.10	2.37	-0.08	0.00	1.2449			
	0.20	2.36	-0.15	0.00	1.1468			
	0.30	2.35	-0.21	0.00	1.0523			
	0.40	2.32	-0.28	0.00	0.9614			
	0.50	2.29	-0.33	0.00	0.8741			
7	0.00	2.29	-0.33	0.00	0.8741			
	0.10	2.25	-0.38	0.00	0.7904			
	0.20	2.21	-0.42	0.00	0.7101			
	0.30	2.17	-0.46	0.00	0.6333			
	0.40	2.12	-0.50	0.00	0.5598			
	0.50	2.07	-0.53	0.00	0.4896			
8	0.00	2.07	-0.53	0.00	0.4896			
	0.10	2.02	-0.56	0.00	0.4226			
	0.20	1.96	-0.58	0.00	0.3587			
	0.30	1.90	-0.60	0.00	0.2978			
	0.40	1.84	-0.62	0.00	0.2399			
	0.50	1.78	-0.63	0.00	0.1848			
9	0.00	1.78	-0.63	0.00	0.1848			
	0.10	1.71	-0.64	0.00	0.1324			
	0.20	1.65	-0.65	0.00	0.0827			
	0.30	1.58	-0.65	0.00	0.0356			
	0.40	1.52	-0.65	0.00	-0.0091			
	0.50	1.45	-0.65	0.00	-0.0515			
10	0.00	1.45	-0.65	0.00	-0.0515			
	0.10	1.39	-0.64	0.00	-0.0916			
	0.20	1.32	-0.64	0.00	-0.1296			
	0.30	1.26	-0.63	0.00	-0.1656			
	0.40	1.20	-0.62	0.00	-0.1995			
	0.50	1.14	-0.61	0.00	-0.2317			
11	0.00	1.14	-0.61	0.00	-0.2317			
	0.10	1.08	-0.59	0.00	-0.2621			
	0.20	1.02	-0.57	0.00	-0.2908			
	0.30	0.96	-0.56	0.00	-0.3179			
	0.40	0.91	-0.54	0.00	-0.3436			
	0.50	0.86	-0.51	0.00	-0.3678			
12	0.00	0.86	-0.51	0.00	-0.3678			
	0.10	0.80	-0.49	0.00	-0.3907			
	0.20	0.76	-0.47	0.00	-0.4124			
	0.30	0.71	-0.44	0.00	-0.4329			
	0.40	0.67	-0.42	0.00	-0.4524			
	0.50	0.63	-0.39	0.00	-0.4707			
13	0.00	0.63	-0.39	0.00	-0.4707			
	0.10	0.59	-0.38	0.00	-0.4927			
	0.20	0.55	-0.37	0.00	-0.5144			
	0.30	0.52	-0.36	0.00	-0.5344			
	0.40	0.48	-0.35	0.00	-0.5524			
	0.50	0.45	-0.34	0.00	-0.5678			
14	0.00	0.45	-0.34	0.00	-0.5678			
	0.10	0.41	-0.33	0.00	-0.5876			
	0.20	0.38	-0.32	0.00	-0.6048			
	0.30	0.35	-0.30	0.00	-0.6199			
	0.40	0.32	-0.29	0.00	-0.6324			
	0.50	0.29	-0.28	0.00	-0.6424			
15	0.00	0.29	-0.28	0.00	-0.6424			
	0.10	0.26	-0.27	0.00	-0.6571			
	0.20	0.24	-0.26	0.00	-0.6691			
	0.30	0.21	-0.24	0.00	-0.6788			
	0.40	0.19	-0.23	0.00	-0.6859			
	0.50	0.17	-0.22	0.00	-0.6901			
16	0.00	0.17	-0.22	0.00	-0.6901			
	0.10	0.15	-0.20	0.00	-0.7021			
	0.20	0.13	-0.19	0.00	-0.7118			
	0.30	0.11	-0.18	0.00	-0.7199			
	0.40	0.09	-0.16	0.00	-0.7254			
	0.50	0.08	-0.15	0.00	-0.7284			
17	0.00	0.08	-0.15	0.00	-0.7284			
	0.10	0.06	-0.13	0.00	-0.7373			
	0.20	0.05	-0.12	0.00	-0.7440			
	0.30	0.04	-0.11	0.00	-0.7487			
	0.40	0.03	-0.09	0.00	-0.7514			
	0.50	0.02	-0.08	0.00	-0.7524			
18	0.00	0.02	-0.08	0.00	-0.7524			
	0.10	0.01	-0.06	0.00	-0.7556			
	0.20	0.01	-0.05	0.00	-0.7573			
	0.30	0.00	-0.03	0.00	-0.7599			
	0.40	0.00	-0.02	0.00	-0.7618			
	0.50	0.00	0.00	0.00	-0.7612			

Condizione : SPINTA PASSIVA**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	-0.0088	0.0000	0.00197	0.00	0.00	0.00
2	-0.0079	0.0000	0.00197	0.00	0.00	0.00

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3	-0.0069	0.0000	0.00197	0.00	0.00
4	-0.0059	0.0000	0.00196	0.00	0.00
5	-0.0049	0.0000	0.00194	0.00	0.00
6	-0.0040	0.0000	0.00187	0.00	0.00
7	-0.0031	0.0000	0.00172	0.00	0.00
8	-0.0022	0.0000	0.00153	0.00	0.00
9	-0.0015	0.0000	0.00133	0.00	0.00
10	-0.0009	0.0000	0.00113	0.00	0.00
11	-0.0004	0.0000	0.00095	0.00	0.00
12	0.0000	0.0000	0.00080	0.00	0.00
13	0.0004	0.0000	0.00068	0.00	0.00
14	0.0007	0.0000	0.00059	0.00	0.00
15	0.0010	0.0000	0.00053	0.00	0.00
16	0.0013	0.0000	0.00049	0.00	0.00
17	0.0015	0.0000	0.00047	0.00	0.00
18	0.0017	0.0000	0.00046	0.00	0.00
19	0.0020	0.0000	0.00046	0.00	0.00

Reazioni totali 0.00 0.00 0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	0.00	0.0000
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	0.00	0.00	0.00	0.0000
	0.20	0.00	0.00	0.00	0.0000
	0.30	0.00	0.00	0.00	0.0000
	0.40	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
	0.10	-0.13	-2.65	0.00	0.0000
	0.20	-0.54	-5.55	0.00	0.0000
	0.30	-1.25	-8.70	0.00	0.0000
	0.40	-2.29	-12.11	0.00	0.0000
	0.50	-3.68	-15.76	0.00	0.0000
4	0.00	-3.68	-15.76	0.00	0.0000
	0.10	-5.45	-19.67	0.00	0.0000
	0.20	-7.62	-23.83	0.00	0.0000
	0.30	-10.22	-28.25	0.00	0.0000
	0.40	-13.28	-32.91	0.00	0.0000
	0.50	-16.81	-37.83	0.00	0.0000
5	0.00	-16.81	-37.83	0.00	0.0000
	0.10	-20.85	-43.00	0.00	0.0000
	0.20	-25.42	-48.42	0.00	0.0000
	0.30	-30.55	-54.10	0.00	0.0000
	0.40	-36.25	-60.03	0.00	0.0000
	0.50	-42.56	-66.20	0.00	0.0000
6	0.00	-42.56	-66.21	0.00	-118.8205
	0.10	-48.83	-59.26	0.00	-113.2527
	0.20	-54.42	-52.65	0.00	-107.7602
	0.30	-59.37	-46.37	0.00	-102.3518
	0.40	-63.71	-40.40	0.00	-97.0350
	0.50	-67.46	-34.75	0.00	-91.8166
7	0.00	-67.46	-34.75	0.00	-91.8166
	0.10	-70.67	-29.41	0.00	-86.7023
	0.20	-73.35	-24.37	0.00	-81.6972
	0.30	-75.55	-19.63	0.00	-76.8053
	0.40	-77.29	-15.18	0.00	-72.0301
	0.50	-78.60	-11.01	0.00	-67.3743
8	0.00	-78.60	-11.01	0.00	-67.3743
	0.10	-79.50	-7.12	0.00	-62.8398
	0.20	-80.03	-3.49	0.00	-58.4282
	0.30	-80.21	-0.12	0.00	-54.1401
	0.40	-80.06	2.99	0.00	-49.9760
	0.50	-79.62	5.86	0.00	-45.9355
9	0.00	-79.62	5.86	0.00	-45.9355
	0.10	-78.90	8.49	0.00	-42.0179
	0.20	-77.93	10.89	0.00	-38.2223
	0.30	-76.73	13.07	0.00	-34.5470
	0.40	-75.32	15.03	0.00	-30.9903
	0.50	-73.73	16.78	0.00	-27.5499
10	0.00	-73.73	16.78	0.00	-27.5499
	0.10	-71.97	18.33	0.00	-24.2234
	0.20	-70.07	19.68	0.00	-21.0080
	0.30	-68.04	20.84	0.00	-17.9010
	0.40	-65.91	21.82	0.00	-14.8990
	0.50	-63.69	22.63	0.00	-11.9989
11	0.00	-63.69	22.63	0.00	-11.9989
	0.10	-61.39	23.26	0.00	-9.1971
	0.20	-59.04	23.73	0.00	-6.4903
	0.30	-56.65	24.04	0.00	-3.8746
	0.40	-54.24	24.19	0.00	-1.3464
	0.50	-51.81	24.20	0.00	1.0980
12	0.00	-51.81	24.20	0.00	1.0980
	0.10	-49.40	24.07	0.00	3.4623
	0.20	-47.01	23.79	0.00	5.7502
	0.30	-44.65	23.38	0.00	7.9656
	0.40	-42.34	22.84	0.00	10.1119
	0.50	-40.08	22.17	0.00	12.1929
13	0.00	-40.08	22.17	0.00	4.0643
	0.10	-37.88	21.91	0.00	4.7373

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.20	-35.70	21.60	0.00	5.3908
	0.30	-33.56	21.26	0.00	6.0259
	0.40	-31.45	20.88	0.00	6.6437
	0.50	-29.39	20.47	0.00	7.2453
14	0.00	-29.39	20.47	0.00	7.2453
	0.10	-27.36	20.02	0.00	7.8318
	0.20	-25.38	19.53	0.00	8.4042
	0.30	-23.46	19.01	0.00	8.9635
	0.40	-21.58	18.46	0.00	9.5107
	0.50	-19.77	17.87	0.00	10.0468
15	0.00	-19.77	17.87	0.00	10.0468
	0.10	-18.01	17.26	0.00	10.5728
	0.20	-16.32	16.61	0.00	11.0894
	0.30	-14.69	15.93	0.00	11.5976
	0.40	-13.13	15.22	0.00	12.0983
	0.50	-11.65	14.48	0.00	12.5922
16	0.00	-11.65	14.48	0.00	12.5922
	0.10	-10.24	13.71	0.00	13.0801
	0.20	-8.90	12.92	0.00	13.5628
	0.30	-7.65	12.09	0.00	14.0408
	0.40	-6.49	11.24	0.00	14.5149
	0.50	-5.41	10.35	0.00	14.9857
17	0.00	-5.41	10.35	0.00	14.9857
	0.10	-4.42	9.44	0.00	15.4537
	0.20	-3.52	8.50	0.00	15.9193
	0.30	-2.72	7.54	0.00	16.3832
	0.40	-2.01	6.54	0.00	16.8457
	0.50	-1.41	5.52	0.00	17.3071
18	0.00	-1.41	5.52	0.00	17.3071
	0.10	-0.91	4.47	0.00	17.7678
	0.20	-0.52	3.40	0.00	18.2280
	0.30	-0.23	2.29	0.00	18.6880
	0.40	-0.06	1.16	0.00	19.1478
	0.50	0.00	0.00	0.00	19.6076

Condizione : Nbp**Spostamenti e reazioni**

nodo	Spost. Wx	Spost. Wy	Rotaz. Rz	Reaz. Wx	Reaz. Wy	Reaz. Rz
1	0.0000	0.0000	0.00000	0.00	0.00	0.00
2	0.0000	0.0000	0.00000	0.00	0.00	0.00
3	0.0000	0.0000	0.00000	0.00	0.00	0.00
4	0.0000	0.0000	0.00000	0.00	0.00	0.00
5	0.0000	0.0000	0.00000	0.00	0.00	0.00
6	0.0000	0.0000	0.00000	0.00	0.00	0.00
7	0.0000	0.0000	0.00000	0.00	0.00	0.00
8	0.0000	0.0000	0.00000	0.00	0.00	0.00
9	0.0000	0.0000	0.00000	0.00	0.00	0.00
10	0.0000	0.0000	0.00000	0.00	0.00	0.00
11	0.0000	0.0000	0.00000	0.00	0.00	0.00
12	0.0000	0.0000	0.00000	0.00	0.00	0.00
13	0.0000	0.0000	0.00000	0.00	0.00	0.00
14	0.0000	0.0000	0.00000	0.00	0.00	0.00
15	0.0000	0.0000	0.00000	0.00	0.00	0.00
16	0.0000	0.0000	0.00000	0.00	0.00	0.00
17	0.0000	0.0000	0.00000	0.00	0.00	0.00
18	0.0000	0.0000	0.00000	0.00	0.00	0.00
19	0.0000	0.0000	0.00000	0.00	48.95	0.00
Reazioni totali				0.00	48.95	0.00

Sollecitazioni

asta	x	M	T	N	P
1	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
2	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
3	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
4	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
5	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
6	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000

GENERAL CONTRACTOR



ALTA SORVEGLIANZA



GRUPPO FERROVIE DELLO STATO ITALIANE

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	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
7	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
8	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
9	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
10	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
11	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
12	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
13	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
14	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
15	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
16	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
17	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000
18	0.00	0.00	0.00	-48.95	0.0000
	0.10	0.00	0.00	-48.95	0.0000
	0.20	0.00	0.00	-48.95	0.0000
	0.30	0.00	0.00	-48.95	0.0000
	0.40	0.00	0.00	-48.95	0.0000
	0.50	0.00	0.00	-48.95	0.0000

Combinazioni di carico

combinazione	Nppm	Tppm	Mppm	Mbp	Tbp	qs	Tsacpv..	Tqpv	Mqpv	Msacpv	.Spinta	Passiva..	Nbp
SLE RARA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SLU	1.50	1.50	1.50	1.50	1.50	1.50	1.35	1.50	1.50	1.35	1.00		1.50

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	100.08	52.53	-54.95	0.0000
	0.10	105.35	52.82	-54.95	0.0000
	0.20	110.65	53.11	-54.95	0.0000
	0.30	115.97	53.39	-54.95	0.0000
	0.40	121.32	53.68	-54.95	0.0000
	0.50	126.71	53.96	-54.95	0.0000
2	0.00	126.71	53.96	-54.95	0.0000
	0.10	132.12	54.25	-54.95	0.0000
	0.20	137.55	54.53	-54.95	0.0000

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	0.30	143.02	54.82	-54.95	0.0000
	0.40	148.52	55.10	-54.95	0.0000
	0.50	154.04	55.39	-54.95	0.0000
3	0.00	154.04	55.39	-54.95	0.0000
	0.10	159.47	53.03	-54.95	0.0000
	0.20	164.64	50.41	-54.95	0.0000
	0.30	169.54	47.54	-54.95	0.0000
	0.40	174.14	44.43	-54.95	0.0000
	0.50	178.42	41.05	-54.95	0.0000
4	0.00	178.42	41.05	-54.95	0.0000
	0.10	182.34	37.43	-54.95	0.0000
	0.20	185.89	33.55	-54.95	0.0000
	0.30	189.05	29.43	-54.95	0.0000
	0.40	191.77	25.05	-54.95	0.0000
	0.50	194.05	20.41	-54.95	0.0000
5	0.00	194.05	20.41	-54.95	0.0000
	0.10	195.85	15.53	-54.95	0.0000
	0.20	197.14	10.39	-54.95	0.0000
	0.30	197.92	5.00	-54.95	0.0000
	0.40	198.14	-0.64	-54.95	0.0000
	0.50	197.78	-6.53	-54.95	0.0000
6	0.00	197.78	-6.53	-54.95	104.2379
	0.10	196.84	-12.25	-54.95	96.3674
	0.20	195.34	-17.50	-54.95	88.8009
	0.30	193.35	-22.31	-54.95	81.5361
	0.40	190.90	-26.69	-54.95	74.5701
	0.50	188.03	-30.67	-54.95	67.8989
7	0.00	188.03	-30.67	-54.95	67.8989
	0.10	184.78	-34.25	-54.95	61.5182
	0.20	181.19	-37.46	-54.95	55.4230
	0.30	177.30	-40.32	-54.95	49.6076
	0.40	173.13	-42.84	-54.95	44.0662
	0.50	168.74	-45.03	-54.95	38.7922
8	0.00	168.74	-45.03	-54.95	38.7922
	0.10	164.14	-46.91	-54.95	33.7789
	0.20	159.37	-48.50	-54.95	29.0192
	0.30	154.45	-49.82	-54.95	24.5057
	0.40	149.41	-50.87	-54.95	20.2309
	0.50	144.28	-51.67	-54.95	16.1868
9	0.00	144.28	-51.67	-54.95	16.1868
	0.10	139.08	-52.24	-54.95	12.3657
	0.20	133.84	-52.59	-54.95	8.7595
	0.30	128.57	-52.72	-54.95	5.3600
	0.40	123.30	-52.66	-54.95	2.1593
	0.50	118.05	-52.41	-54.95	-0.8510
10	0.00	118.05	-52.41	-54.95	-0.8510
	0.10	112.83	-51.99	-54.95	-3.6789
	0.20	107.66	-51.41	-54.95	-6.3324
	0.30	102.55	-50.67	-54.95	-8.8196
	0.40	97.53	-49.78	-54.95	-11.1483
	0.50	92.60	-48.76	-54.95	-13.3264
11	0.00	92.60	-48.76	-54.95	-13.3264
	0.10	87.78	-47.62	-54.95	-15.3613
	0.20	83.08	-46.36	-54.95	-17.2607
	0.30	78.51	-44.99	-54.95	-19.0316
	0.40	74.09	-43.51	-54.95	-20.6812
	0.50	69.81	-41.94	-54.95	-22.2163
12	0.00	69.81	-41.94	-54.95	-22.2163
	0.10	65.70	-40.28	-54.95	-23.6436
	0.20	61.76	-38.54	-54.95	-24.9693
	0.30	57.99	-36.73	-54.95	-26.1995
	0.40	54.42	-34.84	-54.95	-27.3402
	0.50	51.03	-32.89	-54.95	-28.3967
13	0.00	51.03	-32.89	-54.95	-9.4656
	0.10	47.79	-31.94	-54.95	-9.7915
	0.20	44.64	-30.98	-54.95	-10.0927
	0.30	41.59	-30.00	-54.95	-10.3710
	0.40	38.64	-29.00	-54.95	-10.6279
	0.50	35.79	-27.99	-54.95	-10.8648
14	0.00	35.79	-27.99	-54.95	-10.8648
	0.10	33.04	-26.96	-54.95	-11.0833
	0.20	30.40	-25.92	-54.95	-11.2848
	0.30	27.86	-24.88	-54.95	-11.4706
	0.40	25.43	-23.81	-54.95	-11.6421
	0.50	23.10	-22.74	-54.95	-11.8005
15	0.00	23.10	-22.74	-54.95	-11.8005
	0.10	20.88	-21.67	-54.95	-11.9470
	0.20	18.76	-20.58	-54.95	-12.0827
	0.30	16.76	-19.48	-54.95	-12.2087
	0.40	14.87	-18.38	-54.95	-12.3262
	0.50	13.09	-17.27	-54.95	-12.4359
16	0.00	13.09	-17.27	-54.95	-12.4359
	0.10	11.41	-16.15	-54.95	-12.5389
	0.20	9.86	-15.03	-54.95	-12.6360
	0.30	8.41	-13.90	-54.95	-12.7281
	0.40	7.07	-12.77	-54.95	-12.8158
	0.50	5.85	-11.63	-54.95	-12.8998
17	0.00	5.85	-11.63	-54.95	-12.8998
	0.10	4.75	-10.49	-54.95	-12.9809
	0.20	3.76	-9.34	-54.95	-13.0595
	0.30	2.88	-8.19	-54.95	-13.1361
	0.40	2.12	-7.03	-54.95	-13.2113
	0.50	1.47	-5.87	-54.95	-13.2853
18	0.00	1.47	-5.87	-54.95	-13.2853

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0.10	0.94	-4.71	-54.95	-13.3586
0.20	0.53	-3.54	-54.95	-13.4315
0.30	0.24	-2.36	-54.95	-13.5040
0.40	0.06	-1.18	-54.95	-13.5764
0.50	0.00	0.00	-54.95	-13.6488

Combinazione : SLU

asta	x	M	T	N	P
1	0.00	149.77	77.73	-82.42	0.0000
	0.10	157.56	78.16	-82.42	0.0000
	0.20	165.40	78.59	-82.42	0.0000
	0.30	173.28	79.02	-82.42	0.0000
	0.40	181.20	79.44	-82.42	0.0000
	0.50	189.17	79.87	-82.42	0.0000
2	0.00	189.17	79.87	-82.42	0.0000
	0.10	197.17	80.30	-82.42	0.0000
	0.20	205.23	80.73	-82.42	0.0000
	0.30	213.32	81.16	-82.42	0.0000
	0.40	221.46	81.58	-82.42	0.0000
	0.50	229.64	82.01	-82.42	0.0000
3	0.00	229.64	82.01	-82.43	0.0000
	0.10	237.73	79.79	-82.43	0.0000
	0.20	245.59	77.32	-82.43	0.0000
	0.30	253.19	74.60	-82.43	0.0000
	0.40	260.50	71.62	-82.43	0.0000
	0.50	267.50	68.39	-82.43	0.0000
4	0.00	267.50	68.39	-82.43	0.0000
	0.10	274.17	64.91	-82.43	0.0000
	0.20	280.47	61.18	-82.43	0.0000
	0.30	286.40	57.19	-82.43	0.0000
	0.40	291.91	52.95	-82.43	0.0000
	0.50	296.98	48.47	-82.43	0.0000
5	0.00	296.98	48.47	-82.43	0.0000
	0.10	301.59	43.72	-82.43	0.0000
	0.20	305.71	38.73	-82.43	0.0000
	0.30	309.33	33.48	-82.43	0.0000
	0.40	312.40	27.98	-82.43	0.0000
	0.50	314.92	22.23	-82.43	0.0000
6	0.00	314.92	22.23	-82.43	212.5184
	0.10	316.54	10.38	-82.43	198.1190
	0.20	317.02	-0.63	-82.43	184.2086
	0.30	316.44	-10.82	-82.43	170.7879
	0.40	314.88	-20.22	-82.43	157.8560
	0.50	312.42	-28.86	-82.43	145.4104
7	0.00	312.42	-28.86	-82.43	145.4104
	0.10	309.13	-36.77	-82.43	133.4475
	0.20	305.09	-43.98	-82.43	121.9621
	0.30	300.36	-50.52	-82.43	110.9480
	0.40	295.01	-56.41	-82.43	100.3979
	0.50	289.10	-61.69	-82.43	90.3035
8	0.00	289.10	-61.69	-82.43	90.3035
	0.10	282.69	-66.37	-82.43	80.6557
	0.20	275.84	-70.49	-82.43	71.4446
	0.30	268.61	-74.07	-82.43	62.6597
	0.40	261.04	-77.14	-82.43	54.2898
	0.50	253.20	-79.72	-82.43	46.3231
9	0.00	253.20	-79.72	-82.43	46.3231
	0.10	245.11	-81.84	-82.43	38.7476
	0.20	236.84	-83.51	-82.43	31.5508
	0.30	228.43	-84.76	-82.43	24.7199
	0.40	219.90	-85.62	-82.43	18.2420
	0.50	211.31	-86.10	-82.43	12.1037
10	0.00	211.31	-86.10	-82.43	12.1037
	0.10	202.70	-86.22	-82.43	6.2920
	0.20	194.08	-86.00	-82.43	0.7935
	0.30	185.51	-85.46	-82.43	-4.4052
	0.40	177.00	-84.62	-82.43	-9.3172
	0.50	168.59	-83.50	-82.43	-13.9558
11	0.00	168.59	-83.50	-82.43	-13.9558
	0.10	160.31	-82.10	-82.43	-18.3338
	0.20	152.18	-80.45	-82.43	-22.4642
	0.30	144.23	-78.56	-82.43	-26.3594
	0.40	136.47	-76.44	-82.43	-30.0317
	0.50	128.95	-74.12	-82.43	-33.4931
12	0.00	128.95	-74.12	-82.43	-33.4931
	0.10	121.66	-71.58	-82.43	-36.7553
	0.20	114.63	-68.86	-82.43	-39.8295
	0.30	107.89	-65.97	-82.43	-42.7265
	0.40	101.45	-62.90	-82.43	-45.4568
	0.50	95.32	-59.67	-82.43	-48.0303
13	0.00	95.32	-59.67	-82.43	-16.0101
	0.10	89.43	-58.14	-82.43	-16.8188
	0.20	83.69	-56.55	-82.43	-17.5815
	0.30	78.12	-54.93	-82.43	-18.3011
	0.40	72.71	-53.26	-82.43	-18.9804
	0.50	67.47	-51.55	-82.43	-19.6223
14	0.00	67.47	-51.55	-82.43	-19.6223
	0.10	62.40	-49.81	-82.43	-20.2294
	0.20	57.51	-48.03	-82.43	-20.8043
	0.30	52.79	-46.21	-82.43	-21.3497
	0.40	48.27	-44.36	-82.43	-21.8678
	0.50	43.92	-42.49	-82.43	-22.3611
15	0.00	43.92	-42.49	-82.43	-22.3611
	0.10	39.77	-40.58	-82.43	-22.8318

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	0.20	35.81	-38.65	-82.43	-23.2819
	0.30	32.04	-36.69	-82.43	-23.7136
	0.40	28.47	-34.71	-82.43	-24.1288
	0.50	25.10	-32.70	-82.43	-24.5294
16	0.00	25.10	-32.70	-82.43	-24.5294
	0.10	21.93	-30.67	-82.43	-24.9170
	0.20	18.97	-28.61	-82.43	-25.2933
	0.30	16.21	-26.53	-82.43	-25.6598
	0.40	13.66	-24.43	-82.43	-26.0180
	0.50	11.32	-22.31	-82.43	-26.3691
17	0.00	11.32	-22.31	-82.43	-26.3691
	0.10	9.20	-20.17	-82.43	-26.7144
	0.20	7.29	-18.01	-82.43	-27.0549
	0.30	5.60	-15.83	-82.43	-27.3916
	0.40	4.12	-13.63	-82.43	-27.7255
	0.50	2.87	-11.41	-82.43	-28.0573
18	0.00	2.87	-11.41	-82.43	-28.0573
	0.10	1.84	-9.16	-82.43	-28.3875
	0.20	1.04	-6.90	-82.43	-28.7168
	0.30	0.46	-4.62	-82.43	-29.0456
	0.40	0.12	-2.32	-82.43	-29.3741
	0.50	0.00	0.00	-82.43	-29.7025

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ALLEGATO N°12
Fondazioni su pali per Barriere di h=3.75m con rilevato di H=7.0m
Effetti indotti dal ritiro e dalla diminuzione di temperatura.
Calcolo agli elementi finiti con il programma di calcolo "ENG"

Doc. N.

Progetto
INORLotto
11Codifica Documento
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AFoglio
310 di 313**Geometria struttura****Coordinate nodali e vincoli fissi**

Coordinate nodali e vincoli fissi :

nodo	X	Y	Wx	Wy	Rz
1	0.00	0.00	0	0	1
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	1	0

Caratteristiche delle aste

Elemento strutturale:

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

asta	sezione	area	modulo J	modulo E	K Winkler	base app.
1	1	0.2785	0.006174	3.5E7	0.0000	0.00
2	1	0.2785	0.006174	3.5E7	0.0000	0.00
3	1	0.2785	0.006174	3.1447E7	0.0000	0.00
4	1	0.2785	0.006174	3.1447E7	0.0000	0.00
5	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
6	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
7	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
8	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
9	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
10	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
11	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
12	1	0.2785	0.006174	3.1447E7	30000.0000	0.60
13	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
14	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
15	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
16	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
17	1	0.2785	0.006174	3.1447E7	10000.0000	0.60
18	1	0.2785	0.006174	3.1447E7	10000.0000	0.60

Geometria delle sezioni

Sezione 1 : diametro =0.60

Carichi applicati alla struttura**RITIRO+AT**

Spostamenti imposti :

descrizione	nodo	spostam.	comp.
	1	0.0043	Wx

SPINTA PASSIVA

Carichi distribuiti :

descrizione	asta	qx iniz.	qx fin.	qy iniz.	qy fin.	riferim.
	1	0.00	0.00	0.00	-12.61	LL
	2	0.00	0.00	-12.61	-25.22	LL
	3	0.00	0.00	-25.22	-37.83	LL
	4	0.00	0.00	-37.83	-50.44	LL

Risultati**Condizioni di carico**

Condizione : RITIRO+AT

Sollecitazioni

asta	x	M	T	N	P
1	0.00	-173.95	73.57	0.00	0.0000
	0.25	-155.56	73.57	0.00	0.0000
	0.50	-137.17	73.57	0.00	0.0000
2	0.00	-137.17	73.57	0.00	0.0000
	0.25	-118.77	73.57	0.00	0.0000
	0.50	-100.38	73.57	0.00	0.0000
3	0.00	-100.38	73.57	0.00	0.0000

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	0.25	-81.99	73.57	0.00	0.0000			
	0.50	-63.60	73.57	0.00	0.0000			
4	0.00	-63.60	73.57	0.00	0.0000			
	0.25	-45.20	73.57	0.00	0.0000			
	0.50	-26.81	73.57	0.00	0.0000			
5	0.00	-26.81	73.57	0.00	87.7263			
	0.25	-10.01	60.99	0.00	80.4083			
	0.50	3.78	49.52	0.00	72.9911			
6	0.00	3.78	49.52	0.00	72.9911			
	0.25	14.84	39.15	0.00	65.6083			
	0.50	23.45	29.88	0.00	58.3667			
7	0.00	23.45	29.88	0.00	58.3667			
	0.25	29.87	21.68	0.00	51.3498			
	0.50	34.37	14.51	0.00	44.6198			
8	0.00	34.37	14.51	0.00	44.6198			
	0.25	37.21	8.32	0.00	38.2203			
	0.50	38.61	3.06	0.00	32.1790			
9	0.00	38.61	3.06	0.00	32.1790			
	0.25	38.81	-1.33	0.00	26.5096			
	0.50	38.01	-4.89	0.00	21.2141			
10	0.00	38.01	-4.89	0.00	21.2141			
	0.25	36.42	-7.69	0.00	16.2850			
	0.50	34.23	-9.78	0.00	11.7072			
11	0.00	34.23	-9.78	0.00	11.7072			
	0.25	31.59	-11.21	0.00	7.4596			
	0.50	28.67	-12.03	0.00	3.5168			
12	0.00	28.67	-12.03	0.00	3.5168			
	0.25	25.62	-12.28	0.00	-0.1493			
	0.50	22.58	-12.00	0.00	-3.5679			
13	0.00	22.58	-12.00	0.00	-1.1893			
	0.25	19.61	-11.74	0.00	-2.2561			
	0.50	16.72	-11.32	0.00	-3.2599			
14	0.00	16.72	-11.32	0.00	-3.2599			
	0.25	13.96	-10.77	0.00	-4.2097			
	0.50	11.35	-10.07	0.00	-5.1146			
15	0.00	11.35	-10.07	0.00	-5.1146			
	0.25	8.93	-9.24	0.00	-5.9829			
	0.50	6.74	-8.28	0.00	-6.8224			
16	0.00	6.74	-8.28	0.00	-6.8224			
	0.25	4.81	-7.20	0.00	-7.6401			
	0.50	3.15	-5.99	0.00	-8.4423			
17	0.00	3.15	-5.99	0.00	-8.4423			
	0.25	1.82	-4.67	0.00	-9.2342			
	0.50	0.83	-3.23	0.00	-10.0202			
18	0.00	0.83	-3.23	0.00	-10.0202			
	0.25	0.21	-1.67	0.00	-10.8034			
	0.50	0.00	0.00	0.00	-11.5859			

Condizione : SPINTA PASSIVA**Sollecitazioni**

asta	x	M	T	N	P
1	0.00	61.98	0.00	0.00	0.0000
	0.25	61.91	-0.79	0.00	0.0000
	0.50	61.45	-3.15	0.00	0.0000
2	0.00	61.45	-3.15	0.00	0.0000
	0.25	60.20	-7.09	0.00	0.0000
	0.50	57.77	-12.61	0.00	0.0000
3	0.00	57.77	-12.61	0.00	0.0000
	0.25	53.77	-19.70	0.00	0.0000
	0.50	47.79	-28.37	0.00	0.0000
4	0.00	47.79	-28.37	0.00	0.0000
	0.25	39.45	-38.62	0.00	0.0000
	0.50	28.35	-50.44	0.00	0.0000
5	0.00	28.35	-50.44	0.00	-54.7064
	0.25	16.74	-42.55	0.00	-50.6894
	0.50	7.02	-35.28	0.00	-46.5093
6	0.00	7.02	-35.28	0.00	-46.5093
	0.25	-0.96	-28.64	0.00	-42.2599
	0.50	-7.35	-22.64	0.00	-38.0186
7	0.00	-7.35	-22.64	0.00	-38.0186
	0.25	-12.33	-17.27	0.00	-33.8471
	0.50	-16.04	-12.51	0.00	-29.7936
8	0.00	-16.04	-12.51	0.00	-29.7936
	0.25	-18.63	-8.35	0.00	-25.8941
	0.50	-20.26	-4.75	0.00	-22.1738
9	0.00	-20.26	-4.75	0.00	-22.1738
	0.25	-21.06	-1.70	0.00	-18.6485
	0.50	-21.15	0.84	0.00	-15.3259
10	0.00	-21.15	0.84	0.00	-15.3259
	0.25	-20.68	2.89	0.00	-12.2071
	0.50	-19.75	4.50	0.00	-9.2876
11	0.00	-19.75	4.50	0.00	-9.2876
	0.25	-18.46	5.68	0.00	-6.5586

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	0.50	-16.94	6.47	0.00	-4.0076
12	0.00	-16.94	6.47	0.00	-4.0076
	0.25	-15.26	6.89	0.00	-1.6201
	0.50	-13.52	6.96	0.00	0.6201
13	0.00	-13.52	6.96	0.00	0.2067
	0.25	-11.79	6.88	0.00	0.9099
	0.50	-10.09	6.69	0.00	1.5751
14	0.00	-10.09	6.69	0.00	1.5751
	0.25	-8.45	6.41	0.00	2.2079
	0.50	-6.90	6.03	0.00	2.8134
15	0.00	-6.90	6.03	0.00	2.8134
	0.25	-5.45	5.57	0.00	3.3966
	0.50	-4.12	5.02	0.00	3.9623
16	0.00	-4.12	5.02	0.00	3.9623
	0.25	-2.95	4.38	0.00	4.5147
	0.50	-1.94	3.67	0.00	5.0575
17	0.00	-1.94	3.67	0.00	5.0575
	0.25	-1.12	2.87	0.00	5.5941
	0.50	-0.51	1.99	0.00	6.1270
18	0.00	-0.51	1.99	0.00	6.1270
	0.25	-0.13	1.04	0.00	6.6582
	0.50	0.00	0.00	0.00	7.1889

Combinazioni di carico

combinazione	RITIRO+AT	SPINTA PASSIVA
SLE RARA	1.00	1.00
SLU	1.50	1.00

Sollecitazioni**Combinazione : SLE RARA**

asta	x	M	T	N	P
1	0.00	-111.97	73.57	0.00	0.0000
	0.25	-93.65	72.78	0.00	0.0000
	0.50	-75.71	70.42	0.00	0.0000
2	0.00	-75.71	70.42	0.00	0.0000
	0.25	-58.57	66.48	0.00	0.0000
	0.50	-42.61	60.96	0.00	0.0000
3	0.00	-42.61	60.96	0.00	0.0000
	0.25	-28.22	53.87	0.00	0.0000
	0.50	-15.81	45.20	0.00	0.0000
4	0.00	-15.81	45.20	0.00	0.0000
	0.25	-5.75	34.95	0.00	0.0000
	0.50	1.54	23.13	0.00	0.0000
5	0.00	1.54	23.13	0.00	33.0200
	0.25	6.72	18.44	0.00	29.7189
	0.50	10.80	14.24	0.00	26.4819
6	0.00	10.80	14.24	0.00	26.4819
	0.25	13.88	10.51	0.00	23.3483
	0.50	16.09	7.24	0.00	20.3481
7	0.00	16.09	7.24	0.00	20.3481
	0.25	17.54	4.42	0.00	17.5027
	0.50	18.33	2.00	0.00	14.8261
8	0.00	18.33	2.00	0.00	14.8261
	0.25	18.57	-0.03	0.00	12.3262
	0.50	18.35	-1.70	0.00	10.0052
9	0.00	18.35	-1.70	0.00	10.0052
	0.25	17.75	-3.03	0.00	7.8611
	0.50	16.86	-4.06	0.00	5.8882
10	0.00	16.86	-4.06	0.00	5.8882
	0.25	15.75	-4.80	0.00	4.0779
	0.50	14.48	-5.28	0.00	2.4196
11	0.00	14.48	-5.28	0.00	2.4196
	0.25	13.12	-5.53	0.00	0.9010
	0.50	11.73	-5.56	0.00	-0.4908
12	0.00	11.73	-5.56	0.00	-0.4908
	0.25	10.36	-5.39	0.00	-1.7693
	0.50	9.05	-5.04	0.00	-2.9478
13	0.00	9.05	-5.04	0.00	-0.9826
	0.25	7.82	-4.86	0.00	-1.3462
	0.50	6.63	-4.63	0.00	-1.6847
14	0.00	6.63	-4.63	0.00	-1.6847
	0.25	5.50	-4.36	0.00	-2.0018
	0.50	4.45	-4.04	0.00	-2.3012
15	0.00	4.45	-4.04	0.00	-2.3012
	0.25	3.49	-3.67	0.00	-2.5863
	0.50	2.62	-3.26	0.00	-2.8601
16	0.00	2.62	-3.26	0.00	-2.8601
	0.25	1.86	-2.82	0.00	-3.1254
	0.50	1.21	-2.33	0.00	-3.3847
17	0.00	1.21	-2.33	0.00	-3.3847
	0.25	0.70	-1.80	0.00	-3.6401
	0.50	0.32	-1.24	0.00	-3.8932

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18	0.00	0.32	-1.24	0.00		-3.8932		
	0.25	0.08	-0.64	0.00		-4.1452		
	0.50	0.00	0.00	0.00		-4.3970		
Combinazione : SLU								
asta	x	M	T	N		P		
1	0.00	-198.95	110.35	0.00		0.0000		
	0.25	-171.43	109.57	0.00		0.0000		
	0.50	-144.30	107.20	0.00		0.0000		
2	0.00	-144.30	107.20	0.00		0.0000		
	0.25	-117.96	103.26	0.00		0.0000		
	0.50	-92.80	97.74	0.00		0.0000		
3	0.00	-92.80	97.74	0.00		0.0000		
	0.25	-69.22	90.65	0.00		0.0000		
	0.50	-47.60	81.98	0.00		0.0000		
4	0.00	-47.60	81.98	0.00		0.0000		
	0.25	-28.36	71.74	0.00		0.0000		
	0.50	-11.87	59.91	0.00		0.0000		
5	0.00	-11.87	59.91	0.00		76.8831		
	0.25	1.72	48.93	0.00		69.9230		
	0.50	12.69	39.00	0.00		62.9774		
6	0.00	12.69	39.00	0.00		62.9774		
	0.25	21.30	30.09	0.00		56.1524		
	0.50	27.81	22.19	0.00		49.5315		
7	0.00	27.81	22.19	0.00		49.5315		
	0.25	32.48	15.26	0.00		43.1776		
	0.50	35.52	9.25	0.00		37.1360		
8	0.00	35.52	9.25	0.00		37.1360		
	0.25	37.18	4.13	0.00		31.4363		
	0.50	37.65	-0.17	0.00		26.0947		
9	0.00	37.65	-0.17	0.00		26.0947		
	0.25	37.16	-3.69	0.00		21.1159		
	0.50	35.87	-6.50	0.00		16.4952		
10	0.00	35.87	-6.50	0.00		16.4952		
	0.25	33.96	-8.65	0.00		12.2205		
	0.50	31.59	-10.18	0.00		8.2732		
11	0.00	31.59	-10.18	0.00		8.2732		
	0.25	28.92	-11.14	0.00		4.6308		
	0.50	26.07	-11.57	0.00		1.2676		
12	0.00	26.07	-11.57	0.00		1.2676		
	0.25	23.17	-11.53	0.00		-1.8440		
	0.50	20.34	-11.03	0.00		-4.7317		
13	0.00	20.34	-11.03	0.00		-1.5772		
	0.25	17.62	-10.73	0.00		-2.4743		
	0.50	14.99	-10.30	0.00		-3.3146		
14	0.00	14.99	-10.30	0.00		-3.3146		
	0.25	12.48	-9.74	0.00		-4.1067		
	0.50	10.13	-9.07	0.00		-4.8585		
15	0.00	10.13	-9.07	0.00		-4.8585		
	0.25	7.95	-8.29	0.00		-5.5777		
	0.50	5.99	-7.40	0.00		-6.2713		
16	0.00	5.99	-7.40	0.00		-6.2713		
	0.25	4.26	-6.41	0.00		-6.9455		
	0.50	2.79	-5.33	0.00		-7.6059		
17	0.00	2.79	-5.33	0.00		-7.6059		
	0.25	1.61	-4.14	0.00		-8.2572		
	0.50	0.73	-2.86	0.00		-8.9033		
18	0.00	0.73	-2.86	0.00		-8.9033		
	0.25	0.19	-1.48	0.00		-9.5469		
	0.50	0.00	0.00	0.00		-10.1899		