

COMMITTENTE:



PROGETTAZIONE:



U.O. OPERE CIVILI E GESTIONE DELLE VARIANTI

PROGETTO DEFINITIVO

COLLEGAMENTO FERROVIARIO DELL'AEROPORTO DEL SALENTO CON LA STAZIONE DI BRINDISI

OCC MINORI

Sottovia SP42 - Relazione di calcolo Muri di approccio

SCALA:

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COMMESSA LOTTO FASE ENTE TIPO DOC. OPERA/DISCIPLINA PROGR. REV.

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1. PREMESSA

Il collegamento ferroviario tra la stazione di Brindisi e la futura stazione dell'aeroporto del Salento, interessa le aree a nord e nord-ovest della città, compresa tra l'asse ferroviario e l'aeroporto stesso.

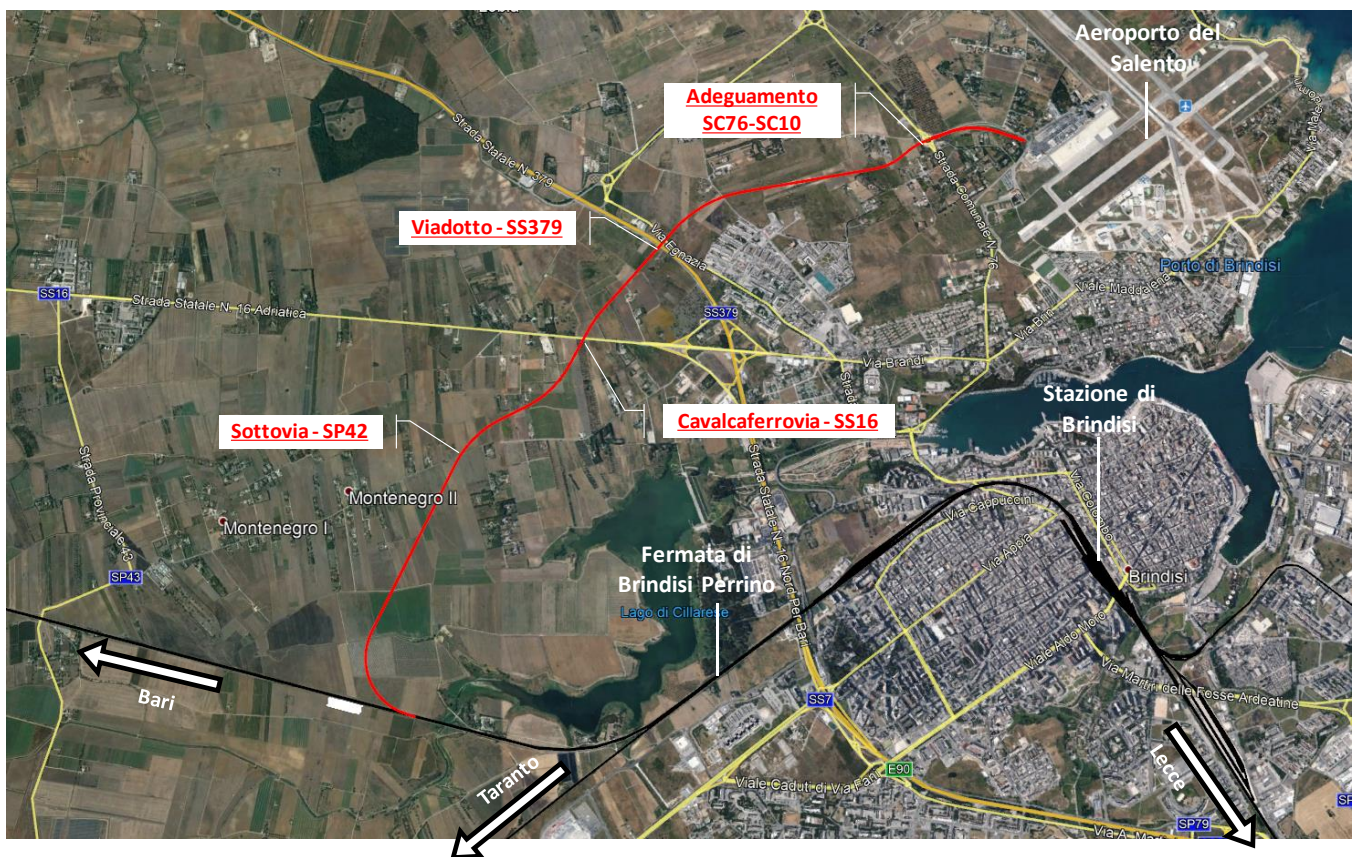
Quest'ultimo ha confermato il ruolo strategico rivestito negli ultimi anni per la Regione Puglia, dato il notevole incremento dei flussi turistici sia nazionali che internazionali.

RFI con la nota prot. RFI-DIN-DIS.AD\LTINC\P\2019\00000270, ha richiesto l'avvio delle attività per la Progettazione Tecnica ed Economica di I e II fase.

La soluzione individuata è la migliore alternativa progettuale risultante da un'analisi multicriteria realizzata all'interno del PFTE di prima fase e consegnato ad RFI con nota AGCCS.BATA.0017480.19.U del 12/03/2019.

La stessa soluzione è stata oggetto degli approfondimenti del PFTE di fase II.

Con la nota prot. RFI-DIN-DIS.AD\LTINC\P\2019\00000510, RFI ha richiesto l'avvio delle attività per l'esecuzione delle prestazioni relative alla progettazione definitiva della soluzione individuata.



Soluzione individuata

Nel PFTE di seconda fase, il tracciato era suddiviso in due lotti funzionali corrispondenti alle due fasi realizzative:

- Lotto1: relativo al collegamento a singolo binario tra la Stazione di Brindisi e la nuova Stazione di Brindisi Aeroporto;
- Lotto 2: relativo ai rami di collegamento della nuova linea Brindisi- Brindisi Aeroporto con la linea Taranto-Brindisi e la linea Bari-Lecce.

Nella fase definitiva invece, il progetto è trattato in un unico lotto inclusi i rami di collegamento della nuova linea Brindisi- Brindisi Aeroporto con la linea Taranto-Brindisi, e la linea Bari-Lecce.

Il tracciato di progetto, lungo circa 6+225 km e con una pendenza massima del 20%, si sviluppa sostanzialmente in rilevato basso, attraversando le aree agricole a nord-ovest dell'abitato di Brindisi.

In corrispondenza di due interferenze viarie, in particolare per realizzare lo scavalco della SP42 e della SS379, la livelletta ferroviaria aumenta di quota (circa +7,5 e +10 m rispetto al piano di campagna rispettivamente).

2. SCOPO DEL DOCUMENTO

La presente relazione ha per oggetto il dimensionamento dei muri di contenimento del rilevato di appoggio al sottopasso denominato "SL01" previsto nell'ambito della progettazione definitiva del Collegamento ferroviario dell'aeroporto del Salento con la stazione di Brindisi ed ubicato al km 1+313.042 della linea ferroviaria.

L'opera, ubicata nel Comune di Brindisi, ricade in zona sismica e sono state pertanto considerate le azioni derivanti dall'analisi sismica, secondo quanto previsto dal D.M. 17/01/18 e dalla Circolare Applicativa.

3. DOCUMENTI DI RIFERIMENTO

3.1 Normativa

Di seguito si riportano i riferimenti delle normative prese in considerazione per lo sviluppo delle analisi e delle verifiche in oggetto:

- LEGGE n. 1086 05.11.1971: “Norme per la disciplina delle opere in conglomerato cementizio armato, normale e precompresso ed a struttura metallica”.
- Decreto Ministeriale del 17 gennaio 2018: “*Aggiornamento delle «Norme Tecniche per le Costruzioni»*”, G.U. Serie Generale n.42 del 20.02.2008, Supplemento Ordinario n.8.
- Circolare 21 gennaio 2019 n.7 ” Istruzioni per l’applicazione dell’«Aggiornamento delle “Norme tecniche per le costruzioni”» di cui al decreto ministeriale 17 gennaio 2018”;
- RFI DTC SI MA IFS 001 C del 21.12.2018 - “*Manuale di progettazione delle opere civili*”.
- RFI DTC SI PS MA IFS 001 C del 21.12.2018 - “*Manuale di progettazione delle opere civili – Sezione 2 – Ponti e Strutture*”.
- RFI DTC SI AM MA IFS 001 B del 21.12.2018 - “*Manuale di progettazione delle opere civili – Sezione 3 – Corpo stradale*”.
- RFI DTC SI CS MA IFS 001 C del 21.12.2018 - “*Capitolato generale tecnico di appalto delle opere civili*”.
- 1299/2014/UE Specifiche tecniche d'interoperabilità per il sottosistema “*Infrastruttura*” del sistema ferroviario dell’Unione Europea (18/11/2014);
- UNI EN 1997-1: Eurocodice 7 – Progettazione geotecnica – Parte 1: Regole generali;
- UNI EN 1998-5: Eurocodice 8 – Progettazione delle strutture per la resistenza sismica – Parte 5: Fondazioni, strutture di contenimento ed aspetti geotecnici.

3.2 ELABORATI PROGETTUALI DI RIFERIMENTO

Costituiscono parte integrante di quanto esposto nel presente documento, l’insieme degli elaborati di progetto specifici relativi all’opera in esame e riportati in elenco elaborati.

Carpenteria Sottovia-Fondazione e sezioni	1:50	I	A	7	K	0	0	D	1	0	B	Z	S	L	0	1	0	1	0	0	1	A
Carpenteria Sottovia-Copertura	1:100	I	A	7	K	0	0	D	1	0	B	Z	S	L	0	1	0	1	0	0	2	A
Dettagli / Particolari Costruttivi	VARIE	I	A	7	K	0	0	D	1	0	B	Z	S	L	0	1	0	1	0	0	3	A
Muri - Carpenterie	varie	I	A	7	K	0	0	D	1	0	B	Z	S	L	0	1	0	1	0	0	4	A
Pianta scavi	1:100	I	A	7	K	0	0	D	1	0	P	Z	S	L	0	1	0	1	0	0	1	A

4. CARATTERISTICHE DEI MATERIALI

4.1 CALCESTRUZZO

4.1.1 Fondazione

Per la realizzazione dei piedritti del muro, si prevede l'utilizzo di calcestruzzo avente classe di resistenza 25/30 ($R_{ck} \geq 30.00 \text{ N/mm}^2$) che presenta le seguenti caratteristiche:

- Resistenza caratteristica a compressione (cilindrica)

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

- Resistenza media a compressione

$$f_{cm} = f_{ck} + 8 = 32.90 \quad \text{N/mm}^2$$

- Modulo elastico

$$E_{cm} = 22000 \times (f_{cm}/10)^{0.3} = 31447 \quad \text{N/mm}^2$$

- Resistenza di calcolo a compressione

$$f_{cd} = a_{cc} \times f_{ck} / \gamma_c = 0.85 \times f_{ck} / 1.5 = 14.11 \quad \text{N/mm}^2$$

- Resistenza a trazione media

$$f_{ctm} = 0.30 \times f_{ck}^{2/3} = 2.56 \quad \text{N/mm}^2$$

- Resistenza a trazione

$$f_{ctk} = 0.7 \times f_{ctm} = 1.79 \quad \text{N/mm}^2$$

- Resistenza a trazione di calcolo

$$f_{ctd} = f_{ctk} / \gamma_c = 1.19 \quad \text{N/mm}^2$$

- Resistenza a compressione (comb. Rara)

$$\sigma_c = 0.55 \times f_{ck} = 13.70 \quad \text{N/mm}^2$$

- Resistenza a compressione (comb. Quasi permanente)

$$\sigma_c = 0.40 \times f_{ck} = 9.96 \quad \text{N/mm}^2$$

4.1.2 Piedritti

Per la realizzazione della soletta di fondazione del muro, si prevede l'utilizzo di calcestruzzo avente classe di resistenza 32/40 ($R_{ck} \geq 37.00 \text{ N/mm}^2$) che presenta le seguenti caratteristiche:

- Resistenza caratteristica a compressione (cilindrica)

$$f_{ck} = 0.83 \times R_{ck} = 33.2 \quad \text{N/mm}^2$$

- Resistenza media a compressione

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

- Modulo elastico

$$E_{cm} = 22000 \times (f_{cm}/10)^{0.3} = 33643 \quad \text{N/mm}^2$$

- Resistenza di calcolo a compressione

$$f_{cd} = a_{cc} \times f_{ck}/g_c = 0.85^* f_{ck}/1.5 = 18.81 \quad \text{N/mm}^2$$

- Resistenza a trazione media

$$f_{ctm} = 0.30 \times f_{ck}^{2/3} = 3.10 \quad \text{N/mm}^2$$

- Resistenza a trazione

$$f_{ctk} = 0.7 \times f_{ctm} = 2.60 \quad \text{N/mm}^2$$

- Resistenza a trazione di calcolo

$$f_{ctd} = f_{ctk} / g_c = 1.45 \quad \text{N/mm}^2$$

- Resistenza a compressione (comb. Rara)

$$s_c = 0.55 \times f_{ck} = 18.26 \quad \text{N/mm}^2$$

- Resistenza a compressione (comb. Quasi permanente)

$$s_c = 0.40 \times f_{ck} = 13.28 \quad \text{N/mm}^2$$

Calcestruzzo per magrone

Classe di resistenza = C12/15

4.2 ACCIAIO PER CEMENTO ARMATO

Tipo	B450 (controllato in stabilimento)	
$f_{yk} =$	450 MPa	Tensione caratteristica di snervamento
$f_{yd} = f_{yk} / 1.15 =$	391.30 MPa	Resistenza di calcolo
$\sigma_s = 0.75 f_{yk} =$	337.50 MPa	Tensione limite in condizione di esercizio (comb. Rara)
$E_s =$	210000 MPa	Modulo elastico

4.3 DURABILITÀ E PRESCRIZIONI SUI MATERIALI

Per garantire la durabilità delle strutture in calcestruzzo armato ordinario, esposte all'azione dell'ambiente, si devono adottare i provvedimenti atti a limitare gli effetti di degrado indotti dall'attacco chimico, fisico e derivante dalla corrosione delle armature e dai cicli di gelo e disgelo.

Per le opere della presente relazione, in base a quanto prescritto dal Capitolato di Costruzione RFI 2018, si adotta quanto segue:

Fondazione	Classe di esposizione	XC2
Elevazione (piedritti)	Classe di esposizione	XC4

4.4 COPRIFERRO MINIMO E COPRIFERRO NOMINALE

Al fine di preservare le armature dai fenomeni di aggressione ambientale, dovrà essere previsto un idoneo copriferro; definito come la distanza tra la superficie esterna dell'armatura, inclusi collegamenti e staffe, e la superficie di calcestruzzo più vicina.

In riferimento alla Tabella 2.5.2.2.3.2.-1 del Manuale di Progettazione delle Opere Civili Parte II - Sezione 2, per l'elemento strutturale in esame risulta un copriferro minimo $c_{min}=40mm$.

In considerazione delle condizioni ambientali che sono aggressive, i sensi della tab.4.1.III del DM 17.01.2018, il copriferro minimo indicato in tabella è stato aumentato di 10 mm, ottenendo quindi un copriferro nominale pari a $c_{nom} = 50 \text{ mm}$ per l'elevazione.

5. DESCRIZIONE DELL'OPERA

Il muro in cemento armato a presidio del rilevato ferroviario presenta fondazioni di tipo diretto con le seguenti caratteristiche:

- paramento murario di altezza variabile da un minimo di 5.00 m fino ad un massimo di 7.53 m;
- pendenza del paramento murario lato esterno pari a 1:10 per tutto lo sviluppo del muro;
- fondazione caratterizzata da spessore costante pari a 1.00m.

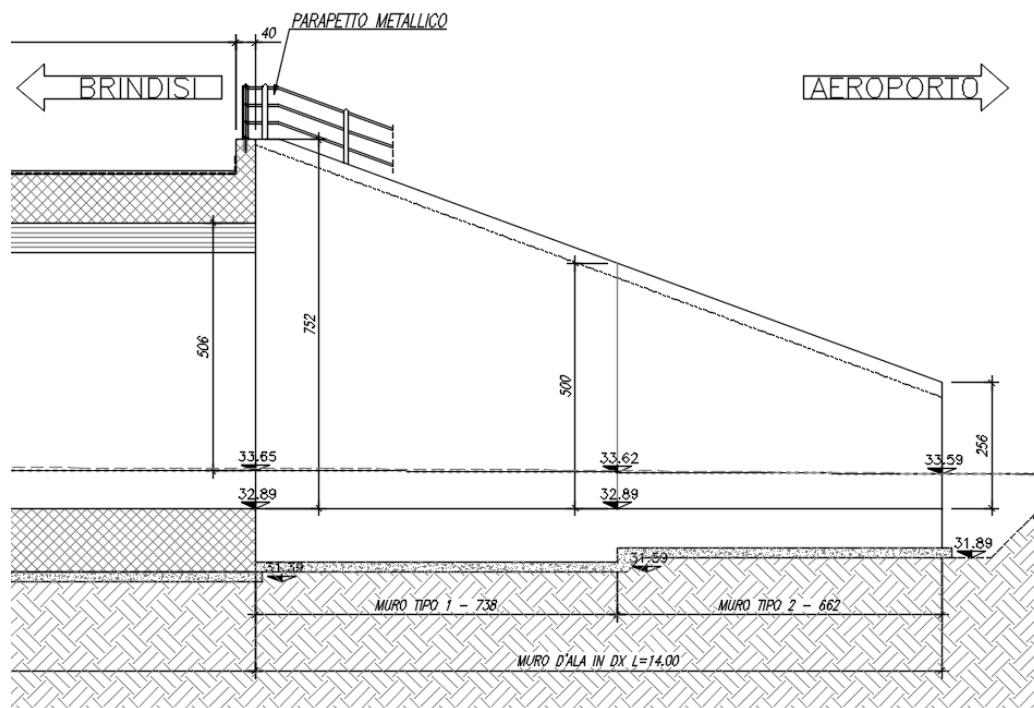


Figura 1 Sezione longitudinale

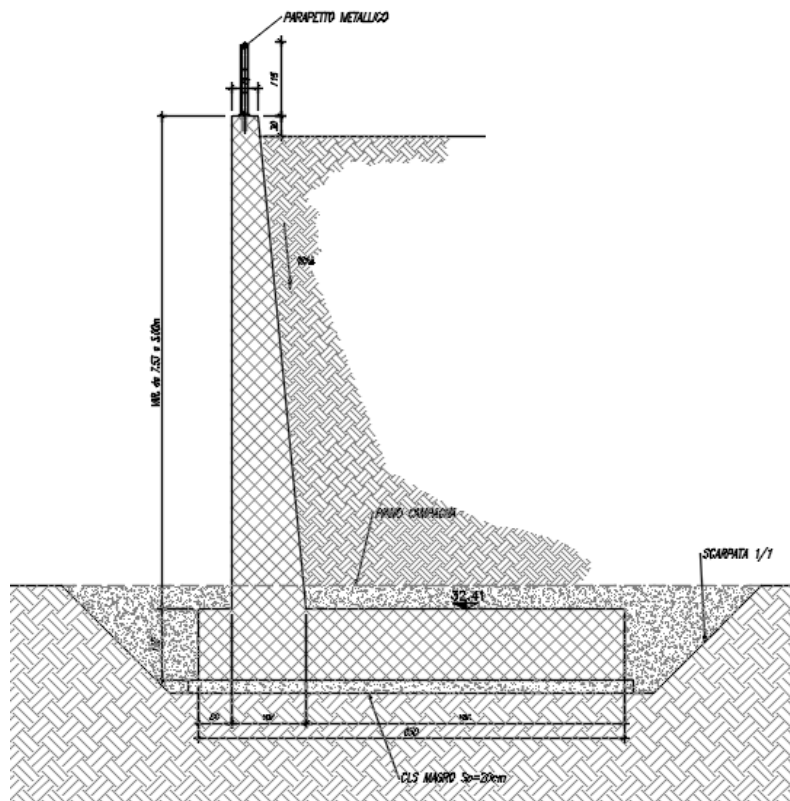


Figura 2 Muro di appoggio

6. PARAMETRI SISMICI

La vita nominale (V_N) dell'opera è stata assunta pari a 75 anni. La classe d'uso assunta è la II.

Vita nominale:	$V_N = 75$ anni
Classe d'uso	II
Coefficiente d'uso	$C_u = 1.0$
Periodo di riferimento	$V_R = V_N \times C_u = 75$ anni
Categoria del suolo	C
Categoria topografica	T1
Stato Limite	SLV
Tempo di ritorno	712

L'opera ricade nel comune di Brindisi. I corrispondenti valori delle caratteristiche sismiche per lo SLV sono i seguenti:

$$\text{latitudine} = 40.632727;$$

$$\text{longitudine} = 17.941761;$$

$$a_g = 0.050 \text{ g};$$

$$F_0 = 2.566;$$

$$T_c^* = 0.484 \text{ s}.$$

Il sottosuolo su cui insiste l'opera ricade in categoria sismica "C" e categoria topografica "T1". I coefficienti di amplificazione stratigrafica e topografica risultano quindi:

$$S_s = 1.50;$$

$$S_T = 1.0.$$

Facendo riferimento alle Norme Tecniche delle Costruzioni 2018, il coefficiente di riduzione dell'accelerazione massima attesa al sito (β_m) è pari a:

- $\beta_m = 0.38$ nelle verifiche allo stato limite ultimo (SLV)
- $\beta_m = 0.47$ nelle verifiche allo stato limite di esercizio (SLD).
- per muri non liberi di subire spostamenti relativi rispetto al terreno, il coefficiente β_m assume valore unitario.

In accordo con il Manuale di Progettazione (SEZIONE III § 3.10.3.1), i coefficienti sismici orizzontale e verticale nel caso in esame risultano:

$$a_{\max} = 0.733 \text{ m/s}^2;$$

$$k_h = \beta_m a_{\max}/g = 0.075;$$

$$k_v = \pm 0.5 k_h = \pm 0.037.$$

7. PARAMETRI GEOTECNICI

L'interpretazione delle prove in sito e di laboratorio ha condotto alla definizione dei seguenti valori dei parametri meccanici per i terreni tipo individuati:

Valori caratteristici dei parametri geotecnici di progetto								
	γ	φ'	c'	C_u	G_0	E_{op}	$k_h=k_v$	
	(kN/m ³)	(°)	(kPa)	(kPa)	(Mpa)	(MPa)	(m/s)	
LS(ms)	Limo marrone scuro	19	25÷26 (1)	0÷10 (1)	10÷15 (1)	35 ÷ 45	9 ÷ 11	1.0E-8 ⁽¹⁾

SL/Cal	Sabbia limosa/limo sabbioso color avana con possibili intercalazioni calcarenitiche	19	29÷30	0÷6	-	70 ÷ 100 fino a 4.5 m da pc 85 ÷ 110 oltre 4.5 m da pc	18 ÷ 25 fino a 4.5 m da pc 21 ÷ 28 oltre 4.5 m da pc	1.0E-8 (per i raccordi e fino al km 01+800) 1.0E-7÷1.0E-6 (dal km 01+800 fino a fine tracciato)
LS(ga)	Limo sabbioso grigio azzurro	19.5	26÷28	7÷10	50	110 ÷ 150	28÷38	1.0E-7
AL	Argilla limosa grigio azzurra	20	23÷24	15÷20	70-150 (3)	$G_0 = 85 \cdot (\sigma'_{v0}/p_a)^{0.65}$ (assumendo la falda ad 1 m da pc)	$(2.5 \cdot G_0)/10$	1.0E-9
Cal	Depositi calcarenitici	20	31 (2)	0	-	n.d.	30 (1)	1.0E-7

γ = peso di volume naturale;

φ' = angolo di attrito "operativo";

c' = intercetta di coesione "operativa";

C_u = resistenza al taglio non drenata;

G_0 = modulo di taglio iniziale riferito alle pressioni efficaci geostatiche. Dove $G_0 = 85 \cdot (\sigma'_{v0}/p_a)^{0.65}$, $p_a = 100$ kPa

E_{op} = Modulo di young "operativo" per l'analisi dei cedimenti dei rilevati con metodi elastici lineari e non lineari

k = coefficiente di permeabilità

n.d. = non determinato

(1) Valori ipotizzati sulla base della descrizione del materiale in assenza di prove.

(2) In assenza di prove sono stati cautelativamente assunti i parametri di resistenza ottenuti sulla calcarenite fratturata più superficiale

(3) variabile linearmente con la profondità da 21 m a 50 m da pc originale

Tabella 1: Caratterizzazione geotecnica

I parametri geotecnici impiegati per il rilevato ferroviario sono:

$\gamma = 20.00$	kN/m ³	peso di volume naturale
$\varphi' = 38$	°	angolo di resistenza al taglio
$c' = 0.00$	kPa	coesione drenata

La falda è pertanto posiziona al di sotto del piano di posa della fondazione e non interagisce con l'opera in esame.

8. CRITERI DI CALCOLO

Sono state effettuate le verifiche con riferimento ai seguenti stati limite:

- scorrimento sul piano di posa;
- collasso per carico limite del complesso fondazione-terreno;
- ribaltamento;
- stabilità globale del complesso opera di sostegno-terreno;
- raggiungimento della resistenza negli elementi strutturali.

8.1 VERIFICHE GEOTECNICHE

8.1.1 Verifica a ribaltamento

La verifica a ribaltamento consiste nel determinare il momento risultante di tutte le forze che tendono a fare ribaltare il muro (momento ribaltante M_r) ed il momento risultante di tutte le forze che tendono a stabilizzare il muro (momento stabilizzante M_s) rispetto allo spigolo a valle della fondazione e verificare che il rapporto M_s/M_r sia maggiore di un determinato coefficiente di sicurezza η_r .

Deve quindi essere verificata la seguente disequaglianza

$$\frac{M_s}{M_r} \geq \eta_r$$

Il momento ribaltante M_r è dato dalla componente orizzontale della spinta S , dalle forze di inerzia del muro e del terreno gravante sulla fondazione di monte (caso di presenza di sisma) per i rispettivi bracci. Nel momento stabilizzante interviene il peso del muro (applicato nel baricentro) ed il peso del terreno gravante sulla fondazione di monte. Se sono presenti dei tiranti essi contribuiscono al momento stabilizzante. Questa verifica ha significato solo per fondazione superficiale e non per fondazione su pali.

A favore di sicurezza è stata trascurata la spinta passiva del terreno a valle.

8.1.2 Verifica a scorrimento

Per la verifica a scorrimento del muro lungo il piano di fondazione deve risultare che la somma di tutte le forze parallele al piano di posa che tendono a fare scorrere il muro deve essere minore di tutte le forze, parallele al piano di scorrimento, che si oppongono allo scivolamento, secondo un certo coefficiente di sicurezza. La verifica a scorrimento risulta soddisfatta se il rapporto fra la risultante delle forze resistenti allo scivolamento F_r e la risultante delle forze che tendono a fare scorrere il muro F_s risulta maggiore di un determinato coefficiente di sicurezza η_s

$$\frac{F_r}{F_s} \geq \eta_s$$

Le forze che intervengono nella F_s sono: la componente della spinta parallela al piano di fondazione e la componente delle forze d'inerzia parallela al piano di fondazione.

La forza resistente è data dalla resistenza d'attrito e dalla resistenza per adesione lungo la base della fondazione. Detta N la componente normale al piano di fondazione del carico totale gravante in fondazione e indicando con δ_f l'angolo d'attrito terreno-fondazione, con c_a l'adesione terreno-fondazione e con B_r la larghezza della fondazione reagente, la forza resistente può esprimersi come

$$F_r = N \operatorname{tg} \delta_f + c_a B_r$$

Per quanto riguarda l'angolo d'attrito terra-fondazione, δ_f , si assume un valore di δ_f pari all'angolo d'attrito del terreno di fondazione, trascurando il contributo della spinta passiva del terreno a valle.

8.1.3 Verifica al carico limite

Il rapporto fra il carico limite in fondazione e la componente normale della risultante dei carichi trasmessi dal muro sul terreno di fondazione deve essere superiore a η_q . Cioè, detto Q_u , il carico limite ed R la risultante verticale dei carichi in fondazione, deve essere:

$$\frac{Q_u}{R} \geq \eta_q$$

dove R rappresenta la capacità portante ultima valutata con la teoria di Brinch-Hansen. Le espressioni di Hansen per il calcolo della capacità portante si differenziano a seconda se si è alla presenza di un terreno puramente coesivo ($\phi = 0$) o meno e si esprimono nel modo seguente:

Caso generale

$$q_{ult} = c \cdot N_c \cdot s_c \cdot d_c \cdot i_c \cdot g_c \cdot b_c + q \cdot N_q \cdot s_q \cdot d_q \cdot i_q \cdot g_q \cdot b_q + 0.5 \cdot B \cdot \gamma \cdot N_\gamma \cdot s_\gamma \cdot d_\gamma \cdot i_\gamma \cdot g_\gamma \cdot b_\gamma$$

Caso di terreno puramente coesivo $\phi = 0$

$$q_{ult} = 5.14 \cdot c \cdot (1 + s_c + d_c - i_c - g_c - b_c) + q$$

in cui d_c , d_q e d_γ sono i fattori di profondità, s_c , s_q e s_γ sono i fattori di forma, i_c , i_q e i_γ sono i fattori di inclinazione del carico, b_c , b_q e b_γ sono i fattori di inclinazione del piano di posa e g_c , g_q e g_γ sono fattori che tengono conto del fatto che la fondazione poggia su un terreno in pendenza.

I fattori N_c , N_q , N_γ sono espressi come:

$$N_q = e^{m\phi} K_p$$

$$N_c = (N_q - 1) \operatorname{ctg} \phi$$

$$N_\gamma = 1.5 (N_q - 1) \operatorname{tg} \phi$$

8.1.4 Verifica alla stabilità globale

La verifica alla stabilità globale del complesso muro+terreno deve fornire un coefficiente di sicurezza non inferiore a η_g . Viene usata la tecnica della suddivisione a strisce della superficie di scorrimento da analizzare. La superficie di scorrimento viene supposta circolare e determinata in modo tale da non avere intersezione con il profilo del muro o con i pali di fondazione. Si determina il minimo coefficiente di sicurezza su una maglia di centri di dimensioni

10x10 posta in prossimità della sommità del muro. Il numero di strisce è pari a 50. Si adotta per la verifica di stabilità globale il metodo di Bishop.

8.2 VERIFICHE STRUTTURALI

Le verifiche strutturali condotte sono le seguenti:

- Verifiche di stato limite di esercizio
 - Verifiche a fessurazione
 - Verifica delle tensioni
- Verifiche di stato limite di ultimo
 - Verifica a flessione
 - Verifica a taglio

8.2.1 Verifiche allo stato limite ultimo (SLU+SLV)

8.2.1.1 Sollecitazioni flettenti

La verifica agli SLU è stata realizzata attraverso il calcolo dei domini di interazione N-M, ovvero il luogo dei punti rappresentativi di sollecitazioni che portano in crisi la sezione di verifica secondo i criteri di resistenza da normativa.

Nel calcolo dei domini sono state mantenute le consuete ipotesi, tra cui:

- conservazione delle sezioni piane;
- legame costitutivo del calcestruzzo parabola-rettangolo non reagente a trazione, con plateau ad una deformazione pari a 0.002 e a rottura pari a 0.0035 ($\sigma_{max} = 0.85 \times 0.83 \times R_{ck} / 1.5$);
- legame costitutivo dell'armatura d'acciaio elastico-perfettamente plastico con deformazione limite di rottura a 0.01 ($\sigma_{max} = f_{yk} / 1.15$)

8.2.1.2 Sollecitazioni taglianti

La resistenza a taglio V_{Rd} di elementi sprovvisti di specifica armatura è stata calcolata sulla base della resistenza a trazione del calcestruzzo.

Con riferimento all'elemento fessurato da momento flettente, la resistenza al taglio si valuta con la seguente espressione:

$$V_{Rd} = \left\{ 0,18 \cdot k \cdot (100 \cdot \rho_1 \cdot f_{ck})^{1/3} / \gamma_c + 0,15 \cdot \sigma_{cp} \right\} \cdot b_w \cdot d \geq (v_{min} + 0,15 \cdot \sigma_{cp}) \cdot b_w \cdot d$$

$$k = 1 + (200/d)^{1/2} \leq 2$$

$$v_{\min} = 0,035k^{3/2} f_{ck}^{1/2}$$

dove:

d è l'altezza utile della sezione (in mm);

$\rho_1 = A_{sl} / (b_w \times d)$ è il rapporto geometrico di armatura longitudinale tesa ($\leq 0,02$);

$\sigma_{cp} = N_{Ed} / A_c$ è la tensione media di compressione nella sezione ($\leq 0,2 f_{cd}$);

b_w è la larghezza minima della sezione (in mm).

La resistenza a taglio V_{Rd} di elementi strutturali dotati di specifica armatura a taglio deve essere valutata sulla base di una adeguata schematizzazione a traliccio. Gli elementi resistenti dell'ideale traliccio sono: le armature trasversali, le armature longitudinali, il corrente compresso di calcestruzzo e i puntoni d'anima inclinati. L'inclinazione θ dei puntoni di calcestruzzo rispetto all'asse della trave deve rispettare i limiti seguenti:

$$1 \leq \text{ctg } \theta \leq 2.5$$

La verifica di resistenza (SLU) è soddisfatta se è verificata la seguente relazione:

$$V_{Rd} \geq V_{Ed}$$

dove V_{Ed} è il valore di calcolo dello sforzo di taglio agente.

La resistenza di calcolo a "taglio trazione" dell'armatura trasversale è stata calcolata con la seguente relazione:

$$V_{Rsd} = 0,9 \cdot d \cdot \frac{A_{sw}}{s} \cdot f_{yd} \cdot (\text{ctg } \alpha + \text{ctg } \theta) \cdot \sin \alpha$$

La resistenza di calcolo a "taglio compressione" del calcestruzzo d'anima è stata calcolata con la seguente relazione:

$$V_{Rcd} = 0,9 \cdot d \cdot b_w \cdot \alpha_c \cdot f'_{cd} \cdot (\text{ctg } \alpha + \text{ctg } \theta) / (1 + \text{ctg}^2 \theta)$$

La resistenza al taglio della trave è la minore delle due relazioni sopra definite:

$$V_{Rd} = \min (V_{Rsd}, V_{Rcd})$$

In cui:

d è l'altezza utile della sezione;

b_w è la larghezza minima della sezione;

σ_{cp} è la tensione media di compressione della sezione;

A_{sw} è l'area dell'armatura trasversale;

S è interasse tra due armature trasversali consecutive;

α è l'angolo di inclinazione dell'armatura trasversale rispetto all'asse della trave;

f_{cd} è la resistenza a compressione ridotta del calcestruzzo d'anima ($f_{cd}=0.5f_{cd}$);

α è un coefficiente maggiorativo par ad 1 per membrature non compresse.

8.2.2 Verifiche allo stato limite di esercizio (SLE)

Le condizioni ambientali, ai fini della protezione contro la corrosione delle armature, sono suddivise in ordinarie, aggressive e molto aggressive in relazione a quanto indicato dalla Tab. 4.1.III delle NTC2018:

Condizioni ambientali	Classe di esposizione
Ordinarie	X0, XC1, XC2, XC3, XF1
Aggressive	XC4, XD1, XS1, XA1, XA2, XF2, XF3
Molto aggressive	XD2, XD3, XS2, XS3, XA3, XF4

Tabella 2 Descrizione delle condizioni ambientali (Tab. 4.1.III delle NTC18)

Nel caso in esame, le condizioni ambientali sono sempre "ordinarie".

8.2.2.1 Verifica a fessurazione

In relazione all'aggressività ambientale e alla sensibilità dell'acciaio, l'apertura limite delle fessure è pari a 0.2mm per la combinazione rara.

8.2.2.2 Verifica delle tensioni

I limiti tensionali considerati per i materiali sono relativi alla combinazione di carico quasi permanente e caratteristica.

Calcestruzzo:

Combinazione di azioni	Limite tensionale
Caratteristica (rara)	$\sigma_c \leq 0.55f_{ck}$
Quasi permanente	$\sigma_c \leq 0.40f_{ck}$

Acciaio:

Combinazione di azioni	Limite tensionale
Caratteristica (rara)	$\sigma_a \leq 0.75 f_{yk}$

9. ANALISI DEI CARICHI

Nel seguente paragrafo si descrivono le condizioni di carico elementari assunte per l'analisi delle sollecitazioni e per le verifiche della struttura in esame. Tali condizioni di carico elementari saranno opportunamente combinate secondo quanto previsto dalla normativa vigente.

9.1 CONDIZIONI DI CARICO ELEMENTARI

9.1.1 Peso proprio del muro

Il peso proprio del muro è stato considerato considerando un peso per unità di volume pari a $\gamma_{cls} = 25 \text{ kN/m}^3$.

9.1.2 Peso del terrapieno

Il peso proprio del terrapieno è stato considerato considerando un peso per unità di volume pari a $\gamma_t = 20 \text{ kN/m}^3$.

9.1.3 Spinta del terreno in condizioni statiche

La spinta del terreno agente sulla struttura è stata calcolata attraverso la teoria di Culmann che adotta le stesse ipotesi di base del metodo di Coulomb. La differenza sostanziale è che mentre Coulomb considera un terrapieno con superficie a pendenza costante e carico uniformemente distribuito (il che permette di ottenere una espressione in forma chiusa per il coefficiente di spinta) il metodo di Culmann consente di analizzare situazioni con profilo di forma generica e carichi sia concentrati che distribuiti comunque disposti. Inoltre, rispetto al metodo di Coulomb, risulta più immediato e lineare tener conto della coesione del masso spingente. Il metodo di Culmann, nato come metodo essenzialmente grafico, si è evoluto per essere trattato mediante analisi numerica (noto in questa forma come metodo del cuneo di tentativo). Come il metodo di Coulomb anche questo metodo considera una superficie di rottura rettilinea. I passi del procedimento risolutivo sono i seguenti:

- si impone una superficie di rottura e si considera il cuneo di spinta delimitato dalla superficie di rottura stessa, dalla parete su cui si calcola la spinta e dal profilo del terreno;
- si valutano tutte le forze agenti sul cuneo di spinta e cioè peso proprio (W), carichi sul terrapieno, resistenza per attrito e per coesione lungo la superficie di rottura (R e C) e resistenza per coesione lungo la parete (A);
- dalle equazioni di equilibrio si ricava il valore della spinta S sulla parete.

Questo processo viene iterato fino a trovare l'angolo di rottura per cui la spinta risulta massima.

La convergenza non si raggiunge se il terrapieno risulta inclinato di un angolo maggiore dell'angolo d'attrito del terreno.

Nei casi in cui è applicabile il metodo di Coulomb (profilo a monte rettilineo e carico uniformemente distribuito) i risultati ottenuti col metodo di Culmann coincidono con quelli del metodo di Coulomb, il cui coefficiente di spinta attiva è di seguito riportata:

$$K_a = \frac{\cos^2(\phi' - \alpha)}{\cos^2 \alpha \cdot \cos(\alpha + \delta) \cdot \left[1 + \frac{\sin(\phi' + \delta) \cdot \sin(\phi' - \beta)}{\cos(\alpha + \delta) \cdot \cos(\alpha - \beta)} \right]^2}$$

dove:

- α è l'inclinazione del paramento interno del muro rispetto alla verticale;
- β è l'inclinazione del piano campagna rispetto all'orizzontale;
- ϕ è l'angolo d'attrito del terreno;
- δ è l'angolo d'attrito terreno-struttura

9.1.4 Azioni variabili da traffico

9.1.4.1 Treno LM71 (ACCM L71)

Si è tenuto in conto della spinta dovuta al transito dei convogli ferroviari, in quanto l'asse del binario ricade all'interno del cuneo di spinta.

Il treno LM71 viene schematizzato da 4 assi da 250 kN disposti ad interasse di 1,60 m e da un carico distribuito di 80 kN/m in entrambe le direzioni per una larghezza illimitata.

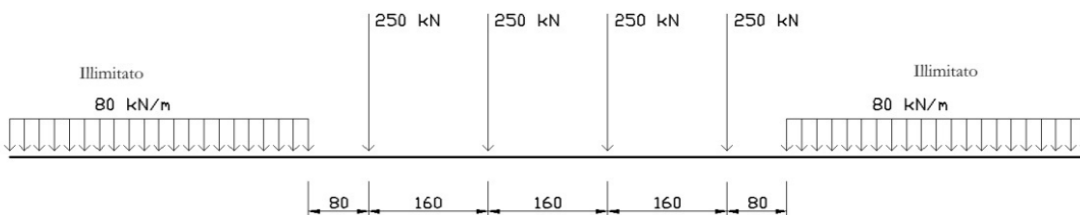


Figura 3- Treno LM71

Secondo il § 2.5.1.4.1.5 del RFI DTC SI PS MA IFS 001 C Manuale di progettazione RFI2018 (cfr, 5.2.2.2.1.5 NTC2018) il carico verticale su rilevato a tergo della spalla può essere ottenuto considerando una distribuzione trasversale dei carichi concentrati LM71 su una larghezza di 3m e una distribuzione longitudinale pari a quella di applicazione dei 4 carichi concentrati (schema LM71) = 6.40m.

Per questo tipo di carico non deve essere applicato l'incremento dinamico.

$$P_{V,LM71} = 52.08 \text{ kN/m}^2$$

9.1.4.2 Treno SW/0-SW2

Tale carico schematizza gli effetti statici prodotti dal traffico ferroviario pesante. Viene schematizzato da un carico lineare uniformemente ripartito di valore pari a 150 kN/m (coefficiente $\alpha = 1,00$):

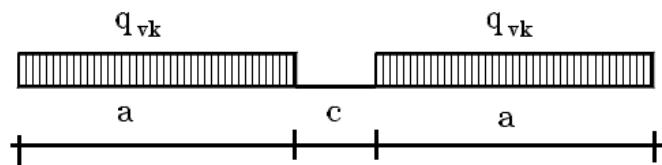


Figura 4 Treno di carico SW

Tipo di carico	Q _{vk} [kN/m]	A [m]	C [m]
SW/0	133	15.0	5.3
SW/2	150	25.0	7.0

$$P_{V,SW/2} = 50 \text{ kN/m}^2$$

$$P_{V,SW/0} = 44.33 \text{ kN/m}^2$$

Tali carichi verticali producono una spinta inferiore a quella dovuta dal treno di carico LM71 e pertanto non verranno utilizzati ai fini del dimensionamento del muro in oggetto. La stessa considerazione è valida anche per il caso di treno scarico, il cui valore di normativa di 10kN/m non produce effetti significativi rispetto ai carichi precedentemente descritti.

9.1.5 **Frenatura e avviamento (AVV e FREN)**

Le forze di frenatura e di avviamento (Treno LM71) agiscono sulla sommità del binario nella direzione longitudinale.

$$\text{Avviamento } A_v = 33 \text{ kN/m}$$

Carico distribuito su L_d :

$$q_{Av} = A_v \alpha / L_d = 10.35 \text{ kN/m}$$

Nel modello di calcolo si considera l'azione congruente al treno di carico verticale considerato. La spinta è applicata da sinistra verso destra per massimizzare gli effetti di sbilanciamento della struttura.

Tale contributo non risulta dimensionante in termini di spinta sul muro e verrà pertanto trascurato.

9.1.6 **Azione centrifuga**

Nei ponti ferroviari al di sopra dei quali il binario presenta un tracciato in curva deve essere considerata la forza centrifuga agente su tutta l'estensione del tratto in curva. La forza centrifuga si considera agente verso l'esterno della curva, in direzione orizzontale ed applicata alla quota di 1.80m al di sopra del P.F..

Il valore caratteristico della forza centrifuga si determina in accordo con le seguenti espressioni:

$$Q_{tk} = \frac{v^2}{g \cdot r} (f \cdot Q_{vk}) = \frac{v^2}{127 \cdot r} (f \cdot Q_{vk})$$

$$q_{tk} = \frac{v^2}{g \cdot r} (f \cdot q_{vk}) = \frac{v^2}{127 \cdot r} (f \cdot q_{vk})$$

dove:

- Q_{tk} - q_{tk} è il valore caratteristico della forza centrifuga, espresso in kN/m;
- Q_{vk} - q_{vk} è il valore caratteristico dei carichi verticali ferroviari, espresso in kN/m;
- V è la velocità di progetto, espressa in km/h;
- f è un fattore di riduzione;
- r è il raggio di curvatura, espresso in m.

L'azione centrifuga viene determinata per i modelli di carico LM71 e SW/2 associando alle grandezze precedentemente indicate quanto contenuto nella tabella 2.5.1.4.3.1-1 del "Manuale di progettazione delle opere civili".

Si è assunta una velocità V uguale a 100 km/h, un valore di f pari ad 1 ed il valore di α pari a 1.

La forza centrifuga, in accordo con quanto prescritto nel "Manuale di progettazione delle opere civili", non è stata incrementata dai coefficienti dinamici.

Tabella 3 Parametri per determinazione della forza centrifuga - Tab. 2.5.1.3.1-1 – Manuale di progettazione delle opere civili

Valore di α	Massima velocità della linea [Km/h]	Azione centrifuga basata su:				traffico verticale associato
		V	α	f		
SW/2	≥ 100	100	1	1	1 x 1 x SW/2	Φ x 1 x SW/2
	< 100	V	1	1	1 x 1 x SW/2	
LM71 e SW/0	> 120	V	1	f	1 x f x (LM71" + "SW/0)	Φ x 1 x 1 x (LM71" + "SW/0)
		120	α	1	α x 1 x (LM71" + "SW/0)	Φ x α x 1 x (LM71" + "SW/0)
	≤ 120	V	α	1	α x 1 x (LM71" + "SW/0)	

AZIONE CENTRIFUGA				
Velocità di progetto	V	100	km/h	
Velocità massima di calcolo per modello SW2	V _{SW2}	100	km/h	

Raggio di curvatura minimo associato alla velocità di progetto	r	600	m
Fattore di riduzione-modello SW2 (Tab. 2.5.1.4.3.1-1)	f	1.00	-
Lunghezza di influenza della parte curva di binario carico sul ponte	Lf	2.88	m
Fattore di riduzione per V>120km/h-modello LM71 (Tab. 2.5.1.4.3.1-1)	f*	1.00	-
Valore caratteristico del traffico verticale associato (SW2)	qv _{kSW2}	150.00	kN/m
Valore caratteristico del traffico verticale associato (LM71)	qv _{kLM71}	80.00	kN/m
Valore caratteristico del traffico verticale associato (LM71)	Qv _{kLM72}	250.00	kN
Azione centrifuga per singolo treno - modello SW2 (min(V;V_{sw2}),r)	qtk_{SW2}	19.69	kN/m
Azione centrifuga per singolo treno - modello LM71 (V;r)	qtk _{LM71-V}	11.55	kN/m
Azione centrifuga di progetto per singolo treno - modello LM71	qtk_{LM71}	11.55	kN/m
Azione centrifuga per singolo treno - modello LM71 (V;r)	Qtk _{LM71-V}	36.09	kN
Azione centrifuga di progetto per singolo treno - modello LM71	Qtk_{LM71}	36.09	kN

Tale contributo non risulta dimensionante in termini di spinta sul muro e verrà pertanto trascurato.

9.1.7 Spinta del sovraccarico sul rilevato (SPACCSX e SPACCDX)

Si considera la sola spinta dovuta al Treno LM71, in quanto più gravosa per il dimensionamento in oggetto:

Assumendo $k_0=1-\sin\varphi'=0.384$

Spinta indotta dal carico LM71 $P_{H,Q,riti} = (P_{V,Q1, cop}) K_0 = 52.08*0.384= 20 \quad \text{kN/m}$

9.1.8 Azioni sismiche

9.1.8.1 Forze inerziali

In condizioni sismiche le forze inerziali orizzontali e verticali sul paramento, soletta di fondazione ed il terreno di riempimento sono valutate attraverso le seguenti espressioni:

$$F_h = k_h W$$

$$F_v = k_v W$$

9.1.8.2 Spinta del terreno in condizioni sismiche

Se la struttura è libera di spostarsi, la sovra spinta sismica attiva agente sulle strutture è calcolata secondo l'approccio di Mononobe-Okabe. La spinta totale esercitata dal terrapieno sul muro è data da:

$$E_d = \frac{1}{2} \gamma (1 \pm k_v) K H^2$$

dove:

H altezza muro

k_v coefficiente sismico verticale

γ peso per unità di volume del terreno

K coefficienti di spinta attiva totale (statico + dinamico)

Il coefficiente di spinta attiva (k_a) è calcolato secondo la seguente relazione:

$$K_a = \frac{\sin^2(\psi + \varphi - \theta)}{\cos \theta \sin^2 \psi \sin(\psi - \theta - \delta) \left[1 + \sqrt{\frac{\sin(\varphi + \delta) \sin(\varphi - \varepsilon - \theta)}{\sin(\psi - \theta - \delta) \sin(\psi + \varepsilon)}} \right]^2}$$

dove:

ψ = angolo di inclinazione del paramento interno del muro rispetto all'orizzontale

δ = angolo di attrito terreno-muro

φ = angolo di resistenza al taglio

ε = angolo di inclinazione, rispetto all'orizzontale, del terreno a monte del muro ($0-\varphi$)

$$\theta = \arctan \frac{k_h}{1 \pm k_v} \quad \text{per terreno sopra falda}$$

$$\theta = \arctan \frac{\gamma}{\gamma - \gamma_w} \frac{k_h}{1 \pm k_v} \quad \text{per terreno sotto falda}$$

dove:

k_h = coefficiente sismico orizzontale

k_v = coefficiente sismico verticale

Detta S la spinta calcolata in condizioni statiche l'incremento di spinta da applicare è espresso da

$$\Delta S = AS' - S$$

Nel caso di muri di sostegno liberi di traslare o di ruotare intorno al piede, si è assunto che l'incremento di spinta dovuta al sisma agisca nello stesso punto di quella statica.

9.2 COMBINAZIONI DI CARICO

La verifica di stabilità globale del complesso opera di sostegno-terreno è stata effettuata secondo l'Approccio 1, con la Combinazione 2 (A2+M2+R2), tenendo conto dei coefficienti parziali riportati nelle Tabelle 6.2.I e 6.2.II per le azioni e i parametri geotecnici e nella Tab. 6.8.I delle NTC 2018 per le verifiche di sicurezza di opere di materiali sciolti e fronti di scavo. Le rimanenti verifiche sono state effettuate secondo l'Approccio 2, con la combinazione (A1+M1+R3), tenendo conto dei valori dei coefficienti parziali riportati nelle Tabelle 6.2.I, 6.2.II e 6.5.I.

Nelle verifiche in condizioni sismiche si è controllato che la resistenza del sistema sia maggiore delle azioni, ponendo pari all'unità i coefficienti parziali sulle azioni e sui parametri geotecnici e impiegando le resistenze di progetto con i coefficienti parziali γ_R indicati nella tabella 7.11.III delle NTC 2018.

Ai fini delle verifiche degli stati limite si è fatto riferimento alle seguenti combinazioni delle azioni:

- Combinazione fondamentale, generalmente impiegata per gli stati limite ultimi (SLU):

$$\gamma_{G1} \cdot G_1 + \gamma_{G2} \cdot G_2 + \gamma_P \cdot P + \gamma_{Q1} \cdot Q_{k1} + \gamma_{Q2} \cdot \psi_{02} \cdot Q_{k2} + \gamma_{Q3} \cdot \psi_{03} \cdot Q_{k3} + \dots$$

- Combinazione caratteristica (rara), generalmente impiegata per gli stati limite di esercizio (SLE) irreversibili:

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

- Combinazione frequente, generalmente impiegata per gli stati limite di esercizio (SLE) reversibili:

$$G_1 + G_2 + P + \psi_{11} \cdot Q_{k1} + \psi_{22} \cdot Q_{k2} + \psi_{23} \cdot Q_{k3} + \dots$$

- Combinazione quasi permanente, generalmente impiegata per gli stati limite di esercizio (SLE) a lungo termine:

$$G_1 + G_2 + P + \psi_{21} \cdot Q_{k1} + \psi_{22} \cdot Q_{k2} + \psi_{23} \cdot Q_{k3} + \dots$$

- Combinazione sismica, impiegata per gli stati limite ultimi e di esercizio connessi all'azione sismica E:

$$E + G_1 + G_2 + P + \psi_{21} \cdot Q_{k1} + \psi_{22} \cdot Q_{k2} + \dots$$

dove:

$$E = \pm 1.00 \times E_Y \pm 0.30 \times E_Z \quad \text{oppure} \quad E = \pm 0.30 \times E_Y \pm 1.00 \times E_Z$$

avendo indicato con E_Y e E_Z rispettivamente le componenti orizzontale e verticale dell'azione sismica.

I coefficienti di amplificazione dei carichi γ e i coefficienti di combinazione ψ sono riportati nelle tabelle seguenti. Si ripota la Tabella 5.2.V delle NTC18 dei coefficienti parziali di sicurezza per le combinazioni di carico SLU:

Tabella 5.2.V – Coefficienti parziali di sicurezza per le combinazioni di carico agli SLU, eccezionali e sismica (da DM 17/01/2018)

		Coefficiente	EQU ⁽¹⁾	A1 STR	A2 GEO	Combinazione eccezionale	Combinazione Sismica
Carichi permanenti	favorevoli	γ_{G1}	0,90	1,00	1,00	1,00	1,00
	sfavorevoli		1,10	1,35	1,00	1,00	1,00
Carichi permanenti non strutturali ⁽²⁾	favorevoli	γ_{G2}	0,00	0,00	0,00	1,00	1,00
	sfavorevoli		1,50	1,50	1,30	1,00	1,00
Ballast ⁽³⁾	favorevoli	γ_B	0,90	1,00	1,00	1,00	1,00
	sfavorevoli		1,50	1,50	1,30	1,00	1,00
Carichi variabili da traffico ⁽⁴⁾	favorevoli	γ_Q	0,00	0,00	0,00	0,00	0,00
	sfavorevoli		1,45	1,45	1,25	0,20 ⁽⁵⁾	0,20 ⁽⁵⁾
Carichi variabili	favorevoli	γ_{Qi}	0,00	0,00	0,00	0,00	0,00
	sfavorevoli		1,50	1,50	1,30	1,00	0,00
Precompressione	favorevole	γ_P	0,90	1,00	1,00	1,00	1,00
	sfavorevole		1,00 ⁽⁶⁾	1,00 ⁽⁷⁾	1,00	1,00	1,00

Si riporta la Tabella 5.2.VI delle NTC18 in cui sono espressi i coefficienti di combinazione delle azioni:

Tabella 5.2.VI - Coefficienti di combinazione ψ delle azioni (da DM 17/01/2018)

Tab. 5.2.VI - Coefficienti di combinazione Ψ delle azioni

Azioni		ψ_0	ψ_1	ψ_2
Azioni singole	Carico sul rilevato a tergo delle spalle	0,80	0,50	0,0
da traffico	Azioni aerodinamiche generate dal transito dei convogli	0,80	0,50	0,0
	gr_1	0,80 ⁽¹⁾	0,80 ⁽¹⁾	0,0
Gruppi di	gr_2	0,80 ⁽²⁾	0,80 ⁽¹⁾	-
carico	gr_3	0,80 ⁽²⁾	0,80 ⁽¹⁾	0,0
	gr_4	1,00	1,00 ⁽¹⁾	0,0
Azioni del vento	F_{Wk}	0,60	0,50	0,0
Azioni da	in fase di esecuzione	0,80	0,0	0,0
neve	SLU e SLE	0,0	0,0	0,0
Azioni termiche	T_k	0,60	0,60	0,50

⁽¹⁾ 0,80 se è carico solo un binario, 0,60 se sono carichi due binari e 0,40 se sono carichi tre o più binari.

⁽²⁾ Quando come azione di base venga assunta quella del vento, i coefficienti ψ_0 relativi ai gruppi di carico delle azioni da traffico vanno assunti pari a 0,0.

Nella combinazione sismica le azioni indotte dal traffico ferroviario sono combinate con un coefficiente $\psi_2 = 0.2$ (paragrafo 5.1.3.12 del DM 17/01/2018) coerentemente con l'aliquota di massa afferente ai carichi da traffico.

Parametro	Grandezza alla quale applicare il coefficiente parziale	Coefficiente parziale γ_M	(M1)	(M2)
Tangente dell'angolo di resistenza al taglio	$\tan \varphi'_k$	$\gamma_{\varphi'}$	1,0	1,25
Coesione efficace	c'_k	$\gamma_{c'}$	1,0	1,25
Resistenza non drenata	c_{uk}	γ_{cu}	1,0	1,4
Peso dell'unità di volume	γ_Y	γ_Y	1,0	1,0

Tabella 4: Coefficienti parziali per i parametri geotecnici del terreno (Tabella 6.2.II – NTC 2018)

Verifica	Coefficiente parziale (R3)
Capacità portante della fondazione	$\gamma_R = 1,4$
Scorrimento	$\gamma_R = 1,1$
Ribaltamento	$\gamma_R = 1,15$
Resistenza del terreno a valle	$\gamma_R = 1,4$

Tabella 5: Coefficienti parziali γ_R per le verifiche agli stati limite ultimi di muri di sostegno (Tabella 6.5.I – NTC 2018)

COEFFICIENTE	R2
γ_R	1,1

Tabella 6: Coefficienti parziali per le verifiche di sicurezza di opere di materiali sciolti e di fronti di scavo (Tabella 6.8.I – NTC 2018)

Verifica	Coefficiente parziale γ_R
Carico limite	1.2
Scorrimento	1.0
Ribaltamento	1.0
Resistenza del terreno a valle	1.2

Tabella 7: Coefficienti parziali γ_R per le verifiche degli stati limite (SLV) dei muri di sostegno. (Tabella 7.11.III – NTC 2018)

10. MODELLO DI CALCOLO

I modelli di calcolo sono stati implementati tramite il software di calcolo specifico AZTEC MAX.

10.1 DATI

Materiali

Simbologia adottata

n° Indice materiale

Descr Descrizione del materiale

Calcestruzzo armato

C Classe di resistenza del cls

A Classe di resistenza dell'acciaio

γ Peso specifico, espresso in [kN/mc]

R_{ck} Resistenza caratteristica a compressione, espressa in [kPa]

E Modulo elastico, espresso in [kPa]

ν Coeff. di Poisson

n Coeff. di omogenizzazione acciaio/cls

ntc Coeff. di omogenizzazione cls teso/compresso

Calcestruzzo armato

n°	Descr	C	A	γ	R _{ck}	E	ν	n	ntc
				[kN/mc]	[kPa]	[kPa]			
1	C25/30	C25/30	B450C	24.5170	30000	31447048	0.30	15.00	0.50
4	C32/40	C32/40	B450C	24.5170	40000	33642648	0.30	15.00	0.50

Acciai

Descr	f _{yk}	f _{uk}
	[kPa]	[kPa]
B450C	450000	540000

Geometria profilo terreno a monte del muro

Simbologia adottata

(Sistema di riferimento con origine in testa al muro, ascissa X positiva verso monte, ordinata Y positiva verso l'alto)

n°	numero ordine del punto
X	ascissa del punto espressa in [m]
Y	ordinata del punto espressa in [m]
A	inclinazione del tratto espressa in [°]

n°	X [m]	Y [m]	A [°]
1	0.03	-0.30	0.000
2	15.00	-0.30	0.000

Inclinazione terreno a valle del muro rispetto all'orizzontale 0.000 [°]

Falda

Simbologia adottata

(Sistema di riferimento con origine in testa al muro, ascissa X positiva verso monte, ordinata Y positiva verso l'alto)

n°	numero ordine del punto
X	ascissa del punto espressa in [m]
Y	ordinata del punto espressa in [m]
A	inclinazione del tratto espressa in [°]

n°	X [m]	Y [m]	A [°]
1	-5.00	-12.50	0.000
2	-0.40	-12.50	0.000
3	10.00	-12.50	0.000
4	15.00	-12.50	0.000

Geometria muro

Geometria paramento e fondazione

Paramento

Materiale	C32/40	
Altezza paramento	7.55	[m]
Altezza paramento libero	7.55	[m]
Spessore in sommità	0.40	[m]
Spessore all'attacco con la fondazione	1.16	[m]
Inclinazione paramento esterno	0.00	[°]
Inclinazione paramento interno	5.71	[°]

Fondazione

Materiale	C25/30	
Lunghezza mensola di valle	0.50	[m]
Lunghezza mensola di monte	4.85	[m]
Lunghezza totale	6.51	[m]
Inclinazione piano di posa	0.00	[°]
Spessore	1.10	[m]
Spessore magrone	0.20	[m]

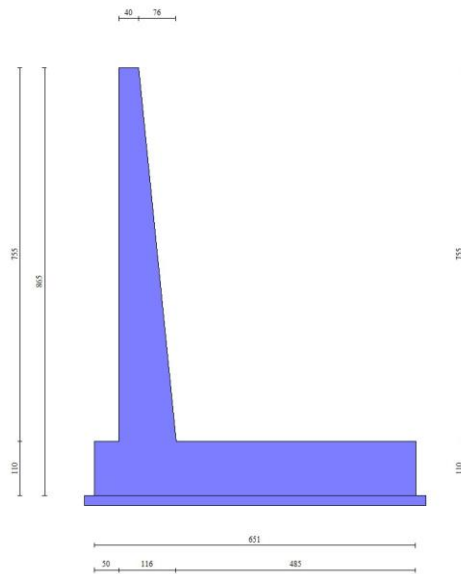


Fig. 1 - Sezione quotata del muro

Descrizione terreni

Parametri di resistenza

Simbologia adottata

n°	Indice del terreno
Descr	Descrizione terreno
γ	Peso di volume del terreno espresso in [kN/mc]
γ_s	Peso di volume saturo del terreno espresso in [kN/mc]
ϕ	Angolo d'attrito interno espresso in [°]
δ	Angolo d'attrito terra-muro espresso in [°]
c	Coesione espressa in [kPa]
c_a	Adesione terra-muro espressa in [kPa]

Per calcolo portanza con il metodo di Bustamante-Doix

Cesp	Coeff. di espansione laterale (solo per il metodo di Bustamante-Doix)
τ_l	Tensione tangenziale limite, espressa in [kPa]

n°	Descr	γ	γ_{sat}	ϕ	δ	c	ca	Cesp	τ_l
		[kN/mc]	[kN/mc]	[°]	[°]	[kPa]	[kPa]		[kPa]
1	Rilevato ferroviario	20.0000	20.0000	38.000	0.000	0	0		
2	Ls(mS)	19.0000	19.0000	26.000	16.670	0	0		
3	SL/Cal	19.0000	19.0000	30.000	20.000	0	0		

Stratigrafia

Simbologia adottata

n°	Indice dello strato
H	Spessore dello strato espresso in [m]
α	Inclinazione espressa in [°]
Terreno	Terreno dello strato
Kwn, Kwt	Costante di Winkler normale e tangenziale alla superficie espressa in Kg/cm ² /cm

Per calcolo pali (solo se presenti)

Kw	Costante di Winkler orizzontale espressa in Kg/cm ² /cm
Ks	Coefficiente di spinta
Cesp	Coefficiente di espansione laterale (per tutti i metodi tranne il metodo di Bustamante-Doix)

Per calcolo della spinta con coeff. di spinta definiti (usati solo se attiva l'opzione 'Usa coeff. di spinta da strato')

Kststa, Kstsis	Coeff. di spinta statico e sismico
----------------	------------------------------------

n°	H	α	Terreno	Kwn	Kwt	Kw	Ks	Cesp	Kststa	Kstsis
	[m]	[°]		[Kg/cm ²]	[Kg/cm ²]	[Kg/cm ²]				
1	7.55	0.000	Rilevato ferroviario	0.000	0.000	0.000	0.000	1.000	0.000	0.000
2	1.10	0.000	Ls(mS)	0.000	0.000	0.000	0.000	1.000	0.000	0.000
3	10.00	0.000	SL/Cal	0.000	0.000	0.000	0.000	1.000	0.000	0.000

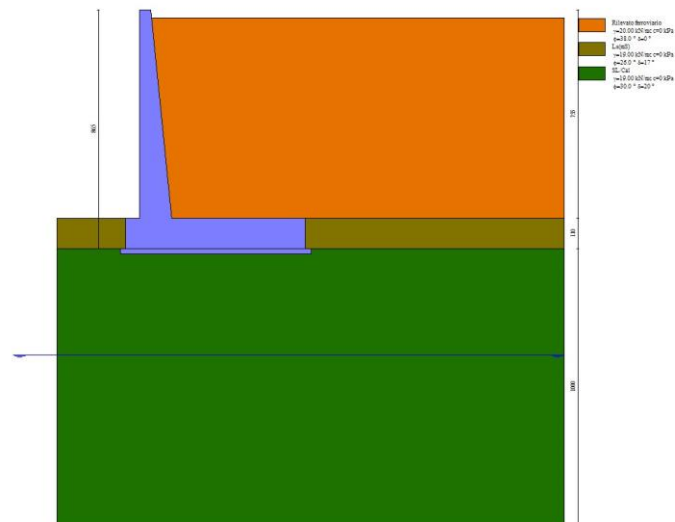


Fig. 2 - Stratigrafia

Condizioni di carico

Simbologia adottata

Carichi verticali positivi verso il basso.

Carichi orizzontali positivi verso sinistra.

Momento positivo senso antiorario.

X	Ascissa del punto di applicazione del carico concentrato espressa in [m]
F _x	Componente orizzontale del carico concentrato espressa in [kN]
F _y	Componente verticale del carico concentrato espressa in [kN]
M	Momento espresso in [kNm]
X _i	Ascissa del punto iniziale del carico ripartito espressa in [m]
X _r	Ascissa del punto finale del carico ripartito espressa in [m]
Q _i	Intensità del carico per $x=X_i$ espressa in [kN]
Q _r	Intensità del carico per $x=X_r$ espressa in [kN]

Condizione n° 1 (ACCIDENTALE) - VARIABILE TF

Coeff. di combinazione $\Psi_0=0.80 - \Psi_1=0.50 - \Psi_2=0.00$

Carichi sul terreno

n°	Tipo	X [m]	Fx [kN]	Fy [kN]	M [kNm]	Xi [m]	Xf [m]	Qi [kN]	Qf [kN]
1	Distribuito					5.60	8.60	52.0800	52.0800

Normativa

Normativa usata: **Norme Tecniche sulle Costruzioni 2018 (D.M. 17.01.2018) + Circolare C.S.LL.PP. 21/01/2019 n.7**

Coeff. parziali per le azioni o per l'effetto delle azioni

Carichi	Effetto		Combinazioni statiche					Combinazioni sismiche		
			HYD	UPL	EQU	A1	A2	EQU	A1	A2
Permanenti strutturali	Favorevoli	$\gamma_{G1, fav}$	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Permanenti strutturali	Sfavorevoli	$\gamma_{G1, sfav}$	1.00	1.10	1.30	1.35	1.00	1.00	1.00	1.00
Permanenti non strutturali	Favorevoli	$\gamma_{G2, fav}$	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00
Permanenti non strutturali	Sfavorevoli	$\gamma_{G2, sfav}$	1.00	1.50	1.50	1.50	1.30	1.00	1.00	1.00
Variabili	Favorevoli	$\gamma_{Q, fav}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Variabili	Sfavorevoli	$\gamma_{Q, sfav}$	1.00	1.50	1.50	1.50	1.30	1.00	1.00	1.00
Variabili da traffico	Favorevoli	$\gamma_{QT, fav}$	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Variabili da traffico	Sfavorevoli	$\gamma_{QT, sfav}$	1.00	1.50	1.45	1.45	1.25	1.00	1.00	1.00

Coeff. parziali per i parametri geotecnici del terreno

Parametro		Combinazioni statiche		Combinazioni sismiche	
		M1	M2	M1	M2
Tangente dell'angolo di attrito	$\gamma_{\tan(\phi)}$	1.00	1.25	1.00	1.00
Coesione efficace	γ_c	1.00	1.25	1.00	1.00
Resistenza non drenata	γ_{cu}	1.00	1.40	1.00	1.00
Peso nell'unità di volume	γ_r	1.00	1.00	1.00	1.00

Coeff. parziali γ_R per le verifiche agli stati limite ultimi STR e GEO

Verifica	Combinazioni statiche			Combinazioni sismiche		
	R1	R2	R3	R1	R2	R3
Capacità portante	--	--	1.40	--	--	1.20
Scorrimento	--	--	1.10	--	--	1.00
Resistenza terreno a valle	--	--	1.40	--	--	1.20
Ribaltamento	--	--	1.15	--	--	1.00
Stabilità fronte di scavo	--	1.10	--	--	1.20	--

Descrizione combinazioni di carico

Con riferimento alle azioni elementari prima determinate, si sono considerate le seguenti combinazioni di carico:

- Combinazione fondamentale, impiegata per gli stati limite ultimi (SLU):

$$\gamma_{G1} G_1 + \gamma_{G2} G_2 + \gamma_{Q1} Q_{k1} + \gamma_{Q2} Q_{k2} + \gamma_{Q3} Q_{k3} + \dots$$

- Combinazione caratteristica, cosiddetta rara, impiegata per gli stati limite di esercizio (SLE) irreversibili:

$$G_1 + G_2 + Q_{k1} + \Psi_{0,2} Q_{k2} + \Psi_{0,3} Q_{k3} + \dots$$

- Combinazione frequente, impiegata per gli stati limite di esercizio (SLE) reversibili:

$$G_1 + G_2 + \Psi_{1,1} Q_{k1} + \Psi_{2,2} Q_{k2} + \Psi_{2,3} Q_{k3} + \dots$$

- Combinazione quasi permanente, impiegata per gli effetti di lungo periodo:

$$G_1 + G_2 + \Psi_{2,1} Q_{k1} + \Psi_{2,2} Q_{k2} + \Psi_{2,3} Q_{k3} + \dots$$

- Combinazione sismica, impiegata per gli stati limite ultimi connessi all'azione sismica E:

$$E + G_1 + G_2 + \Psi_{2,1} Q_{k1} + \Psi_{2,2} Q_{k2} + \Psi_{2,3} Q_{k3} + \dots$$

I valori dei coeff. $\Psi_{0,j}$, $\Psi_{1,j}$, $\Psi_{2,j}$ sono definiti nelle singole condizioni variabili. I valori dei coeff. γ_G e γ_Q , sono definiti nella tabella normativa.

In particolare si sono considerate le seguenti combinazioni:

Simbologia adottata

γ	Coefficiente di partecipazione della condizione
Ψ	Coefficiente di combinazione della condizione

Combinazione n° 1 - STR (A1-M1-R3)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.35	--	Sfavorevole
ACCIDENTALE	1.45	1.00	Sfavorevole

Combinazione n° 2 - STR (A1-M1-R3)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.35	--	Sfavorevole
ACCIDENTALE	1.45	0.80	Sfavorevole

Combinazione n° 3 - STR (A1-M1-R3) H + V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 4 - STR (A1-M1-R3) H - V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 5 - GEO (A2-M2-R2)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole
ACCIDENTALE	1.25	1.00	Sfavorevole

Combinazione n° 6 - GEO (A2-M2-R2)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole
ACCIDENTALE	1.25	0.80	Sfavorevole

Combinazione n° 7 - GEO (A2-M2-R2) H + V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 8 - GEO (A2-M2-R2) H - V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 9 - EQU (A1-M1-R3)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.30	--	Sfavorevole
ACCIDENTALE	1.45	1.00	Sfavorevole

Combinazione n° 10 - EQU (A1-M1-R3)

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.30	--	Sfavorevole
ACCIDENTALE	1.45	0.80	Sfavorevole

Combinazione n° 11 - EQU (A1-M1-R3) H + V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 12 - EQU (A1-M1-R3) H - V

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Favorevole
Peso terrapieno	1.00	--	Favorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 13 - SLER

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole
ACCIDENTALE	1.00	1.00	Sfavorevole

Combinazione n° 14 - SLEF

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole
ACCIDENTALE	1.00	0.50	Sfavorevole

Combinazione n° 15 - SLEQ

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole

Combinazione n° 16 - SLER

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole
ACCIDENTALE	1.00	0.80	Sfavorevole

Combinazione n° 17 - SLEF

Condizione	γ	Ψ	Effetto
Peso muro	1.00	--	Sfavorevole
Peso terrapieno	1.00	--	Sfavorevole
Spinta terreno	1.00	--	Sfavorevole

Dati sismici

Comune

Brindisi

Sottovia SP42 - Relazione di calcolo Muri di appoggio

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IA7K	00	D10CL	SL0100002	A	40 di 159

Provincia	Brindisi
Regione	Puglia
Latitudine	40.636175
Longitudine	17.938991
Indice punti di interpolazione	33701 - 33700 - 33922 - 33923
Vita nominale	75 anni
Classe d'uso	II
Tipo costruzione	Normali affollamenti
Vita di riferimento	75 anni

	Simbolo	U.M.	SLU	SLE
Accelerazione al suolo	a_g	[m/s ²]	0.489	0.217
Accelerazione al suolo	a_g/g	[%]	0.050	0.022
Massimo fattore amplificazione spettro orizzontale	F0		2.567	2.322
Periodo inizio tratto spettro a velocità costante	Tc*		0.484	0.255
Tipo di sottosuolo - Coefficiente stratigrafico	Ss		C	1.500
Categoria topografica - Coefficiente amplificazione topografica	St		T1	1.000

Stato limite ...	Coeff. di riduzione β_m	kh	kv
Ultimo	0.380	2.839	1.419
Ultimo - Ribaltamento	0.570	4.258	2.129
Esercizio	0.470	1.557	0.778

Forma diagramma incremento sismico **Stessa forma del diagramma statico**

10.2 RISULTATI PER COMBINAZIONE

Spinta e forze

Simbologia adottata

Ic	Indice della combinazione
A	Tipo azione
I	Inclinazione della spinta, espressa in [°]
V	Valore dell'azione, espressa in [kN]
Cx, Cy	Componente in direzione X ed Y dell'azione, espressa in [kN]
Px, Py	Coordinata X ed Y del punto di applicazione dell'azione, espressa in [m]

Ic	A	V	I	Cx	Cy	Px	Py
		[kN]	[°]	[kN]	[kN]	[m]	[m]
1	Spinta statica	349.37	4.93	348.08	30.00	5.61	-6.01
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
2	Spinta statica	328.73	5.01	327.47	28.68	5.61	-6.03
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
3	Spinta statica	182.67	5.33	181.88	16.98	5.61	-6.09
	Incremento di spinta sismica		13.25	13.19	1.23	5.61	-5.87
	Peso/Inerzia muro			9.07	319.36/4.53	1.30	-6.43
	Peso/Inerzia terrapieno			21.46	755.82/10.73	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
4	Spinta statica	182.67	5.33	181.88	16.98	5.61	-6.09
	Incremento di spinta sismica		8.07	8.04	0.75	5.61	-5.87
	Peso/Inerzia muro			9.07	319.36/-4.53	1.30	-6.43
	Peso/Inerzia terrapieno			21.46	755.82/-10.73	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
13	Spinta statica	253.52	4.95	252.57	21.89	5.61	-6.02
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
14	Spinta statica	217.96	5.15	217.08	19.55	5.61	-6.07
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
15	Spinta statica	182.67	5.35	181.87	17.02	5.61	-6.09
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
16	Spinta statica	239.29	5.03	238.36	20.97	5.61	-6.04
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			
17	Spinta statica	182.67	5.35	181.87	17.02	5.61	-6.09
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			

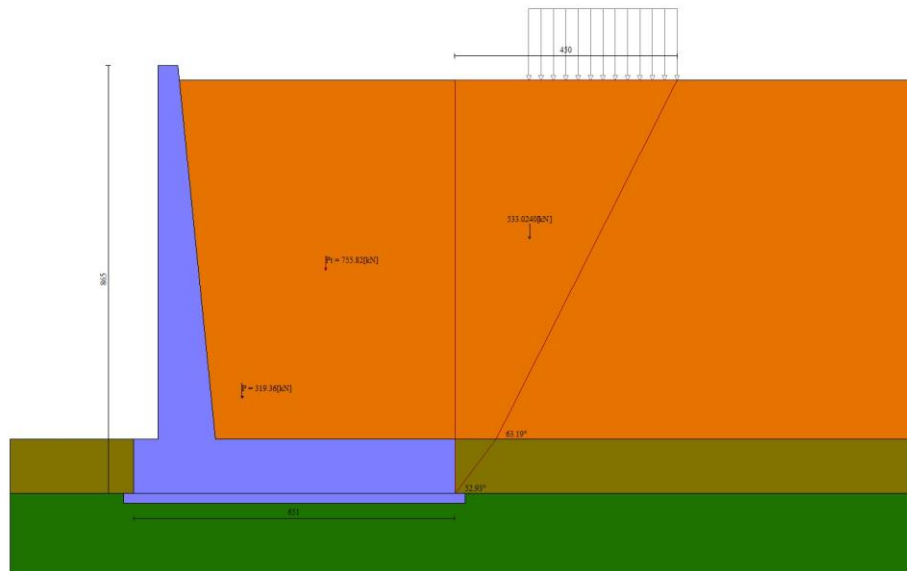


Fig. 3 - Cuneo di spinta (combinazione statica) (Combinazione n° 1)

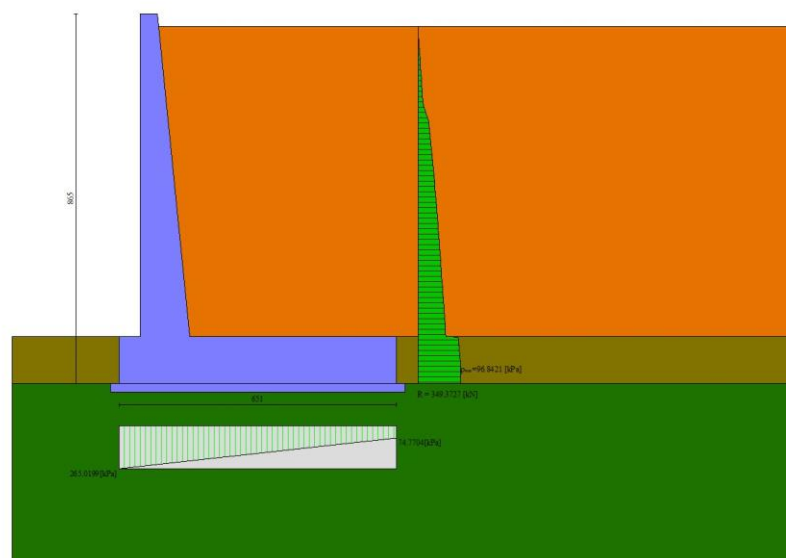


Fig. 4 - Diagramma delle pressioni (combinazione statica) (Combinazione n° 1)

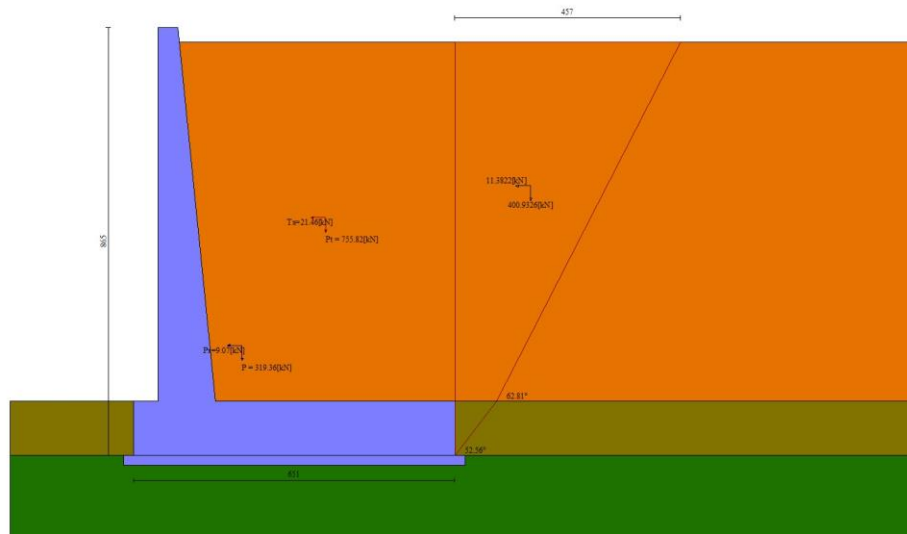


Fig. 5 - Cuneo di spinta (combinazione sismica) (Combinazione n° 3)

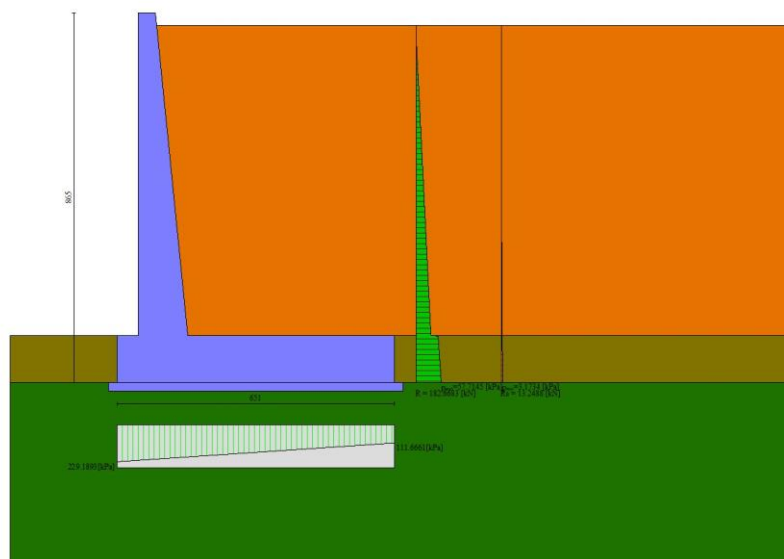


Fig. 6 - Diagramma delle pressioni (combinazione sismica) (Combinazione n° 3)

Verifiche geotecniche

Quadro riassuntivo coeff. di sicurezza calcolati

Simbologia adottata

Cmb	Indice/Tipo combinazione
S	Sisma (H: componente orizzontale, V: componente verticale)
FS _{SCO}	Coeff. di sicurezza allo scorrimento
FS _{RIB}	Coeff. di sicurezza al ribaltamento
FS _{QLIM}	Coeff. di sicurezza a carico limite
FS _{STAB}	Coeff. di sicurezza a stabilità globale
FS _{HYD}	Coeff. di sicurezza a sifonamento
FS _{UPL}	Coeff. di sicurezza a sollevamento

Cmb	Sismica	FS _{SCO}	FS _{RIB}	FS _{QLIM}	FS _{STAB}	FS _{HYD}	FS _{UPL}
1 - STR (A1-M1-R3)		1.198		1.568			
2 - STR (A1-M1-R3)		1.272		1.712			
3 - STR (A1-M1-R3)	H + V	1.854		2.576			
4 - STR (A1-M1-R3)	H - V	1.846		2.637			
5 - GEO (A2-M2-R2)					1.387		
6 - GEO (A2-M2-R2)					1.414		
7 - GEO (A2-M2-R2)	H + V				1.806		
8 - GEO (A2-M2-R2)	H - V				1.803		
9 - EQU (A1-M1-R3)			4.284				
10 - EQU (A1-M1-R3)			4.589				
11 - EQU (A1-M1-R3)	H + V		5.450				
12 - EQU (A1-M1-R3)	H - V		4.940				

Verifica a scorrimento fondazione

Simbologia adottata

n°	Indice combinazione
R _{sa}	Resistenza allo scorrimento per attrito, espresso in [kN]
R _{pt}	Resistenza passiva terreno antistante, espresso in [kN]
R _{ps}	Resistenza passiva sperone, espresso in [kN]
R _p	Resistenza a carichi orizzontali pali (solo per fondazione mista), espresso in [kN]
R _t	Resistenza a carichi orizzontali tiranti (solo se presenti), espresso in [kN]

Sottovia SP42 - Relazione di calcolo Muri di appoggio

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IA7K	00	D10CL	SL0100002	A	45 di 159

R Resistenza allo scorrimento (somma di Rsa+Rpt+Rps+Rp), espresso in [kN]

T Carico parallelo al piano di posa, espresso in [kN]

FS Fattore di sicurezza (rapporto R/T)

n°	Rsa	Rpt	Rps	Rp	Rt	R	T	FS
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	
1 - STR (A1-M1-R3)	402.25	14.72	0.00	--	--	416.97	348.08	1.198
2 - STR (A1-M1-R3)	401.77	14.72	0.00	--	--	416.49	327.47	1.272
3 - STR (A1-M1-R3) H + V	403.51	14.72	0.00	--	--	418.23	225.59	1.854
4 - STR (A1-M1-R3) H - V	392.23	14.72	0.00	--	--	406.95	220.44	1.846

Verifica a carico limite

Simbologia adottata

n° Indice combinazione

N Carico normale totale al piano di posa, espresso in [kN]

Qu carico limite del terreno, espresso in [kN]

Qd Portanza di progetto, espresso in [kN]

FS Fattore di sicurezza (rapporto tra portanza di progetto e carico agente al piano di posa)

n°	N	Qu	Qd	FS
	[kN]	[kN]	[kN]	
1 - STR (A1-M1-R3)	1105.18	1732.95	1237.82	1.120
2 - STR (A1-M1-R3)	1103.85	1889.58	1349.70	1.223
3 - STR (A1-M1-R3) H + V	1108.64	2856.32	2380.27	2.147
4 - STR (A1-M1-R3) H - V	1077.64	2842.00	2368.33	2.198

Dettagli calcolo portanza

Simbologia adottata

n° Indece combinazione

Nc, Nq, Ny Fattori di capacità portante

ic, iq, iy Fattori di inclinazione del carico

dc, dq, dy Fattori di profondità del piano di posa

gc, gq, gy Fattori di inclinazione del profilo topografico

bc, bq, by Fattori di inclinazione del piano di posa

sc, sq, sy Fattori di forma della fondazione

pc, pq, py Fattori di riduzione per punzonamento secondo Vesic

γ fattore Fattori per tener conto dell'effetto piastra. Per fondazioni che hanno larghezza maggiore di 2 m, il terzo termine della formula trinomia $0.5B\gamma/N$, viene moltiplicato per questo

D Affondamento del piano di posa, espresso in [m]

B' Larghezza fondazione ridotta, espresso in [m]

H Altezza del cuneo di rottura, espresso in [m]

γ Peso di volume del terreno medio, espresso in [kN/mc]

ϕ Angolo di attrito del terreno medio, espresso in [°]

c Coesione del terreno medio, espresso in [kPa]

Per i coeff. che in tabella sono indicati con il simbolo '--' sono coeff. non presenti nel metodo scelto (Meyerhof).

n°	Nc Nq Ny	ic iq iy	dc dq dy	gc gq gy	bc bq by	sc sq sy	pc pq py	γ	D	B' H	γ	ϕ	c
									[m]	[m]	[kN/mc]	[°]	[kPa]
1	30.140 18.401 15.668	0.649 0.649 0.174	1.059 1.029 1.029	-- -- --	-- -- --	-- -- --	-- -- --	0.872	1.10	6.51 5.63	15.90	30.00	0
2	30.140 18.401 15.668	0.667 0.667 0.202	1.059 1.029 1.029	-- -- --	-- -- --	-- -- --	-- -- --	0.872	1.10	6.51 5.63	15.90	30.00	0
3	30.140 18.401 15.668	0.761 0.761 0.380	1.059 1.029 1.029	-- -- --	-- -- --	-- -- --	-- -- --	0.872	1.10	6.51 5.63	15.90	30.00	0
4	30.140 18.401 15.668	0.760 0.760 0.378	1.059 1.029 1.029	-- -- --	-- -- --	-- -- --	-- -- --	0.872	1.10	6.51 5.63	15.90	30.00	0

Verifica a ribaltamento

Simbologia adottata

n° Indice combinazione

Ms Momento stabilizzante, espresso in [kNm]

Mr Momento ribaltante, espresso in [kNm]

FS Fattore di sicurezza (rapporto tra momento stabilizzante e momento ribaltante)

La verifica viene eseguita rispetto allo spigolo inferiore esterno della fondazione

n°	Ms	Mr	FS
	[kNm]	[kNm]	
9 - EQU (A1-M1-R3)	3836.04	895.36	4.284
10 - EQU (A1-M1-R3)	3827.45	834.13	4.589
11 - EQU (A1-M1-R3) H + V	3846.59	705.85	5.450
12 - EQU (A1-M1-R3) H - V	3764.26	762.01	4.940

Verifica stabilità globale muro + terreno

Simbologia adottata

Ic	Indice/Tipo combinazione
C	Centro superficie di scorrimento, espresso in [m]
R	Raggio, espresso in [m]
FS	Fattore di sicurezza

Ic	C	R	FS
	[m]	[m]	
5 - GEO (A2-M2-R2)	-1.00; 0.50	11.29	1.387
6 - GEO (A2-M2-R2)	-1.00; 0.50	11.29	1.414
7 - GEO (A2-M2-R2) H + V	-1.50; 3.50	14.08	1.806
8 - GEO (A2-M2-R2) H - V	-1.50; 3.50	14.08	1.803

Dettagli strisce verifiche stabilità

Simbologia adottata

Le ascisse X sono considerate positive verso monte

Le ordinate Y sono considerate positive verso l'alto

Origine in testa al muro (spigolo contro terra)

W	peso della striscia espresso in [kN]
Qy	carico sulla striscia espresso in [kN]
α	angolo fra la base della striscia e l'orizzontale espresso in [°] (positivo antiorario)
ϕ	angolo d'attrito del terreno lungo la base della striscia
c	coesione del terreno lungo la base della striscia espressa in [kPa]
b	larghezza della striscia espressa in [m]
u	pressione neutra lungo la base della striscia espressa in [kPa]
Tx; Ty	Resistenza al taglio fornita dai tiranti in direzione X ed Y espressa in [kPa]

Combinazione n° 5 - GEO (A2-M2-R2)

n°	W	Qy	b	α	ϕ	c	u	Tx; Ty
	[kN]	[kN]	[m]	[°]	[°]	[kPa]	[kPa]	[kN]
1	25.68	38.53	10.28 - 0.77	77.050	32.007	0	0.0	
2	63.49	50.03	0.77	64.032	32.007	0	0.0	
3	84.39	50.03	0.77	56.081	32.007	0	0.0	
4	100.11	50.03	0.77	49.579	32.007	0	0.0	
5	112.61	6.69	0.77	43.867	21.315	0	0.0	
6	122.53	0.00	0.77	38.665	21.315	0	0.0	
7	135.32	0.00	0.77	33.822	24.791	0	0.0	
8	142.34	0.00	0.77	29.241	24.791	0	0.0	
9	148.08	0.00	0.77	24.858	24.791	0	0.0	
10	152.80	0.00	0.77	20.626	24.791	0	0.0	
11	156.57	0.00	0.77	16.510	24.791	0	0.0	

n°	W [kN]	Qy [kN]	b [m]	α [°]	φ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
12	159.47	0.00	0.77	12.480	24.791	0	0.0	
13	166.51	0.00	0.77	8.512	24.791	0	0.0	
14	133.76	0.00	0.77	4.585	24.791	0	0.0	
15	49.81	0.00	0.77	0.680	24.791	0	0.0	
16	47.02	0.00	0.77	-3.222	24.791	0	0.0	
17	46.00	0.00	0.77	-7.140	24.791	0	0.0	
18	44.20	0.00	0.77	-11.091	24.791	0	0.0	
19	41.59	0.00	0.77	-15.097	24.791	0	0.0	
20	38.12	0.00	0.77	-19.180	24.791	0	0.0	
21	33.75	0.00	0.77	-23.368	24.791	0	0.0	
22	28.38	0.00	0.77	-27.693	24.791	0	0.0	
23	21.90	0.00	0.77	-32.199	24.791	0	0.0	
24	14.15	0.00	0.77	-36.942	21.315	0	0.0	
25	4.88	0.00	-8.93 - 0.77	-41.515	21.315	0	0.0	

Combinazione n° 6 - GEO (A2-M2-R2)

n°	W [kN]	Qy [kN]	b [m]	α [°]	φ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
1	25.68	30.83	10.28 - 0.77	77.050	32.007	0	0.0	
2	63.49	40.02	0.77	64.032	32.007	0	0.0	
3	84.39	40.02	0.77	56.081	32.007	0	0.0	
4	100.11	40.02	0.77	49.579	32.007	0	0.0	
5	112.61	5.35	0.77	43.867	21.315	0	0.0	
6	122.53	0.00	0.77	38.665	21.315	0	0.0	
7	135.32	0.00	0.77	33.822	24.791	0	0.0	
8	142.34	0.00	0.77	29.241	24.791	0	0.0	
9	148.08	0.00	0.77	24.858	24.791	0	0.0	
10	152.80	0.00	0.77	20.626	24.791	0	0.0	
11	156.57	0.00	0.77	16.510	24.791	0	0.0	
12	159.47	0.00	0.77	12.480	24.791	0	0.0	
13	166.51	0.00	0.77	8.512	24.791	0	0.0	
14	133.76	0.00	0.77	4.585	24.791	0	0.0	
15	49.81	0.00	0.77	0.680	24.791	0	0.0	
16	47.02	0.00	0.77	-3.222	24.791	0	0.0	
17	46.00	0.00	0.77	-7.140	24.791	0	0.0	
18	44.20	0.00	0.77	-11.091	24.791	0	0.0	
19	41.59	0.00	0.77	-15.097	24.791	0	0.0	
20	38.12	0.00	0.77	-19.180	24.791	0	0.0	
21	33.75	0.00	0.77	-23.368	24.791	0	0.0	
22	28.38	0.00	0.77	-27.693	24.791	0	0.0	
23	21.90	0.00	0.77	-32.199	24.791	0	0.0	
24	14.15	0.00	0.77	-36.942	21.315	0	0.0	
25	4.88	0.00	-8.93 - 0.77	-41.515	21.315	0	0.0	

Combinazione n° 7 - GEO (A2-M2-R2) H + V

n°	W [kN]	Qy [kN]	b [m]	α [°]	φ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
1	20.82	0.00	12.07 - 0.89	69.047	38.000	0	0.0	
2	55.74	0.00	0.89	60.501	38.000	0	0.0	
3	80.70	0.00	0.89	53.739	38.000	0	0.0	
4	100.41	0.00	0.89	47.954	38.000	0	0.0	
5	116.62	0.00	0.89	42.766	38.000	0	0.0	
6	130.13	0.00	0.89	37.987	26.000	0	0.0	
7	141.12	0.00	0.89	33.503	26.000	0	0.0	

n°	W [kN]	Qy [kN]	b [m]	α [°]	φ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
8	154.83	0.00	0.89	29.243	30.000	0	0.0	
9	163.59	0.00	0.89	25.154	30.000	0	0.0	
10	170.08	0.00	0.89	21.199	30.000	0	0.0	
11	175.39	0.00	0.89	17.348	30.000	0	0.0	
12	179.58	0.00	0.89	13.576	30.000	0	0.0	
13	184.63	0.00	0.89	9.864	30.000	0	0.0	
14	166.67	0.00	0.89	6.193	30.000	0	0.0	
15	54.00	0.00	0.89	2.547	30.000	0	0.0	
16	51.33	0.00	0.89	-1.088	30.000	0	0.0	
17	50.56	0.00	0.89	-4.727	30.000	0	0.0	
18	48.81	0.00	0.89	-8.386	30.000	0	0.0	
19	46.08	0.00	0.89	-12.079	30.000	0	0.0	
20	42.31	0.00	0.89	-15.825	30.000	0	0.0	
21	37.46	0.00	0.89	-19.642	30.000	0	0.0	
22	31.45	0.00	0.89	-23.552	30.000	0	0.0	
23	24.19	0.00	0.89	-27.583	30.000	0	0.0	
24	15.55	0.00	0.89	-31.769	26.000	0	0.0	
25	5.32	0.00	-10.25 - 0.89	-35.625	26.000	0	0.0	

Combinazione n° 8 - GEO (A2-M2-R2) H - V

n°	W [kN]	Qy [kN]	b [m]	α [°]	φ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
1	20.82	0.00	12.07 - 0.89	69.047	38.000	0	0.0	
2	55.74	0.00	0.89	60.501	38.000	0	0.0	
3	80.70	0.00	0.89	53.739	38.000	0	0.0	
4	100.41	0.00	0.89	47.954	38.000	0	0.0	
5	116.62	0.00	0.89	42.766	38.000	0	0.0	
6	130.13	0.00	0.89	37.987	26.000	0	0.0	
7	141.12	0.00	0.89	33.503	26.000	0	0.0	
8	154.83	0.00	0.89	29.243	30.000	0	0.0	
9	163.59	0.00	0.89	25.154	30.000	0	0.0	
10	170.08	0.00	0.89	21.199	30.000	0	0.0	
11	175.39	0.00	0.89	17.348	30.000	0	0.0	
12	179.58	0.00	0.89	13.576	30.000	0	0.0	
13	184.63	0.00	0.89	9.864	30.000	0	0.0	
14	166.67	0.00	0.89	6.193	30.000	0	0.0	
15	54.00	0.00	0.89	2.547	30.000	0	0.0	
16	51.33	0.00	0.89	-1.088	30.000	0	0.0	
17	50.56	0.00	0.89	-4.727	30.000	0	0.0	
18	48.81	0.00	0.89	-8.386	30.000	0	0.0	
19	46.08	0.00	0.89	-12.079	30.000	0	0.0	
20	42.31	0.00	0.89	-15.825	30.000	0	0.0	
21	37.46	0.00	0.89	-19.642	30.000	0	0.0	
22	31.45	0.00	0.89	-23.552	30.000	0	0.0	
23	24.19	0.00	0.89	-27.583	30.000	0	0.0	
24	15.55	0.00	0.89	-31.769	26.000	0	0.0	
25	5.32	0.00	-10.25 - 0.89	-35.625	26.000	0	0.0	

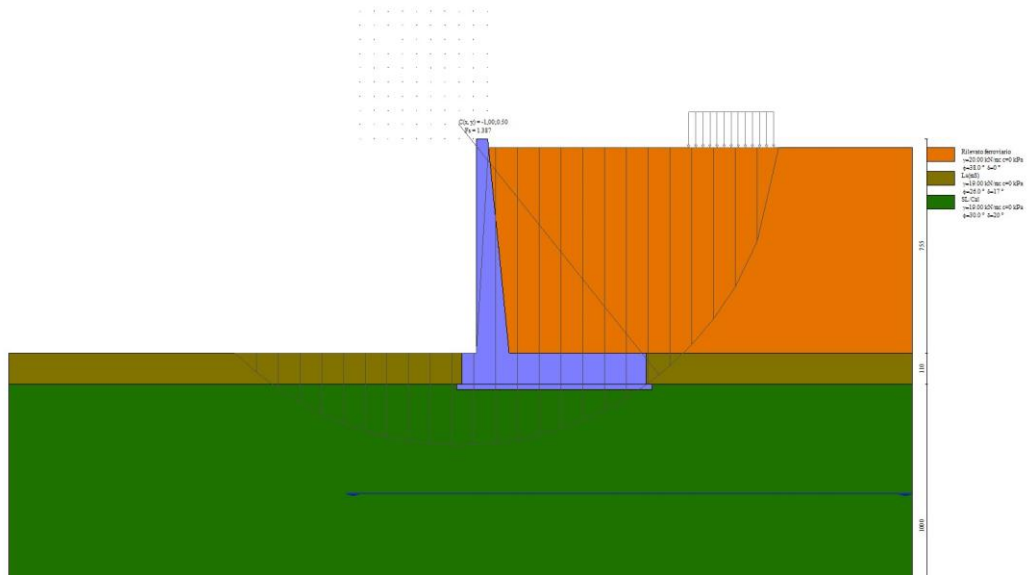


Fig. 7 - Stabilità fronte di scavo - Cerchio critico (Combinazione n° 5)

Sollecitazioni

Elementi calcolati a trave

Simbologia adottata

- N Sforzo normale, espresso in [kN]. Positivo se di compressione.
- T Taglio, espresso in [kN]. Positivo se diretto da monte verso valle
- M Momento, espresso in [kNm]. Positivo se tende le fibre contro terra (a monte)

Paramento

Combinazione n° 1 - STR (A1-M1-R3)

n°	X [m]	N [kN]	T [kN]	M [kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.04	0.04

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
6	-0.50	5.17	0.14	0.07
7	-0.60	6.28	0.33	0.12
8	-0.70	7.41	0.58	0.20
9	-0.79	8.57	0.91	0.32
10	-0.89	9.75	1.31	0.47
11	-0.99	10.95	1.78	0.68
12	-1.09	12.18	2.33	0.94
13	-1.19	13.43	2.95	1.26
14	-1.29	14.71	3.64	1.66
15	-1.39	16.01	4.41	2.13
16	-1.49	17.34	5.24	2.69
17	-1.59	18.68	6.16	3.35
18	-1.69	20.06	7.14	4.11
19	-1.79	21.46	8.20	4.97
20	-1.89	22.88	9.33	5.95
21	-1.99	24.32	10.53	7.05
22	-2.09	25.79	11.81	8.29
23	-2.19	27.29	13.16	9.66
24	-2.28	28.81	14.58	11.18
25	-2.38	30.35	16.08	12.84
26	-2.48	31.92	17.65	14.67
27	-2.58	33.51	19.29	16.67
28	-2.68	35.12	21.00	18.84
29	-2.78	36.76	22.79	21.19
30	-2.88	38.43	24.65	23.74
31	-2.98	40.12	26.59	26.48
32	-3.08	41.83	28.59	29.42
33	-3.18	43.56	30.67	32.58
34	-3.28	45.32	32.83	35.95
35	-3.38	47.11	35.05	39.55
36	-3.48	48.92	37.35	43.38
37	-3.58	50.75	39.72	47.46
38	-3.68	52.61	42.17	51.78
39	-3.78	54.49	44.69	56.36
40	-3.87	56.40	47.28	61.21
41	-3.97	58.33	49.94	66.32
42	-4.07	60.28	52.68	71.71
43	-4.17	62.26	55.49	77.39
44	-4.27	64.26	58.37	83.36
45	-4.37	66.29	61.33	89.63
46	-4.47	68.34	64.36	96.20
47	-4.57	70.42	67.46	103.09
48	-4.67	72.51	70.64	110.31
49	-4.77	74.64	73.89	117.85
50	-4.87	76.79	77.21	125.73
51	-4.97	78.96	80.60	133.96
52	-5.07	81.15	84.07	142.53
53	-5.17	83.37	87.61	151.47
54	-5.27	85.62	91.22	160.77
55	-5.36	87.89	94.91	170.45
56	-5.46	90.18	98.67	180.50
57	-5.56	92.50	102.50	190.95
58	-5.66	94.84	106.41	201.79
59	-5.76	97.20	110.39	213.04
60	-5.86	99.59	114.44	224.69
61	-5.96	102.01	118.57	236.77
62	-6.06	104.45	122.76	249.27
63	-6.16	106.91	127.03	262.20
64	-6.26	109.40	131.38	275.57
65	-6.36	111.91	135.80	289.39
66	-6.46	114.44	140.29	303.66
67	-6.56	117.00	144.85	318.40

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
68	-6.66	119.58	149.49	333.61
69	-6.76	122.19	154.20	349.29
70	-6.85	124.82	158.98	365.46
71	-6.95	127.48	163.83	382.12
72	-7.05	130.16	168.76	399.28
73	-7.15	132.86	173.76	416.95
74	-7.25	135.59	178.84	435.13
75	-7.35	138.34	183.98	453.83
76	-7.45	141.12	189.21	473.06
77	-7.55	143.92	194.50	492.83

Combinazione n° 2 - STR (A1-M1-R3)

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.04	0.04
6	-0.50	5.17	0.14	0.07
7	-0.60	6.28	0.33	0.12
8	-0.70	7.41	0.58	0.20
9	-0.79	8.57	0.91	0.32
10	-0.89	9.75	1.31	0.47
11	-0.99	10.95	1.78	0.68
12	-1.09	12.18	2.33	0.94
13	-1.19	13.43	2.95	1.26
14	-1.29	14.71	3.64	1.66
15	-1.39	16.01	4.41	2.13
16	-1.49	17.34	5.24	2.69
17	-1.59	18.68	6.16	3.35
18	-1.69	20.06	7.14	4.11
19	-1.79	21.46	8.20	4.97
20	-1.89	22.88	9.33	5.95
21	-1.99	24.32	10.53	7.05
22	-2.09	25.79	11.81	8.29
23	-2.19	27.29	13.16	9.66
24	-2.28	28.81	14.58	11.18
25	-2.38	30.35	16.08	12.84
26	-2.48	31.92	17.65	14.67
27	-2.58	33.51	19.29	16.67
28	-2.68	35.12	21.00	18.84
29	-2.78	36.76	22.79	21.19
30	-2.88	38.43	24.65	23.74
31	-2.98	40.12	26.59	26.48
32	-3.08	41.83	28.59	29.42
33	-3.18	43.56	30.67	32.58
34	-3.28	45.32	32.83	35.95
35	-3.38	47.11	35.05	39.55
36	-3.48	48.92	37.35	43.38
37	-3.58	50.75	39.72	47.46
38	-3.68	52.61	42.17	51.78
39	-3.78	54.49	44.69	56.36
40	-3.87	56.40	47.28	61.21
41	-3.97	58.33	49.94	66.32
42	-4.07	60.28	52.68	71.71
43	-4.17	62.26	55.49	77.39
44	-4.27	64.26	58.37	83.36

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
45	-4.37	66.29	61.33	89.63
46	-4.47	68.34	64.36	96.20
47	-4.57	70.42	67.46	103.09
48	-4.67	72.51	70.64	110.31
49	-4.77	74.64	73.89	117.85
50	-4.87	76.79	77.21	125.73
51	-4.97	78.96	80.60	133.96
52	-5.07	81.15	84.07	142.53
53	-5.17	83.37	87.61	151.47
54	-5.27	85.62	91.22	160.77
55	-5.36	87.89	94.91	170.45
56	-5.46	90.18	98.67	180.50
57	-5.56	92.50	102.50	190.95
58	-5.66	94.84	106.41	201.79
59	-5.76	97.20	110.39	213.04
60	-5.86	99.59	114.44	224.69
61	-5.96	102.01	118.57	236.77
62	-6.06	104.45	122.76	249.27
63	-6.16	106.91	127.03	262.20
64	-6.26	109.40	131.38	275.57
65	-6.36	111.91	135.80	289.39
66	-6.46	114.44	140.29	303.66
67	-6.56	117.00	144.85	318.40
68	-6.66	119.58	149.49	333.61
69	-6.76	122.19	154.20	349.29
70	-6.85	124.82	158.98	365.46
71	-6.95	127.48	163.83	382.12
72	-7.05	130.16	168.76	399.28
73	-7.15	132.86	173.76	416.95
74	-7.25	135.59	178.84	435.13
75	-7.35	138.34	183.98	453.83
76	-7.45	141.12	189.21	473.06
77	-7.55	143.92	194.50	492.83

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.03	0.00
3	-0.20	2.00	0.06	0.02
4	-0.30	3.03	0.09	0.03
5	-0.40	4.09	0.14	0.06
6	-0.50	5.17	0.26	0.11
7	-0.60	6.28	0.44	0.17
8	-0.70	7.41	0.67	0.26
9	-0.79	8.57	0.96	0.38
10	-0.89	9.75	1.31	0.54
11	-0.99	10.95	1.72	0.74
12	-1.09	12.18	2.19	0.99
13	-1.19	13.43	2.71	1.29
14	-1.29	14.71	3.30	1.66
15	-1.39	16.01	3.94	2.10
16	-1.49	17.34	4.64	2.61
17	-1.59	18.68	5.40	3.19
18	-1.69	20.06	6.21	3.87
19	-1.79	21.46	7.09	4.63
20	-1.89	22.88	8.02	5.49
21	-1.99	24.32	9.02	6.45

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
22	-2.09	25.79	10.07	7.52
23	-2.19	27.29	11.18	8.71
24	-2.28	28.81	12.35	10.02
25	-2.38	30.35	13.57	11.45
26	-2.48	31.92	14.86	13.02
27	-2.58	33.51	16.20	14.72
28	-2.68	35.12	17.60	16.57
29	-2.78	36.76	19.06	18.57
30	-2.88	38.43	20.58	20.73
31	-2.98	40.12	22.16	23.04
32	-3.08	41.83	23.79	25.53
33	-3.18	43.56	25.49	28.19
34	-3.28	45.32	27.24	31.03
35	-3.38	47.11	29.05	34.05
36	-3.48	48.92	30.92	37.27
37	-3.58	50.75	32.84	40.68
38	-3.68	52.61	34.83	44.30
39	-3.78	54.49	36.87	48.13
40	-3.87	56.40	38.98	52.17
41	-3.97	58.33	41.14	56.43
42	-4.07	60.28	43.36	60.93
43	-4.17	62.26	45.64	65.65
44	-4.27	64.26	47.97	70.61
45	-4.37	66.29	50.37	75.82
46	-4.47	68.34	52.82	81.28
47	-4.57	70.42	55.33	87.00
48	-4.67	72.51	57.90	92.98
49	-4.77	74.64	60.53	99.22
50	-4.87	76.79	63.22	105.75
51	-4.97	78.96	65.96	112.55
52	-5.07	81.15	68.77	119.64
53	-5.17	83.37	71.63	127.02
54	-5.27	85.62	74.55	134.70
55	-5.36	87.89	77.53	142.68
56	-5.46	90.18	80.57	150.98
57	-5.56	92.50	83.66	159.59
58	-5.66	94.84	86.82	168.52
59	-5.76	97.20	90.03	177.78
60	-5.86	99.59	93.30	187.38
61	-5.96	102.01	96.63	197.31
62	-6.06	104.45	100.02	207.59
63	-6.16	106.91	103.46	218.22
64	-6.26	109.40	106.97	229.21
65	-6.36	111.91	110.53	240.56
66	-6.46	114.44	114.15	252.28
67	-6.56	117.00	117.83	264.38
68	-6.66	119.58	121.57	276.86
69	-6.76	122.19	125.37	289.73
70	-6.85	124.82	129.22	302.99
71	-6.95	127.48	133.14	316.64
72	-7.05	130.16	137.11	330.71
73	-7.15	132.86	141.14	345.18
74	-7.25	135.59	145.23	360.07
75	-7.35	138.34	149.38	375.38
76	-7.45	141.12	153.58	391.13
77	-7.55	143.92	157.85	407.30

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.03	0.00
3	-0.20	2.00	0.06	0.02
4	-0.30	3.03	0.09	0.03
5	-0.40	4.09	0.14	0.06
6	-0.50	5.17	0.26	0.11
7	-0.60	6.28	0.43	0.17
8	-0.70	7.41	0.66	0.26
9	-0.79	8.57	0.94	0.37
10	-0.89	9.75	1.28	0.53
11	-0.99	10.95	1.68	0.73
12	-1.09	12.18	2.14	0.98
13	-1.19	13.43	2.65	1.28
14	-1.29	14.71	3.22	1.64
15	-1.39	16.01	3.84	2.06
16	-1.49	17.34	4.53	2.56
17	-1.59	18.68	5.27	3.14
18	-1.69	20.06	6.06	3.80
19	-1.79	21.46	6.92	4.54
20	-1.89	22.88	7.83	5.39
21	-1.99	24.32	8.79	6.33
22	-2.09	25.79	9.82	7.38
23	-2.19	27.29	10.90	8.54
24	-2.28	28.81	12.04	9.82
25	-2.38	30.35	13.23	11.22
26	-2.48	31.92	14.48	12.75
27	-2.58	33.51	15.79	14.41
28	-2.68	35.12	17.16	16.22
29	-2.78	36.76	18.58	18.17
30	-2.88	38.43	20.06	20.28
31	-2.98	40.12	21.60	22.54
32	-3.08	41.83	23.19	24.97
33	-3.18	43.56	24.84	27.57
34	-3.28	45.32	26.54	30.34
35	-3.38	47.11	28.31	33.29
36	-3.48	48.92	30.13	36.43
37	-3.58	50.75	32.01	39.77
38	-3.68	52.61	33.94	43.30
39	-3.78	54.49	35.93	47.04
40	-3.87	56.40	37.98	50.98
41	-3.97	58.33	40.08	55.14
42	-4.07	60.28	42.25	59.53
43	-4.17	62.26	44.46	64.14
44	-4.27	64.26	46.74	68.98
45	-4.37	66.29	49.07	74.06
46	-4.47	68.34	51.46	79.39
47	-4.57	70.42	53.91	84.97
48	-4.67	72.51	56.41	90.80
49	-4.77	74.64	58.97	96.90
50	-4.87	76.79	61.59	103.26
51	-4.97	78.96	64.26	109.90
52	-5.07	81.15	66.99	116.82
53	-5.17	83.37	69.78	124.02
54	-5.27	85.62	72.62	131.51
55	-5.36	87.89	75.52	139.30
56	-5.46	90.18	78.48	147.39
57	-5.56	92.50	81.50	155.79
58	-5.66	94.84	84.57	164.51
59	-5.76	97.20	87.70	173.54
60	-5.86	99.59	90.88	182.90
61	-5.96	102.01	94.13	192.59
62	-6.06	104.45	97.43	202.61

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
63	-6.16	106.91	100.78	212.98
64	-6.26	109.40	104.20	223.70
65	-6.36	111.91	107.67	234.77
66	-6.46	114.44	111.19	246.21
67	-6.56	117.00	114.78	258.01
68	-6.66	119.58	118.42	270.18
69	-6.76	122.19	122.11	282.72
70	-6.85	124.82	125.87	295.65
71	-6.95	127.48	129.68	308.97
72	-7.05	130.16	133.55	322.69
73	-7.15	132.86	137.47	336.80
74	-7.25	135.59	141.46	351.32
75	-7.35	138.34	145.49	366.26
76	-7.45	141.12	149.59	381.61
77	-7.55	143.92	153.74	397.38

Combinazione n° 13 - SLER

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.03	0.04
6	-0.50	5.17	0.11	0.07
7	-0.60	6.28	0.24	0.12
8	-0.70	7.41	0.43	0.18
9	-0.79	8.57	0.67	0.28
10	-0.89	9.75	0.97	0.40
11	-0.99	10.95	1.32	0.57
12	-1.09	12.18	1.73	0.78
13	-1.19	13.43	2.18	1.03
14	-1.29	14.71	2.70	1.35
15	-1.39	16.01	3.26	1.72
16	-1.49	17.34	3.89	2.15
17	-1.59	18.68	4.56	2.66
18	-1.69	20.06	5.29	3.25
19	-1.79	21.46	6.07	3.92
20	-1.89	22.88	6.91	4.67
21	-1.99	24.32	7.80	5.52
22	-2.09	25.79	8.75	6.46
23	-2.19	27.29	9.75	7.51
24	-2.28	28.81	10.80	8.67
25	-2.38	30.35	11.91	9.95
26	-2.48	31.92	13.07	11.34
27	-2.58	33.51	14.29	12.86
28	-2.68	35.12	15.56	14.52
29	-2.78	36.76	16.88	16.31
30	-2.88	38.43	18.26	18.24
31	-2.98	40.12	19.69	20.32
32	-3.08	41.83	21.18	22.55
33	-3.18	43.56	22.72	24.94
34	-3.28	45.32	24.32	27.50
35	-3.38	47.11	25.96	30.23
36	-3.48	48.92	27.67	33.13
37	-3.58	50.75	29.42	36.21
38	-3.68	52.61	31.24	39.48
39	-3.78	54.49	33.10	42.94

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
40	-3.87	56.40	35.02	46.60
41	-3.97	58.33	36.99	50.46
42	-4.07	60.28	39.02	54.53
43	-4.17	62.26	41.10	58.82
44	-4.27	64.26	43.24	63.32
45	-4.37	66.29	45.43	68.05
46	-4.47	68.34	47.67	73.01
47	-4.57	70.42	49.97	78.20
48	-4.67	72.51	52.32	83.64
49	-4.77	74.64	54.73	89.32
50	-4.87	76.79	57.19	95.25
51	-4.97	78.96	59.71	101.45
52	-5.07	81.15	62.27	107.90
53	-5.17	83.37	64.90	114.63
54	-5.27	85.62	67.57	121.63
55	-5.36	87.89	70.30	128.90
56	-5.46	90.18	73.09	136.47
57	-5.56	92.50	75.93	144.32
58	-5.66	94.84	78.82	152.48
59	-5.76	97.20	81.77	160.93
60	-5.86	99.59	84.77	169.69
61	-5.96	102.01	87.83	178.76
62	-6.06	104.45	90.94	188.15
63	-6.16	106.91	94.10	197.87
64	-6.26	109.40	97.32	207.91
65	-6.36	111.91	100.59	218.29
66	-6.46	114.44	103.92	229.01
67	-6.56	117.00	107.30	240.08
68	-6.66	119.58	110.73	251.50
69	-6.76	122.19	114.22	263.27
70	-6.85	124.82	117.76	275.41
71	-6.95	127.48	121.36	287.91
72	-7.05	130.16	125.01	300.79
73	-7.15	132.86	128.71	314.04
74	-7.25	135.59	132.47	327.68
75	-7.35	138.34	136.28	341.71
76	-7.45	141.12	140.15	356.13
77	-7.55	143.92	144.07	370.96

Combinazione n° 14 - SLEF

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.03	0.04
6	-0.50	5.17	0.11	0.07
7	-0.60	6.28	0.24	0.12
8	-0.70	7.41	0.43	0.18
9	-0.79	8.57	0.67	0.28
10	-0.89	9.75	0.97	0.40
11	-0.99	10.95	1.32	0.57
12	-1.09	12.18	1.73	0.78
13	-1.19	13.43	2.18	1.03
14	-1.29	14.71	2.70	1.35
15	-1.39	16.01	3.26	1.72
16	-1.49	17.34	3.89	2.15

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
17	-1.59	18.68	4.56	2.66
18	-1.69	20.06	5.29	3.25
19	-1.79	21.46	6.07	3.92
20	-1.89	22.88	6.91	4.67
21	-1.99	24.32	7.80	5.52
22	-2.09	25.79	8.75	6.46
23	-2.19	27.29	9.75	7.51
24	-2.28	28.81	10.80	8.67
25	-2.38	30.35	11.91	9.95
26	-2.48	31.92	13.07	11.34
27	-2.58	33.51	14.29	12.86
28	-2.68	35.12	15.56	14.52
29	-2.78	36.76	16.88	16.31
30	-2.88	38.43	18.26	18.24
31	-2.98	40.12	19.69	20.32
32	-3.08	41.83	21.18	22.55
33	-3.18	43.56	22.72	24.94
34	-3.28	45.32	24.32	27.50
35	-3.38	47.11	25.96	30.23
36	-3.48	48.92	27.67	33.13
37	-3.58	50.75	29.42	36.21
38	-3.68	52.61	31.24	39.48
39	-3.78	54.49	33.10	42.94
40	-3.87	56.40	35.02	46.60
41	-3.97	58.33	36.99	50.46
42	-4.07	60.28	39.02	54.53
43	-4.17	62.26	41.10	58.82
44	-4.27	64.26	43.24	63.32
45	-4.37	66.29	45.43	68.05
46	-4.47	68.34	47.67	73.01
47	-4.57	70.42	49.97	78.20
48	-4.67	72.51	52.32	83.64
49	-4.77	74.64	54.73	89.32
50	-4.87	76.79	57.19	95.25
51	-4.97	78.96	59.71	101.45
52	-5.07	81.15	62.27	107.90
53	-5.17	83.37	64.90	114.63
54	-5.27	85.62	67.57	121.63
55	-5.36	87.89	70.30	128.90
56	-5.46	90.18	73.09	136.47
57	-5.56	92.50	75.93	144.32
58	-5.66	94.84	78.82	152.48
59	-5.76	97.20	81.77	160.93
60	-5.86	99.59	84.77	169.69
61	-5.96	102.01	87.83	178.76
62	-6.06	104.45	90.94	188.15
63	-6.16	106.91	94.10	197.87
64	-6.26	109.40	97.32	207.91
65	-6.36	111.91	100.59	218.29
66	-6.46	114.44	103.92	229.01
67	-6.56	117.00	107.30	240.08
68	-6.66	119.58	110.73	251.50
69	-6.76	122.19	114.22	263.27
70	-6.85	124.82	117.76	275.41
71	-6.95	127.48	121.36	287.91
72	-7.05	130.16	125.01	300.79
73	-7.15	132.86	128.71	314.04
74	-7.25	135.59	132.47	327.68
75	-7.35	138.34	136.28	341.71
76	-7.45	141.12	140.15	356.13
77	-7.55	143.92	144.07	370.96

Combinazione n° 15 - SLEQ

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.03	0.04
6	-0.50	5.17	0.11	0.07
7	-0.60	6.28	0.24	0.12
8	-0.70	7.41	0.43	0.18
9	-0.79	8.57	0.67	0.28
10	-0.89	9.75	0.97	0.40
11	-0.99	10.95	1.32	0.57
12	-1.09	12.18	1.73	0.78
13	-1.19	13.43	2.18	1.03
14	-1.29	14.71	2.70	1.35
15	-1.39	16.01	3.26	1.72
16	-1.49	17.34	3.89	2.15
17	-1.59	18.68	4.56	2.66
18	-1.69	20.06	5.29	3.25
19	-1.79	21.46	6.07	3.92
20	-1.89	22.88	6.91	4.67
21	-1.99	24.32	7.80	5.52
22	-2.09	25.79	8.75	6.46
23	-2.19	27.29	9.75	7.51
24	-2.28	28.81	10.80	8.67
25	-2.38	30.35	11.91	9.95
26	-2.48	31.92	13.07	11.34
27	-2.58	33.51	14.29	12.86
28	-2.68	35.12	15.56	14.52
29	-2.78	36.76	16.88	16.31
30	-2.88	38.43	18.26	18.24
31	-2.98	40.12	19.69	20.32
32	-3.08	41.83	21.18	22.55
33	-3.18	43.56	22.72	24.94
34	-3.28	45.32	24.32	27.50
35	-3.38	47.11	25.96	30.23
36	-3.48	48.92	27.67	33.13
37	-3.58	50.75	29.42	36.21
38	-3.68	52.61	31.24	39.48
39	-3.78	54.49	33.10	42.94
40	-3.87	56.40	35.02	46.60
41	-3.97	58.33	36.99	50.46
42	-4.07	60.28	39.02	54.53
43	-4.17	62.26	41.10	58.82
44	-4.27	64.26	43.24	63.32
45	-4.37	66.29	45.43	68.05
46	-4.47	68.34	47.67	73.01
47	-4.57	70.42	49.97	78.20
48	-4.67	72.51	52.32	83.64
49	-4.77	74.64	54.73	89.32
50	-4.87	76.79	57.19	95.25
51	-4.97	78.96	59.71	101.45
52	-5.07	81.15	62.27	107.90
53	-5.17	83.37	64.90	114.63
54	-5.27	85.62	67.57	121.63
55	-5.36	87.89	70.30	128.90
56	-5.46	90.18	73.09	136.47
57	-5.56	92.50	75.93	144.32

n°	X [m]	N [kN]	T [kN]	M [kNm]
58	-5.66	94.84	78.82	152.48
59	-5.76	97.20	81.77	160.93
60	-5.86	99.59	84.77	169.69
61	-5.96	102.01	87.83	178.76
62	-6.06	104.45	90.94	188.15
63	-6.16	106.91	94.10	197.87
64	-6.26	109.40	97.32	207.91
65	-6.36	111.91	100.59	218.29
66	-6.46	114.44	103.92	229.01
67	-6.56	117.00	107.30	240.08
68	-6.66	119.58	110.73	251.50
69	-6.76	122.19	114.22	263.27
70	-6.85	124.82	117.76	275.41
71	-6.95	127.48	121.36	287.91
72	-7.05	130.16	125.01	300.79
73	-7.15	132.86	128.71	314.04
74	-7.25	135.59	132.47	327.68
75	-7.35	138.34	136.28	341.71
76	-7.45	141.12	140.15	356.13
77	-7.55	143.92	144.07	370.96

Combinazione n° 16 - SLER

n°	X [m]	N [kN]	T [kN]	M [kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.03	0.04
6	-0.50	5.17	0.11	0.07
7	-0.60	6.28	0.24	0.12
8	-0.70	7.41	0.43	0.18
9	-0.79	8.57	0.67	0.28
10	-0.89	9.75	0.97	0.40
11	-0.99	10.95	1.32	0.57
12	-1.09	12.18	1.73	0.78
13	-1.19	13.43	2.18	1.03
14	-1.29	14.71	2.70	1.35
15	-1.39	16.01	3.26	1.72
16	-1.49	17.34	3.89	2.15
17	-1.59	18.68	4.56	2.66
18	-1.69	20.06	5.29	3.25
19	-1.79	21.46	6.07	3.92
20	-1.89	22.88	6.91	4.67
21	-1.99	24.32	7.80	5.52
22	-2.09	25.79	8.75	6.46
23	-2.19	27.29	9.75	7.51
24	-2.28	28.81	10.80	8.67
25	-2.38	30.35	11.91	9.95
26	-2.48	31.92	13.07	11.34
27	-2.58	33.51	14.29	12.86
28	-2.68	35.12	15.56	14.52
29	-2.78	36.76	16.88	16.31
30	-2.88	38.43	18.26	18.24
31	-2.98	40.12	19.69	20.32
32	-3.08	41.83	21.18	22.55
33	-3.18	43.56	22.72	24.94
34	-3.28	45.32	24.32	27.50

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
35	-3.38	47.11	25.96	30.23
36	-3.48	48.92	27.67	33.13
37	-3.58	50.75	29.42	36.21
38	-3.68	52.61	31.24	39.48
39	-3.78	54.49	33.10	42.94
40	-3.87	56.40	35.02	46.60
41	-3.97	58.33	36.99	50.46
42	-4.07	60.28	39.02	54.53
43	-4.17	62.26	41.10	58.82
44	-4.27	64.26	43.24	63.32
45	-4.37	66.29	45.43	68.05
46	-4.47	68.34	47.67	73.01
47	-4.57	70.42	49.97	78.20
48	-4.67	72.51	52.32	83.64
49	-4.77	74.64	54.73	89.32
50	-4.87	76.79	57.19	95.25
51	-4.97	78.96	59.71	101.45
52	-5.07	81.15	62.27	107.90
53	-5.17	83.37	64.90	114.63
54	-5.27	85.62	67.57	121.63
55	-5.36	87.89	70.30	128.90
56	-5.46	90.18	73.09	136.47
57	-5.56	92.50	75.93	144.32
58	-5.66	94.84	78.82	152.48
59	-5.76	97.20	81.77	160.93
60	-5.86	99.59	84.77	169.69
61	-5.96	102.01	87.83	178.76
62	-6.06	104.45	90.94	188.15
63	-6.16	106.91	94.10	197.87
64	-6.26	109.40	97.32	207.91
65	-6.36	111.91	100.59	218.29
66	-6.46	114.44	103.92	229.01
67	-6.56	117.00	107.30	240.08
68	-6.66	119.58	110.73	251.50
69	-6.76	122.19	114.22	263.27
70	-6.85	124.82	117.76	275.41
71	-6.95	127.48	121.36	287.91
72	-7.05	130.16	125.01	300.79
73	-7.15	132.86	128.71	314.04
74	-7.25	135.59	132.47	327.68
75	-7.35	138.34	136.28	341.71
76	-7.45	141.12	140.15	356.13
77	-7.55	143.92	144.07	370.96

Combinazione n° 17 - SLEF

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.00	0.00
3	-0.20	2.00	0.00	0.01
4	-0.30	3.03	0.00	0.02
5	-0.40	4.09	0.03	0.04
6	-0.50	5.17	0.11	0.07
7	-0.60	6.28	0.24	0.12
8	-0.70	7.41	0.43	0.18
9	-0.79	8.57	0.67	0.28
10	-0.89	9.75	0.97	0.40
11	-0.99	10.95	1.32	0.57

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
12	-1.09	12.18	1.73	0.78
13	-1.19	13.43	2.18	1.03
14	-1.29	14.71	2.70	1.35
15	-1.39	16.01	3.26	1.72
16	-1.49	17.34	3.89	2.15
17	-1.59	18.68	4.56	2.66
18	-1.69	20.06	5.29	3.25
19	-1.79	21.46	6.07	3.92
20	-1.89	22.88	6.91	4.67
21	-1.99	24.32	7.80	5.52
22	-2.09	25.79	8.75	6.46
23	-2.19	27.29	9.75	7.51
24	-2.28	28.81	10.80	8.67
25	-2.38	30.35	11.91	9.95
26	-2.48	31.92	13.07	11.34
27	-2.58	33.51	14.29	12.86
28	-2.68	35.12	15.56	14.52
29	-2.78	36.76	16.88	16.31
30	-2.88	38.43	18.26	18.24
31	-2.98	40.12	19.69	20.32
32	-3.08	41.83	21.18	22.55
33	-3.18	43.56	22.72	24.94
34	-3.28	45.32	24.32	27.50
35	-3.38	47.11	25.96	30.23
36	-3.48	48.92	27.67	33.13
37	-3.58	50.75	29.42	36.21
38	-3.68	52.61	31.24	39.48
39	-3.78	54.49	33.10	42.94
40	-3.87	56.40	35.02	46.60
41	-3.97	58.33	36.99	50.46
42	-4.07	60.28	39.02	54.53
43	-4.17	62.26	41.10	58.82
44	-4.27	64.26	43.24	63.32
45	-4.37	66.29	45.43	68.05
46	-4.47	68.34	47.67	73.01
47	-4.57	70.42	49.97	78.20
48	-4.67	72.51	52.32	83.64
49	-4.77	74.64	54.73	89.32
50	-4.87	76.79	57.19	95.25
51	-4.97	78.96	59.71	101.45
52	-5.07	81.15	62.27	107.90
53	-5.17	83.37	64.90	114.63
54	-5.27	85.62	67.57	121.63
55	-5.36	87.89	70.30	128.90
56	-5.46	90.18	73.09	136.47
57	-5.56	92.50	75.93	144.32
58	-5.66	94.84	78.82	152.48
59	-5.76	97.20	81.77	160.93
60	-5.86	99.59	84.77	169.69
61	-5.96	102.01	87.83	178.76
62	-6.06	104.45	90.94	188.15
63	-6.16	106.91	94.10	197.87
64	-6.26	109.40	97.32	207.91
65	-6.36	111.91	100.59	218.29
66	-6.46	114.44	103.92	229.01
67	-6.56	117.00	107.30	240.08
68	-6.66	119.58	110.73	251.50
69	-6.76	122.19	114.22	263.27
70	-6.85	124.82	117.76	275.41
71	-6.95	127.48	121.36	287.91
72	-7.05	130.16	125.01	300.79
73	-7.15	132.86	128.71	314.04

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
74	-7.25	135.59	132.47	327.68
75	-7.35	138.34	136.28	341.71
76	-7.45	141.12	140.15	356.13
77	-7.55	143.92	144.07	370.96

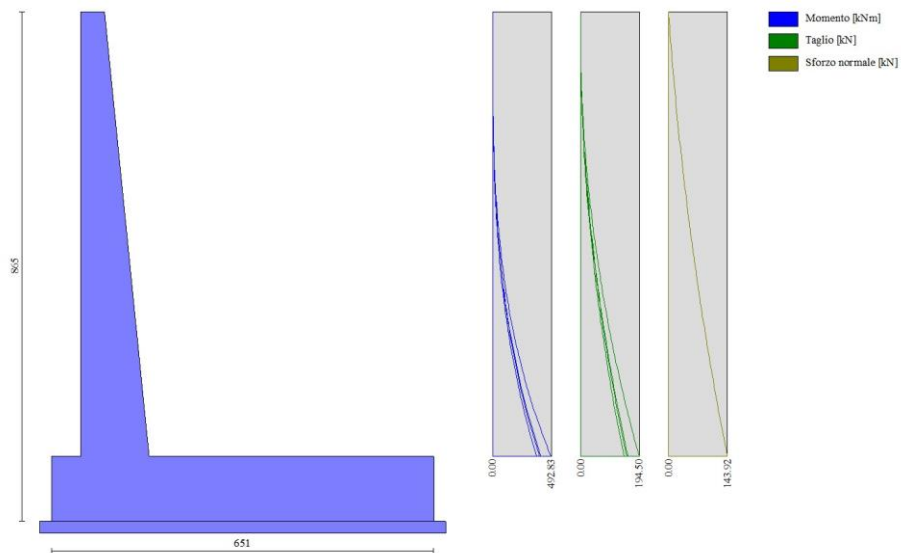


Fig. 8 - Paramento (Inviluppo)

Fondazione

Combinazione n° 1 - STR (A1-M1-R3)

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	23.66	1.19
3	-0.70	0.00	47.03	4.72
4	-0.60	0.00	70.10	10.58
5	-0.50	0.00	92.88	18.73
6	-0.40	0.00	115.37	29.15
7	0.76	0.00	-373.58	-1183.97
8	0.85	0.00	-372.83	-1147.02
9	0.95	0.00	-371.79	-1110.17
10	1.05	0.00	-370.47	-1073.43
11	1.15	0.00	-368.87	-1036.84

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
12	1.25	0.00	-366.97	-1000.42
13	1.35	0.00	-364.79	-964.20
14	1.45	0.00	-362.33	-928.22
15	1.55	0.00	-359.57	-892.49
16	1.65	0.00	-356.53	-857.05
17	1.74	0.00	-353.21	-821.92
18	1.84	0.00	-349.60	-787.13
19	1.94	0.00	-345.70	-752.72
20	2.04	0.00	-341.51	-718.71
21	2.14	0.00	-337.04	-685.13
22	2.24	0.00	-332.28	-652.00
23	2.34	0.00	-327.23	-619.36
24	2.44	0.00	-321.90	-587.23
25	2.54	0.00	-316.28	-555.64
26	2.64	0.00	-310.38	-524.63
27	2.73	0.00	-304.19	-494.21
28	2.83	0.00	-297.71	-464.42
29	2.93	0.00	-290.95	-435.29
30	3.03	0.00	-283.89	-406.84
31	3.13	0.00	-276.56	-379.10
32	3.23	0.00	-268.93	-352.10
33	3.33	0.00	-261.02	-325.87
34	3.43	0.00	-252.83	-300.44
35	3.53	0.00	-244.34	-275.83
36	3.63	0.00	-235.57	-252.08
37	3.72	0.00	-226.52	-229.20
38	3.82	0.00	-217.17	-207.24
39	3.92	0.00	-207.54	-186.22
40	4.02	0.00	-197.63	-166.17
41	4.12	0.00	-187.42	-147.11
42	4.22	0.00	-176.93	-129.08
43	4.32	0.00	-166.16	-112.09
44	4.42	0.00	-155.10	-96.19
45	4.52	0.00	-143.75	-81.40
46	4.62	0.00	-132.11	-67.75
47	4.71	0.00	-120.19	-55.26
48	4.81	0.00	-107.98	-43.96
49	4.91	0.00	-95.49	-33.89
50	5.01	0.00	-82.71	-25.07
51	5.11	0.00	-69.64	-17.53
52	5.21	0.00	-56.28	-11.29
53	5.31	0.00	-42.64	-6.39
54	5.41	0.00	-28.71	-2.86
55	5.51	0.00	-14.50	-0.72
56	5.61	0.00	0.00	0.00

Combinazione n° 2 - STR (A1-M1-R3)

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	22.85	1.14
3	-0.70	0.00	45.42	4.56
4	-0.60	0.00	67.73	10.22
5	-0.50	0.00	89.78	18.10
6	-0.40	0.00	111.55	28.17
7	0.76	0.00	-364.63	-1138.73
8	0.85	0.00	-363.48	-1102.70
9	0.95	0.00	-362.07	-1066.79

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
10	1.05	0.00	-360.40	-1031.03
11	1.15	0.00	-358.47	-995.45
12	1.25	0.00	-356.27	-960.08
13	1.35	0.00	-353.81	-924.93
14	1.45	0.00	-351.09	-890.05
15	1.55	0.00	-348.11	-855.44
16	1.65	0.00	-344.86	-821.14
17	1.74	0.00	-341.36	-787.18
18	1.84	0.00	-337.59	-753.58
19	1.94	0.00	-333.56	-720.36
20	2.04	0.00	-329.26	-687.56
21	2.14	0.00	-324.71	-655.19
22	2.24	0.00	-319.89	-623.29
23	2.34	0.00	-314.81	-591.87
24	2.44	0.00	-309.46	-560.98
25	2.54	0.00	-303.86	-530.62
26	2.64	0.00	-297.99	-500.83
27	2.73	0.00	-291.86	-471.64
28	2.83	0.00	-285.47	-443.07
29	2.93	0.00	-278.81	-415.14
30	3.03	0.00	-271.90	-387.88
31	3.13	0.00	-264.72	-361.32
32	3.23	0.00	-257.28	-335.49
33	3.33	0.00	-249.57	-310.40
34	3.43	0.00	-241.61	-286.09
35	3.53	0.00	-233.38	-262.58
36	3.63	0.00	-224.89	-239.90
37	3.72	0.00	-216.13	-218.07
38	3.82	0.00	-207.12	-197.12
39	3.92	0.00	-197.84	-177.08
40	4.02	0.00	-188.30	-157.97
41	4.12	0.00	-178.50	-139.81
42	4.22	0.00	-168.44	-122.64
43	4.32	0.00	-158.11	-106.48
44	4.42	0.00	-147.52	-91.35
45	4.52	0.00	-136.67	-77.28
46	4.62	0.00	-125.56	-64.30
47	4.71	0.00	-114.18	-52.43
48	4.81	0.00	-102.54	-41.71
49	4.91	0.00	-90.64	-32.14
50	5.01	0.00	-78.48	-23.77
51	5.11	0.00	-66.06	-16.62
52	5.21	0.00	-53.37	-10.70
53	5.31	0.00	-40.42	-6.06
54	5.41	0.00	-27.21	-2.71
55	5.51	0.00	-13.74	-0.68
56	5.61	0.00	0.00	0.00

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	20.13	1.01
3	-0.70	0.00	40.08	4.02
4	-0.60	0.00	59.85	9.02
5	-0.50	0.00	79.44	15.98
6	-0.40	0.00	98.85	24.90
7	0.76	0.00	-79.98	-365.72

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
8	0.85	0.00	-82.60	-357.67
9	0.95	0.00	-85.04	-349.37
10	1.05	0.00	-87.30	-340.84
11	1.15	0.00	-89.38	-332.10
12	1.25	0.00	-91.29	-323.15
13	1.35	0.00	-93.02	-314.03
14	1.45	0.00	-94.58	-304.75
15	1.55	0.00	-95.95	-295.31
16	1.65	0.00	-97.15	-285.76
17	1.74	0.00	-98.17	-276.09
18	1.84	0.00	-99.02	-266.33
19	1.94	0.00	-99.69	-256.49
20	2.04	0.00	-100.18	-246.60
21	2.14	0.00	-100.50	-236.67
22	2.24	0.00	-100.63	-226.71
23	2.34	0.00	-100.59	-216.75
24	2.44	0.00	-100.38	-206.80
25	2.54	0.00	-99.98	-196.89
26	2.64	0.00	-99.41	-187.02
27	2.73	0.00	-98.67	-177.21
28	2.83	0.00	-97.74	-167.49
29	2.93	0.00	-96.64	-157.87
30	3.03	0.00	-95.36	-148.37
31	3.13	0.00	-93.91	-139.00
32	3.23	0.00	-92.27	-129.78
33	3.33	0.00	-90.47	-120.74
34	3.43	0.00	-88.48	-111.88
35	3.53	0.00	-86.32	-103.23
36	3.63	0.00	-83.98	-94.80
37	3.72	0.00	-81.46	-86.61
38	3.82	0.00	-78.76	-78.68
39	3.92	0.00	-75.89	-71.02
40	4.02	0.00	-72.84	-63.66
41	4.12	0.00	-69.62	-56.61
42	4.22	0.00	-66.22	-49.88
43	4.32	0.00	-62.64	-43.51
44	4.42	0.00	-58.88	-37.49
45	4.52	0.00	-54.95	-31.86
46	4.62	0.00	-50.84	-26.62
47	4.71	0.00	-46.55	-21.80
48	4.81	0.00	-42.09	-17.41
49	4.91	0.00	-37.44	-13.47
50	5.01	0.00	-32.63	-10.00
51	5.11	0.00	-27.63	-7.02
52	5.21	0.00	-22.46	-4.54
53	5.31	0.00	-17.11	-2.58
54	5.41	0.00	-11.58	-1.16
55	5.51	0.00	-5.88	-0.29
56	5.61	0.00	0.00	0.00

Combinazione n° 4 - STR (A1-M1-R3) H - V

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	19.54	0.98
3	-0.70	0.00	38.89	3.90
4	-0.60	0.00	58.08	8.75
5	-0.50	0.00	77.08	15.51

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
6	-0.40	0.00	95.91	24.16
7	0.76	0.00	-101.61	-414.62
8	0.85	0.00	-103.69	-404.46
9	0.95	0.00	-105.61	-394.10
10	1.05	0.00	-107.35	-383.56
11	1.15	0.00	-108.91	-372.85
12	1.25	0.00	-110.31	-362.00
13	1.35	0.00	-111.53	-351.02
14	1.45	0.00	-112.57	-339.93
15	1.55	0.00	-113.45	-328.74
16	1.65	0.00	-114.15	-317.48
17	1.74	0.00	-114.67	-306.15
18	1.84	0.00	-115.03	-294.78
19	1.94	0.00	-115.21	-283.39
20	2.04	0.00	-115.21	-271.98
21	2.14	0.00	-115.05	-260.58
22	2.24	0.00	-114.71	-249.21
23	2.34	0.00	-114.19	-237.88
24	2.44	0.00	-113.51	-226.61
25	2.54	0.00	-112.65	-215.42
26	2.64	0.00	-111.61	-204.32
27	2.73	0.00	-110.41	-193.33
28	2.83	0.00	-109.03	-182.47
29	2.93	0.00	-107.47	-171.75
30	3.03	0.00	-105.75	-161.20
31	3.13	0.00	-103.85	-150.82
32	3.23	0.00	-101.77	-140.65
33	3.33	0.00	-99.52	-130.68
34	3.43	0.00	-97.10	-120.95
35	3.53	0.00	-94.51	-111.47
36	3.63	0.00	-91.74	-102.25
37	3.72	0.00	-88.80	-93.31
38	3.82	0.00	-85.69	-84.67
39	3.92	0.00	-82.40	-76.35
40	4.02	0.00	-78.94	-68.37
41	4.12	0.00	-75.31	-60.73
42	4.22	0.00	-71.50	-53.46
43	4.32	0.00	-67.52	-46.58
44	4.42	0.00	-63.37	-40.10
45	4.52	0.00	-59.04	-34.04
46	4.62	0.00	-54.54	-28.42
47	4.71	0.00	-49.87	-23.25
48	4.81	0.00	-45.02	-18.56
49	4.91	0.00	-40.00	-14.35
50	5.01	0.00	-34.80	-10.64
51	5.11	0.00	-29.44	-7.46
52	5.21	0.00	-23.90	-4.82
53	5.31	0.00	-18.18	-2.74
54	5.41	0.00	-12.29	-1.23
55	5.51	0.00	-6.23	-0.31
56	5.61	0.00	0.00	0.00

Combinazione n° 13 - SLER

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	20.36	1.02
3	-0.70	0.00	40.53	4.07

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
4	-0.60	0.00	60.50	9.12
5	-0.50	0.00	80.29	16.16
6	-0.40	0.00	99.87	25.17
7	0.76	0.00	-93.73	-411.15
8	0.85	0.00	-96.36	-401.74
9	0.95	0.00	-98.81	-392.08
10	1.05	0.00	-101.06	-382.19
11	1.15	0.00	-103.13	-372.08
12	1.25	0.00	-105.01	-361.78
13	1.35	0.00	-106.69	-351.30
14	1.45	0.00	-108.19	-340.67
15	1.55	0.00	-109.50	-329.89
16	1.65	0.00	-110.62	-319.00
17	1.74	0.00	-111.55	-308.00
18	1.84	0.00	-112.29	-296.92
19	1.94	0.00	-112.84	-285.78
20	2.04	0.00	-113.20	-274.59
21	2.14	0.00	-113.37	-263.38
22	2.24	0.00	-113.35	-252.15
23	2.34	0.00	-113.14	-240.94
24	2.44	0.00	-112.75	-229.76
25	2.54	0.00	-112.16	-218.63
26	2.64	0.00	-111.38	-207.57
27	2.73	0.00	-110.42	-196.59
28	2.83	0.00	-109.26	-185.71
29	2.93	0.00	-107.92	-174.96
30	3.03	0.00	-106.38	-164.36
31	3.13	0.00	-104.66	-153.91
32	3.23	0.00	-102.75	-143.64
33	3.33	0.00	-100.65	-133.58
34	3.43	0.00	-98.35	-123.73
35	3.53	0.00	-95.87	-114.11
36	3.63	0.00	-93.20	-104.75
37	3.72	0.00	-90.34	-95.67
38	3.82	0.00	-87.29	-86.88
39	3.92	0.00	-84.05	-78.39
40	4.02	0.00	-80.62	-70.24
41	4.12	0.00	-77.01	-62.44
42	4.22	0.00	-73.20	-55.01
43	4.32	0.00	-69.20	-47.96
44	4.42	0.00	-65.02	-41.31
45	4.52	0.00	-60.64	-35.09
46	4.62	0.00	-56.07	-29.31
47	4.71	0.00	-51.32	-24.00
48	4.81	0.00	-46.38	-19.16
49	4.91	0.00	-41.24	-14.82
50	5.01	0.00	-35.92	-11.00
51	5.11	0.00	-30.41	-7.72
52	5.21	0.00	-24.70	-4.99
53	5.31	0.00	-18.81	-2.84
54	5.41	0.00	-12.73	-1.27
55	5.51	0.00	-6.46	-0.32
56	5.61	0.00	0.00	0.00

Combinazione n° 14 - SLEF

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00

n°	X	N	T	M
	[m]	[kN]	[kN]	[kNm]
2	-0.80	0.00	18.98	0.95
3	-0.70	0.00	37.82	3.79
4	-0.60	0.00	56.50	8.51
5	-0.50	0.00	75.03	15.09
6	-0.40	0.00	93.41	23.51
7	0.76	0.00	-78.66	-334.79
8	0.85	0.00	-80.62	-326.91
9	0.95	0.00	-82.43	-318.84
10	1.05	0.00	-84.09	-310.59
11	1.15	0.00	-85.60	-302.20
12	1.25	0.00	-86.96	-293.65
13	1.35	0.00	-88.18	-284.99
14	1.45	0.00	-89.24	-276.20
15	1.55	0.00	-90.16	-267.32
16	1.65	0.00	-90.93	-258.36
17	1.74	0.00	-91.55	-249.33
18	1.84	0.00	-92.02	-240.24
19	1.94	0.00	-92.35	-231.12
20	2.04	0.00	-92.52	-221.97
21	2.14	0.00	-92.55	-212.81
22	2.24	0.00	-92.43	-203.65
23	2.34	0.00	-92.16	-194.51
24	2.44	0.00	-91.74	-185.41
25	2.54	0.00	-91.18	-176.36
26	2.64	0.00	-90.46	-167.37
27	2.73	0.00	-89.60	-158.45
28	2.83	0.00	-88.59	-149.63
29	2.93	0.00	-87.43	-140.92
30	3.03	0.00	-86.12	-132.33
31	3.13	0.00	-84.66	-123.88
32	3.23	0.00	-83.06	-115.58
33	3.33	0.00	-81.30	-107.44
34	3.43	0.00	-79.40	-99.49
35	3.53	0.00	-77.35	-91.73
36	3.63	0.00	-75.15	-84.18
37	3.72	0.00	-72.80	-76.86
38	3.82	0.00	-70.31	-69.77
39	3.92	0.00	-67.66	-62.94
40	4.02	0.00	-64.87	-56.38
41	4.12	0.00	-61.93	-50.11
42	4.22	0.00	-58.84	-44.13
43	4.32	0.00	-55.60	-38.46
44	4.42	0.00	-52.22	-33.13
45	4.52	0.00	-48.68	-28.13
46	4.62	0.00	-45.00	-23.49
47	4.71	0.00	-41.17	-19.23
48	4.81	0.00	-37.19	-15.35
49	4.91	0.00	-33.06	-11.87
50	5.01	0.00	-28.78	-8.81
51	5.11	0.00	-24.35	-6.18
52	5.21	0.00	-19.78	-3.99
53	5.31	0.00	-15.06	-2.27
54	5.41	0.00	-10.19	-1.02
55	5.51	0.00	-5.17	-0.26
56	5.61	0.00	0.00	0.00

Combinazione n° 15 - SLEQ

n°	X	N	T	M
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	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	17.73	0.89
3	-0.70	0.00	35.34	3.54
4	-0.60	0.00	52.84	7.95
5	-0.50	0.00	70.23	14.11
6	-0.40	0.00	87.50	21.99
7	0.76	0.00	-65.29	-266.22
8	0.85	0.00	-66.62	-259.69
9	0.95	0.00	-67.85	-253.04
10	1.05	0.00	-68.96	-246.26
11	1.15	0.00	-69.97	-239.39
12	1.25	0.00	-70.86	-232.42
13	1.35	0.00	-71.64	-225.36
14	1.45	0.00	-72.31	-218.24
15	1.55	0.00	-72.86	-211.05
16	1.65	0.00	-73.31	-203.82
17	1.74	0.00	-73.65	-196.55
18	1.84	0.00	-73.87	-189.24
19	1.94	0.00	-73.98	-181.93
20	2.04	0.00	-73.99	-174.60
21	2.14	0.00	-73.88	-167.28
22	2.24	0.00	-73.66	-159.98
23	2.34	0.00	-73.32	-152.71
24	2.44	0.00	-72.88	-145.47
25	2.54	0.00	-72.33	-138.28
26	2.64	0.00	-71.66	-131.16
27	2.73	0.00	-70.88	-124.10
28	2.83	0.00	-70.00	-117.13
29	2.93	0.00	-69.00	-110.25
30	3.03	0.00	-67.89	-103.47
31	3.13	0.00	-66.67	-96.81
32	3.23	0.00	-65.33	-90.28
33	3.33	0.00	-63.89	-83.88
34	3.43	0.00	-62.34	-77.64
35	3.53	0.00	-60.67	-71.55
36	3.63	0.00	-58.89	-65.63
37	3.72	0.00	-57.00	-59.89
38	3.82	0.00	-55.00	-54.35
39	3.92	0.00	-52.89	-49.01
40	4.02	0.00	-50.67	-43.88
41	4.12	0.00	-48.34	-38.98
42	4.22	0.00	-45.89	-34.32
43	4.32	0.00	-43.34	-29.90
44	4.42	0.00	-40.67	-25.74
45	4.52	0.00	-37.89	-21.85
46	4.62	0.00	-35.01	-18.24
47	4.71	0.00	-32.01	-14.92
48	4.81	0.00	-28.89	-11.91
49	4.91	0.00	-25.67	-9.21
50	5.01	0.00	-22.34	-6.83
51	5.11	0.00	-18.89	-4.79
52	5.21	0.00	-15.34	-3.09
53	5.31	0.00	-11.67	-1.76
54	5.41	0.00	-7.89	-0.79
55	5.51	0.00	-4.00	-0.20
56	5.61	0.00	0.00	0.00

Combinazione n° 16 - SLER

n°	X	N	T	M
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	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	19.80	0.99
3	-0.70	0.00	39.43	3.95
4	-0.60	0.00	58.88	8.87
5	-0.50	0.00	78.15	15.72
6	-0.40	0.00	97.25	24.50
7	0.76	0.00	-87.59	-380.11
8	0.85	0.00	-89.95	-371.32
9	0.95	0.00	-92.14	-362.31
10	1.05	0.00	-94.15	-353.09
11	1.15	0.00	-95.99	-343.67
12	1.25	0.00	-97.66	-334.09
13	1.35	0.00	-99.16	-324.35
14	1.45	0.00	-100.48	-314.46
15	1.55	0.00	-101.63	-304.46
16	1.65	0.00	-102.61	-294.35
17	1.74	0.00	-103.41	-284.15
18	1.84	0.00	-104.05	-273.89
19	1.94	0.00	-104.50	-263.56
20	2.04	0.00	-104.79	-253.20
21	2.14	0.00	-104.90	-242.82
22	2.24	0.00	-104.84	-232.44
23	2.34	0.00	-104.61	-222.08
24	2.44	0.00	-104.21	-211.74
25	2.54	0.00	-103.63	-201.45
26	2.64	0.00	-102.88	-191.23
27	2.73	0.00	-101.96	-181.09
28	2.83	0.00	-100.86	-171.05
29	2.93	0.00	-99.59	-161.13
30	3.03	0.00	-98.15	-151.34
31	3.13	0.00	-96.53	-141.71
32	3.23	0.00	-94.75	-132.24
33	3.33	0.00	-92.79	-122.96
34	3.43	0.00	-90.65	-113.88
35	3.53	0.00	-88.35	-105.02
36	3.63	0.00	-85.87	-96.39
37	3.72	0.00	-83.22	-88.03
38	3.82	0.00	-80.39	-79.93
39	3.92	0.00	-77.39	-72.12
40	4.02	0.00	-74.22	-64.61
41	4.12	0.00	-70.88	-57.43
42	4.22	0.00	-67.37	-50.59
43	4.32	0.00	-63.68	-44.10
44	4.42	0.00	-59.82	-37.99
45	4.52	0.00	-55.78	-32.26
46	4.62	0.00	-51.57	-26.95
47	4.71	0.00	-47.19	-22.06
48	4.81	0.00	-42.64	-17.61
49	4.91	0.00	-37.92	-13.62
50	5.01	0.00	-33.02	-10.11
51	5.11	0.00	-27.95	-7.09
52	5.21	0.00	-22.70	-4.59
53	5.31	0.00	-17.29	-2.61
54	5.41	0.00	-11.70	-1.17
55	5.51	0.00	-5.94	-0.30
56	5.61	0.00	0.00	0.00

Combinazione n° 17 - SLEF

n°	X	N	T	M
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	[m]	[kN]	[kN]	[kNm]
1	-0.90	0.00	0.00	0.00
2	-0.80	0.00	17.73	0.89
3	-0.70	0.00	35.34	3.54
4	-0.60	0.00	52.84	7.95
5	-0.50	0.00	70.23	14.11
6	-0.40	0.00	87.50	21.99
7	0.76	0.00	-65.29	-266.22
8	0.85	0.00	-66.62	-259.69
9	0.95	0.00	-67.85	-253.04
10	1.05	0.00	-68.96	-246.26
11	1.15	0.00	-69.97	-239.39
12	1.25	0.00	-70.86	-232.42
13	1.35	0.00	-71.64	-225.36
14	1.45	0.00	-72.31	-218.24
15	1.55	0.00	-72.86	-211.05
16	1.65	0.00	-73.31	-203.82
17	1.74	0.00	-73.65	-196.55
18	1.84	0.00	-73.87	-189.24
19	1.94	0.00	-73.98	-181.93
20	2.04	0.00	-73.99	-174.60
21	2.14	0.00	-73.88	-167.28
22	2.24	0.00	-73.66	-159.98
23	2.34	0.00	-73.32	-152.71
24	2.44	0.00	-72.88	-145.47
25	2.54	0.00	-72.33	-138.28
26	2.64	0.00	-71.66	-131.16
27	2.73	0.00	-70.88	-124.10
28	2.83	0.00	-70.00	-117.13
29	2.93	0.00	-69.00	-110.25
30	3.03	0.00	-67.89	-103.47
31	3.13	0.00	-66.67	-96.81
32	3.23	0.00	-65.33	-90.28
33	3.33	0.00	-63.89	-83.88
34	3.43	0.00	-62.34	-77.64
35	3.53	0.00	-60.67	-71.55
36	3.63	0.00	-58.89	-65.63
37	3.72	0.00	-57.00	-59.89
38	3.82	0.00	-55.00	-54.35
39	3.92	0.00	-52.89	-49.01
40	4.02	0.00	-50.67	-43.88
41	4.12	0.00	-48.34	-38.98
42	4.22	0.00	-45.89	-34.32
43	4.32	0.00	-43.34	-29.90
44	4.42	0.00	-40.67	-25.74
45	4.52	0.00	-37.89	-21.85
46	4.62	0.00	-35.01	-18.24
47	4.71	0.00	-32.01	-14.92
48	4.81	0.00	-28.89	-11.91
49	4.91	0.00	-25.67	-9.21
50	5.01	0.00	-22.34	-6.83
51	5.11	0.00	-18.89	-4.79
52	5.21	0.00	-15.34	-3.09
53	5.31	0.00	-11.67	-1.76
54	5.41	0.00	-7.89	-0.79
55	5.51	0.00	-4.00	-0.20
56	5.61	0.00	0.00	0.00

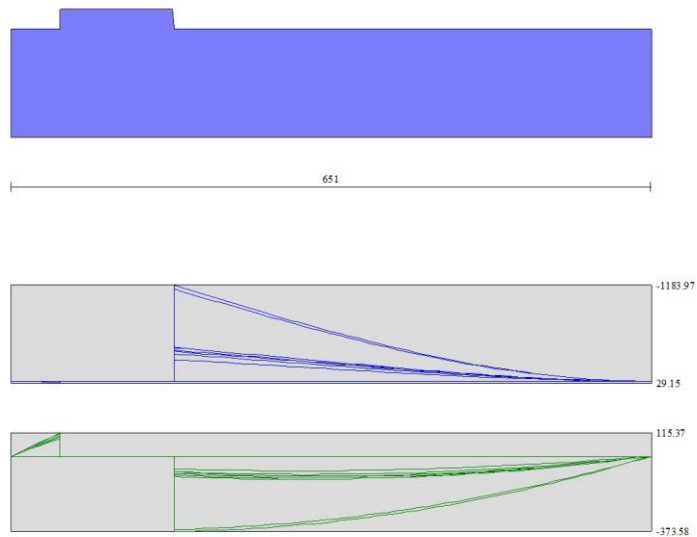


Fig. 9 - Fondazione (Inviluppo)

Verifiche strutturali

Verifiche a flessione

Elementi calcolati a trave

Simbologia adottata

n°	indice sezione
Y	ordinata sezione espressa in [m]
B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
Afi	area ferri inferiori espresso in [cmq]
Afs	area ferri superiori espressa in [cmq]
M	momento agente espressa in [kNm]
N	sforzo normale agente espressa in [kN]
Mu	momento ultimi espresso in [kNm]
Nu	sforzo normale ultimo espressa in [kN]

FS fattore di sicurezza (rapporto tra sollecitazione ultima e sollecitazione agente)

Paramento

Combinazione n° 1 - STR (A1-M1-R3)

n°	Y [m]	B [cm]	H [cm]	Afi [cmq]	Afs [cmq]	M [kNm]	N [kN]	Mu [kNm]	Nu [kN]	FS
1	0.00	100	40	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.10	100	41	22.62	22.62	0.00	0.99	0.00	0.00	1000.000
3	-0.20	100	42	22.62	22.62	0.01	2.00	0.00	0.00	1000.000
4	-0.30	100	43	22.62	22.62	0.02	3.03	0.00	0.00	1000.000
5	-0.40	100	44	22.62	22.62	0.04	4.09	0.00	0.00	1000.000
6	-0.50	100	45	22.62	22.62	0.07	5.17	0.00	0.00	1000.000
7	-0.60	100	46	22.62	22.62	0.12	6.28	0.00	0.00	1000.000
8	-0.70	100	47	22.62	22.62	0.20	7.41	0.00	0.00	1000.000
9	-0.79	100	48	22.62	22.62	0.32	8.57	0.00	0.00	1000.000
10	-0.89	100	49	22.62	22.62	0.47	9.75	418.55	8668.66	889.272
11	-0.99	100	50	22.62	22.62	0.68	10.95	514.34	8344.48	761.904
12	-1.09	100	51	22.62	22.62	0.94	12.18	612.41	7968.02	654.165
13	-1.19	100	52	22.62	22.62	1.26	13.43	709.66	7557.77	562.629
14	-1.29	100	53	22.62	22.62	1.66	14.71	803.52	7129.15	484.658
15	-1.39	100	54	22.62	22.62	2.13	16.01	892.53	6698.40	418.375
16	-1.49	100	55	22.62	22.62	2.69	17.34	976.32	6280.38	362.282
17	-1.59	100	56	22.62	22.62	3.35	18.68	1052.95	5872.81	314.308
18	-1.69	100	57	22.62	22.62	4.11	20.06	1122.80	5484.83	273.443
19	-1.79	100	58	22.62	22.62	4.97	21.46	1183.79	5109.98	238.160
20	-1.89	100	59	22.62	22.62	5.95	22.88	1209.21	4648.92	203.206
21	-1.99	100	60	22.62	22.62	7.05	24.32	1213.62	4184.98	172.051
22	-2.09	100	61	22.62	22.62	8.29	25.79	1204.63	3749.35	145.356
23	-2.19	100	62	22.62	22.62	9.66	27.29	1187.15	3354.00	122.908
24	-2.28	100	63	22.62	22.62	11.18	28.81	1163.38	2998.90	104.102
25	-2.38	100	64	22.62	22.62	12.84	30.35	1132.27	2675.42	88.151
26	-2.48	100	65	22.62	22.62	14.67	31.92	1106.77	2407.36	75.425
27	-2.58	100	66	22.62	22.62	16.67	33.51	1071.12	2153.04	64.253
28	-2.68	100	67	22.62	22.62	18.84	35.12	1042.20	1942.88	55.315
29	-2.78	100	68	22.62	22.62	21.19	36.76	1014.54	1759.80	47.868
30	-2.88	100	69	22.62	22.62	23.74	38.43	986.38	1596.83	41.554
31	-2.98	100	70	22.62	22.62	26.48	40.12	964.59	1461.47	36.432
32	-3.08	100	71	22.62	22.62	29.42	41.83	947.70	1347.37	32.212
33	-3.18	100	72	22.62	22.62	32.58	43.56	934.67	1249.97	28.692
34	-3.28	100	73	22.62	22.62	35.95	45.32	924.74	1165.90	25.723
35	-3.38	100	74	22.62	22.62	39.55	47.11	1085.12	1292.52	27.436
36	-3.48	100	75	22.62	27.14	43.38	48.92	1078.63	1216.22	24.862
37	-3.58	100	76	22.62	27.14	47.46	50.75	1074.19	1148.70	22.634
38	-3.68	100	77	22.62	27.14	51.78	52.61	1071.48	1088.57	20.691
39	-3.78	100	78	22.62	27.14	56.36	54.49	1070.24	1034.69	18.988
40	-3.87	100	79	22.62	27.14	61.21	56.40	1070.27	986.18	17.486
41	-3.97	100	80	22.62	27.14	66.32	58.33	1071.39	942.27	16.155
42	-4.07	100	81	22.62	27.14	71.71	60.28	1073.46	902.37	14.969
43	-4.17	100	82	22.62	27.14	77.39	62.26	1076.36	865.95	13.909
44	-4.27	100	83	22.62	27.14	83.36	64.26	1080.00	832.61	12.956
45	-4.37	100	84	22.62	27.14	89.63	66.29	1084.29	801.96	12.098
46	-4.47	100	85	22.62	27.14	96.20	68.34	1089.16	773.71	11.321
47	-4.57	100	86	22.62	27.14	103.09	70.42	1094.54	747.59	10.617
48	-4.67	100	87	22.62	27.14	110.31	72.51	1100.40	723.38	9.976
49	-4.77	100	88	22.62	36.19	117.85	74.64	1444.34	914.73	12.256
50	-4.87	100	89	22.62	36.19	125.73	76.79	1452.68	887.16	11.554

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
51	-4.97	100	90	22.62	36.19	133.96	78.96	1461.47	861.43	10.910
52	-5.07	100	91	22.62	36.19	142.53	81.15	1470.69	837.36	10.318
53	-5.17	100	92	22.62	36.19	151.47	83.37	1480.28	814.80	9.773
54	-5.27	100	93	22.62	36.19	160.77	85.62	1490.23	793.62	9.269
55	-5.36	100	94	22.62	36.19	170.45	87.89	1500.49	773.70	8.803
56	-5.46	100	95	22.62	36.19	180.50	90.18	1511.06	754.93	8.371
57	-5.56	100	96	22.62	36.19	190.95	92.50	1521.90	737.22	7.970
58	-5.66	100	97	22.62	36.19	201.79	94.84	1532.99	720.49	7.597
59	-5.76	100	98	22.62	36.19	213.04	97.20	1544.33	704.65	7.249
60	-5.86	100	99	22.62	36.19	224.69	99.59	1555.88	689.64	6.924
61	-5.96	100	100	22.62	36.19	236.77	102.01	1567.64	675.40	6.621
62	-6.06	100	101	22.62	36.19	249.27	104.45	1579.60	661.88	6.337
63	-6.16	100	102	22.62	36.19	262.20	106.91	1591.73	649.02	6.071
64	-6.26	100	103	22.62	36.19	275.57	109.40	1604.04	636.77	5.821
65	-6.36	100	104	22.62	36.19	289.39	111.91	1616.50	625.10	5.586
66	-6.46	100	105	22.62	36.19	303.66	114.44	1628.60	613.77	5.363
67	-6.56	100	106	22.62	36.19	318.40	117.00	1640.19	602.71	5.151
68	-6.66	100	107	22.62	36.19	333.61	119.58	1651.92	592.14	4.952
69	-6.76	100	108	22.62	36.19	349.29	122.19	1663.76	582.02	4.763
70	-6.85	100	109	22.62	36.19	365.46	124.82	1675.70	572.34	4.585
71	-6.95	100	110	22.62	36.19	382.12	127.48	1687.76	563.05	4.417
72	-7.05	100	111	22.62	36.19	399.28	130.16	1699.91	554.14	4.257
73	-7.15	100	112	22.62	36.19	416.95	132.86	1712.15	545.59	4.106
74	-7.25	100	113	22.62	36.19	435.13	135.59	1724.48	537.37	3.963
75	-7.35	100	114	22.62	36.19	453.83	138.34	1736.89	529.47	3.827
76	-7.45	100	115	22.62	36.19	473.06	141.12	1749.38	521.87	3.698
77	-7.55	100	116	22.62	36.19	492.83	143.92	1761.94	514.55	3.575

Combinazione n° 2 - STR (A1-M1-R3)

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	0.00	100	40	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.10	100	41	22.62	22.62	0.00	0.99	0.00	0.00	1000.000
3	-0.20	100	42	22.62	22.62	0.01	2.00	0.00	0.00	1000.000
4	-0.30	100	43	22.62	22.62	0.02	3.03	0.00	0.00	1000.000
5	-0.40	100	44	22.62	22.62	0.04	4.09	0.00	0.00	1000.000
6	-0.50	100	45	22.62	22.62	0.07	5.17	0.00	0.00	1000.000
7	-0.60	100	46	22.62	22.62	0.12	6.28	0.00	0.00	1000.000
8	-0.70	100	47	22.62	22.62	0.20	7.41	0.00	0.00	1000.000
9	-0.79	100	48	22.62	22.62	0.32	8.57	0.00	0.00	1000.000
10	-0.89	100	49	22.62	22.62	0.47	9.75	418.55	8668.66	889.272
11	-0.99	100	50	22.62	22.62	0.68	10.95	514.34	8344.48	761.904
12	-1.09	100	51	22.62	22.62	0.94	12.18	612.41	7968.02	654.165
13	-1.19	100	52	22.62	22.62	1.26	13.43	709.66	7557.77	562.629
14	-1.29	100	53	22.62	22.62	1.66	14.71	803.52	7129.15	484.658
15	-1.39	100	54	22.62	22.62	2.13	16.01	892.53	6698.40	418.375
16	-1.49	100	55	22.62	22.62	2.69	17.34	976.32	6280.38	362.282
17	-1.59	100	56	22.62	22.62	3.35	18.68	1052.95	5872.81	314.308
18	-1.69	100	57	22.62	22.62	4.11	20.06	1122.80	5484.83	273.443
19	-1.79	100	58	22.62	22.62	4.97	21.46	1183.79	5109.98	238.160
20	-1.89	100	59	22.62	22.62	5.95	22.88	1209.21	4648.92	203.206
21	-1.99	100	60	22.62	22.62	7.05	24.32	1213.62	4184.98	172.051
22	-2.09	100	61	22.62	22.62	8.29	25.79	1204.63	3749.35	145.356
23	-2.19	100	62	22.62	22.62	9.66	27.29	1187.15	3354.00	122.908
24	-2.28	100	63	22.62	22.62	11.18	28.81	1163.38	2998.90	104.102
25	-2.38	100	64	22.62	22.62	12.84	30.35	1132.27	2675.42	88.151
26	-2.48	100	65	22.62	22.62	14.67	31.92	1106.77	2407.36	75.425
27	-2.58	100	66	22.62	22.62	16.67	33.51	1071.12	2153.04	64.253

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
28	-2.68	100	67	22.62	22.62	18.84	35.12	1042.20	1942.88	55.315
29	-2.78	100	68	22.62	22.62	21.19	36.76	1014.54	1759.80	47.868
30	-2.88	100	69	22.62	22.62	23.74	38.43	986.38	1596.83	41.554
31	-2.98	100	70	22.62	22.62	26.48	40.12	964.59	1461.47	36.432
32	-3.08	100	71	22.62	22.62	29.42	41.83	947.70	1347.37	32.212
33	-3.18	100	72	22.62	22.62	32.58	43.56	934.67	1249.97	28.692
34	-3.28	100	73	22.62	22.62	35.95	45.32	924.74	1165.90	25.723
35	-3.38	100	74	22.62	27.14	39.55	47.11	1085.12	1292.52	27.436
36	-3.48	100	75	22.62	27.14	43.38	48.92	1078.63	1216.22	24.862
37	-3.58	100	76	22.62	27.14	47.46	50.75	1074.19	1148.70	22.634
38	-3.68	100	77	22.62	27.14	51.78	52.61	1071.48	1088.57	20.691
39	-3.78	100	78	22.62	27.14	56.36	54.49	1070.24	1034.69	18.988
40	-3.87	100	79	22.62	27.14	61.21	56.40	1070.27	986.18	17.486
41	-3.97	100	80	22.62	27.14	66.32	58.33	1071.39	942.27	16.155
42	-4.07	100	81	22.62	27.14	71.71	60.28	1073.46	902.37	14.969
43	-4.17	100	82	22.62	27.14	77.39	62.26	1076.36	865.95	13.909
44	-4.27	100	83	22.62	27.14	83.36	64.26	1080.00	832.61	12.956
45	-4.37	100	84	22.62	27.14	89.63	66.29	1084.29	801.96	12.098
46	-4.47	100	85	22.62	27.14	96.20	68.34	1089.16	773.71	11.321
47	-4.57	100	86	22.62	27.14	103.09	70.42	1094.54	747.59	10.617
48	-4.67	100	87	22.62	27.14	110.31	72.51	1100.40	723.38	9.976
49	-4.77	100	88	22.62	36.19	117.85	74.64	1444.34	914.73	12.256
50	-4.87	100	89	22.62	36.19	125.73	76.79	1452.68	887.16	11.554
51	-4.97	100	90	22.62	36.19	133.96	78.96	1461.47	861.43	10.910
52	-5.07	100	91	22.62	36.19	142.53	81.15	1470.69	837.36	10.318
53	-5.17	100	92	22.62	36.19	151.47	83.37	1480.28	814.80	9.773
54	-5.27	100	93	22.62	36.19	160.77	85.62	1490.23	793.62	9.269
55	-5.36	100	94	22.62	36.19	170.45	87.89	1500.49	773.70	8.803
56	-5.46	100	95	22.62	36.19	180.50	90.18	1511.06	754.93	8.371
57	-5.56	100	96	22.62	36.19	190.95	92.50	1521.90	737.22	7.970
58	-5.66	100	97	22.62	36.19	201.79	94.84	1532.99	720.49	7.597
59	-5.76	100	98	22.62	36.19	213.04	97.20	1544.33	704.65	7.249
60	-5.86	100	99	22.62	36.19	224.69	99.59	1555.88	689.64	6.924
61	-5.96	100	100	22.62	36.19	236.77	102.01	1567.64	675.40	6.621
62	-6.06	100	101	22.62	36.19	249.27	104.45	1579.60	661.88	6.337
63	-6.16	100	102	22.62	36.19	262.20	106.91	1591.73	649.02	6.071
64	-6.26	100	103	22.62	36.19	275.57	109.40	1604.04	636.77	5.821
65	-6.36	100	104	22.62	36.19	289.39	111.91	1616.50	625.10	5.586
66	-6.46	100	105	22.62	36.19	303.66	114.44	1628.60	613.77	5.363
67	-6.56	100	106	22.62	36.19	318.40	117.00	1640.19	602.71	5.151
68	-6.66	100	107	22.62	36.19	333.61	119.58	1651.92	592.14	4.952
69	-6.76	100	108	22.62	36.19	349.29	122.19	1663.76	582.02	4.763
70	-6.85	100	109	22.62	36.19	365.46	124.82	1675.70	572.34	4.585
71	-6.95	100	110	22.62	36.19	382.12	127.48	1687.76	563.05	4.417
72	-7.05	100	111	22.62	36.19	399.28	130.16	1699.91	554.14	4.257
73	-7.15	100	112	22.62	36.19	416.95	132.86	1712.15	545.59	4.106
74	-7.25	100	113	22.62	36.19	435.13	135.59	1724.48	537.37	3.963
75	-7.35	100	114	22.62	36.19	453.83	138.34	1736.89	529.47	3.827
76	-7.45	100	115	22.62	36.19	473.06	141.12	1749.38	521.87	3.698
77	-7.55	100	116	22.62	36.19	492.83	143.92	1761.94	514.55	3.575

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	0.00	100	40	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.10	100	41	22.62	22.62	0.00	0.99	0.00	0.00	1000.000
3	-0.20	100	42	22.62	22.62	0.02	2.00	0.00	0.00	1000.000
4	-0.30	100	43	22.62	22.62	0.03	3.03	0.00	0.00	1000.000

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
5	-0.40	100	44	22.62	22.62	0.06	4.09	0.00	0.00	1000.000
6	-0.50	100	45	22.62	22.62	0.11	5.17	0.00	0.00	1000.000
7	-0.60	100	46	22.62	22.62	0.17	6.28	0.00	0.00	1000.000
8	-0.70	100	47	22.62	22.62	0.26	7.41	0.00	0.00	1000.000
9	-0.79	100	48	22.62	22.62	0.38	8.57	0.00	0.00	1000.000
10	-0.89	100	49	22.62	22.62	0.54	9.75	461.94	8406.02	862.329
11	-0.99	100	50	22.62	22.62	0.74	10.95	546.97	8125.82	741.938
12	-1.09	100	51	22.62	22.62	0.99	12.18	634.28	7817.64	641.818
13	-1.19	100	52	22.62	22.62	1.29	13.43	720.59	7476.16	556.554
14	-1.29	100	53	22.62	22.62	1.66	14.71	804.66	7119.35	483.992
15	-1.39	100	54	22.62	22.62	2.10	16.01	886.07	6762.96	422.407
16	-1.49	100	55	22.62	22.62	2.61	17.34	963.31	6408.18	369.654
17	-1.59	100	56	22.62	22.62	3.19	18.68	1036.31	6063.51	324.514
18	-1.69	100	57	22.62	22.62	3.87	20.06	1106.74	5742.35	286.282
19	-1.79	100	58	22.62	22.62	4.63	21.46	1166.99	5408.70	252.083
20	-1.89	100	59	22.62	22.62	5.49	22.88	1223.22	5097.64	222.819
21	-1.99	100	60	22.62	22.62	6.45	24.32	1243.16	4685.99	192.649
22	-2.09	100	61	22.62	22.62	7.52	25.79	1250.35	4286.01	166.161
23	-2.19	100	62	22.62	22.62	8.71	27.29	1248.32	3910.33	143.295
24	-2.28	100	63	22.62	22.62	10.02	28.81	1241.32	3569.23	123.900
25	-2.38	100	64	22.62	22.62	11.45	30.35	1220.61	3234.74	106.580
26	-2.48	100	65	22.62	22.62	13.02	31.92	1202.60	2948.36	92.375
27	-2.58	100	66	22.62	22.62	14.72	33.51	1176.89	2678.46	79.933
28	-2.68	100	67	22.62	22.62	16.57	35.12	1158.39	2455.16	69.900
29	-2.78	100	68	22.62	22.62	18.57	36.76	1127.43	2231.86	60.708
30	-2.88	100	69	22.62	22.62	20.73	38.43	1103.37	2045.67	53.235
31	-2.98	100	70	22.62	22.62	23.04	40.12	1082.62	1884.67	46.981
32	-3.08	100	71	22.62	22.62	25.53	41.83	1056.10	1730.35	41.368
33	-3.18	100	72	22.62	22.62	28.19	43.56	1035.12	1599.76	36.722
34	-3.28	100	73	22.62	22.62	31.03	45.32	1018.53	1487.88	32.827
35	-3.38	100	74	22.62	27.14	34.05	47.11	1189.38	1645.45	34.928
36	-3.48	100	75	22.62	27.14	37.27	48.92	1177.14	1545.11	31.585
37	-3.58	100	76	22.62	27.14	40.68	50.75	1167.72	1456.74	28.703
38	-3.68	100	77	22.62	27.14	44.30	52.61	1160.66	1378.35	26.200
39	-3.78	100	78	22.62	27.14	48.13	54.49	1155.59	1308.39	24.011
40	-3.87	100	79	22.62	27.14	52.17	56.40	1152.23	1245.58	22.086
41	-3.97	100	80	22.62	27.14	56.43	58.33	1150.32	1188.91	20.383
42	-4.07	100	81	22.62	27.14	60.93	60.28	1149.68	1137.53	18.870
43	-4.17	100	82	22.62	27.14	65.65	62.26	1150.15	1090.76	17.520
44	-4.27	100	83	22.62	27.14	70.61	64.26	1151.58	1048.02	16.308
45	-4.37	100	84	22.62	27.14	75.82	66.29	1153.87	1008.81	15.218
46	-4.47	100	85	22.62	27.14	81.28	68.34	1156.91	972.72	14.234
47	-4.57	100	86	22.62	27.14	87.00	70.42	1160.61	939.40	13.341
48	-4.67	100	87	22.62	27.14	92.98	72.51	1164.92	908.56	12.529
49	-4.77	100	88	22.62	36.19	99.22	74.64	1526.69	1148.42	15.387
50	-4.87	100	89	22.62	36.19	105.75	76.79	1533.30	1113.40	14.500
51	-4.97	100	90	22.62	36.19	112.55	78.96	1540.51	1080.74	13.688
52	-5.07	100	91	22.62	36.19	119.64	81.15	1548.24	1050.23	12.941
53	-5.17	100	92	22.62	36.19	127.02	83.37	1556.47	1021.66	12.254
54	-5.27	100	93	22.62	36.19	134.70	85.62	1565.14	994.86	11.620
55	-5.36	100	94	22.62	36.19	142.68	87.89	1574.23	969.67	11.033
56	-5.46	100	95	22.62	36.19	150.98	90.18	1583.69	945.96	10.490
57	-5.56	100	96	22.62	36.19	159.59	92.50	1593.50	923.60	9.985
58	-5.66	100	97	22.62	36.19	168.52	94.84	1603.64	902.49	9.516
59	-5.76	100	98	22.62	36.19	177.78	97.20	1614.07	882.52	9.079
60	-5.86	100	99	22.62	36.19	187.38	99.59	1624.78	863.61	8.671
61	-5.96	100	100	22.62	36.19	197.31	102.01	1635.75	845.68	8.290
62	-6.06	100	101	22.62	36.19	207.59	104.45	1646.96	828.65	7.934
63	-6.16	100	102	22.62	36.19	218.22	106.91	1658.40	812.47	7.600
64	-6.26	100	103	22.62	36.19	229.21	109.40	1670.05	797.07	7.286
65	-6.36	100	104	22.62	36.19	240.56	111.91	1681.90	782.40	6.992
66	-6.46	100	105	22.62	36.19	252.28	114.44	1693.94	768.40	6.714

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
67	-6.56	100	106	22.62	36.19	264.38	117.00	1706.15	755.05	6.453
68	-6.66	100	107	22.62	36.19	276.86	119.58	1718.53	742.28	6.207
69	-6.76	100	108	22.62	36.19	289.73	122.19	1731.07	730.07	5.975
70	-6.85	100	109	22.62	36.19	302.99	124.82	1743.75	718.39	5.755
71	-6.95	100	110	22.62	36.19	316.64	127.48	1756.51	707.16	5.547
72	-7.05	100	111	22.62	36.19	330.71	130.16	1768.20	695.93	5.347
73	-7.15	100	112	22.62	36.19	345.18	132.86	1779.99	685.14	5.157
74	-7.25	100	113	22.62	36.19	360.07	135.59	1791.90	674.78	4.977
75	-7.35	100	114	22.62	36.19	375.38	138.34	1803.92	664.82	4.806
76	-7.45	100	115	22.62	36.19	391.13	141.12	1816.03	655.24	4.643
77	-7.55	100	116	22.62	36.19	407.30	143.92	1828.24	646.02	4.489

Combinazione n° 4 - STR (A1-M1-R3) H - V

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	0.00	100	40	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.10	100	41	22.62	22.62	0.00	0.99	0.00	0.00	1000.000
3	-0.20	100	42	22.62	22.62	0.02	2.00	0.00	0.00	1000.000
4	-0.30	100	43	22.62	22.62	0.03	3.03	0.00	0.00	1000.000
5	-0.40	100	44	22.62	22.62	0.06	4.09	0.00	0.00	1000.000
6	-0.50	100	45	22.62	22.62	0.11	5.17	0.00	0.00	1000.000
7	-0.60	100	46	22.62	22.62	0.17	6.28	0.00	0.00	1000.000
8	-0.70	100	47	22.62	22.62	0.26	7.41	0.00	0.00	1000.000
9	-0.79	100	48	22.62	22.62	0.37	8.57	0.00	0.00	1000.000
10	-0.89	100	49	22.62	22.62	0.53	9.75	458.40	8427.46	864.528
11	-0.99	100	50	22.62	22.62	0.73	10.95	542.52	8155.67	744.664
12	-1.09	100	51	22.62	22.62	0.98	12.18	629.11	7857.03	645.052
13	-1.19	100	52	22.62	22.62	1.28	13.43	714.57	7521.10	559.900
14	-1.29	100	53	22.62	22.62	1.64	14.71	798.39	7173.30	487.660
15	-1.39	100	54	22.62	22.62	2.06	16.01	879.83	6825.29	426.300
16	-1.49	100	55	22.62	22.62	2.56	17.34	956.69	6473.19	373.404
17	-1.59	100	56	22.62	22.62	3.14	18.68	1030.11	6134.49	328.313
18	-1.69	100	57	22.62	22.62	3.80	20.06	1100.38	5814.23	289.865
19	-1.79	100	58	22.62	22.62	4.54	21.46	1162.45	5489.41	255.844
20	-1.89	100	59	22.62	22.62	5.39	22.88	1220.06	5182.79	226.541
21	-1.99	100	60	22.62	22.62	6.33	24.32	1246.48	4791.32	196.979
22	-2.09	100	61	22.62	22.62	7.38	25.79	1257.70	4397.92	170.500
23	-2.19	100	62	22.62	22.62	8.54	27.29	1260.22	4028.32	147.618
24	-2.28	100	63	22.62	22.62	9.82	28.81	1252.15	3675.04	127.573
25	-2.38	100	64	22.62	22.62	11.22	30.35	1235.79	3343.78	110.173
26	-2.48	100	65	22.62	22.62	12.75	31.92	1220.33	3055.44	95.730
27	-2.58	100	66	22.62	22.62	14.41	33.51	1194.65	2777.32	82.884
28	-2.68	100	67	22.62	22.62	16.22	35.12	1174.43	2543.17	72.405
29	-2.78	100	68	22.62	22.62	18.17	36.76	1148.58	2323.52	63.201
30	-2.88	100	69	22.62	22.62	20.28	38.43	1122.28	2126.67	55.342
31	-2.98	100	70	22.62	22.62	22.54	40.12	1102.65	1962.23	48.914
32	-3.08	100	71	22.62	22.62	24.97	41.83	1076.95	1804.03	43.130
33	-3.18	100	72	22.62	22.62	27.57	43.56	1054.08	1665.76	38.237
34	-3.28	100	73	22.62	22.62	30.34	45.32	1035.93	1547.60	34.144
35	-3.38	100	74	22.62	27.14	33.29	47.11	1208.42	1709.90	36.296
36	-3.48	100	75	22.62	27.14	36.43	48.92	1194.88	1604.33	32.796
37	-3.58	100	76	22.62	27.14	39.77	50.75	1184.35	1511.50	29.782
38	-3.68	100	77	22.62	27.14	43.30	52.61	1176.33	1429.27	27.168
39	-3.78	100	78	22.62	27.14	47.04	54.49	1170.43	1355.97	24.884
40	-3.87	100	79	22.62	27.14	50.98	56.40	1166.34	1290.23	22.878
41	-3.97	100	80	22.62	27.14	55.14	58.33	1163.79	1230.98	21.105
42	-4.07	100	81	22.62	27.14	59.53	60.28	1162.58	1177.31	19.530
43	-4.17	100	82	22.62	27.14	64.14	62.26	1162.53	1128.49	18.126

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
44	-4.27	100	83	22.62	27.14	68.98	64.26	1163.51	1083.91	16.867
45	-4.37	100	84	22.62	27.14	74.06	66.29	1165.39	1043.04	15.735
46	-4.47	100	85	22.62	27.14	79.39	68.34	1168.05	1005.45	14.712
47	-4.57	100	86	22.62	27.14	84.97	70.42	1171.41	970.75	13.786
48	-4.67	100	87	22.62	27.14	90.80	72.51	1175.41	938.66	12.944
49	-4.77	100	88	22.62	36.19	96.90	74.64	1540.01	1186.21	15.893
50	-4.87	100	89	22.62	36.19	103.26	76.79	1546.28	1149.80	14.974
51	-4.97	100	90	22.62	36.19	109.90	78.96	1553.16	1115.86	14.132
52	-5.07	100	91	22.62	36.19	116.82	81.15	1560.61	1084.17	13.359
53	-5.17	100	92	22.62	36.19	124.02	83.37	1568.57	1054.50	12.648
54	-5.27	100	93	22.62	36.19	131.51	85.62	1576.99	1026.68	11.991
55	-5.36	100	94	22.62	36.19	139.30	87.89	1585.84	1000.54	11.384
56	-5.46	100	95	22.62	36.19	147.39	90.18	1595.09	975.94	10.822
57	-5.56	100	96	22.62	36.19	155.79	92.50	1604.70	952.76	10.300
58	-5.66	100	97	22.62	36.19	164.51	94.84	1614.65	930.86	9.815
59	-5.76	100	98	22.62	36.19	173.54	97.20	1624.91	910.17	9.363
60	-5.86	100	99	22.62	36.19	182.90	99.59	1635.45	890.57	8.942
61	-5.96	100	100	22.62	36.19	192.59	102.01	1646.27	871.99	8.548
62	-6.06	100	101	22.62	36.19	202.61	104.45	1657.34	854.35	8.180
63	-6.16	100	102	22.62	36.19	212.98	106.91	1668.64	837.59	7.835
64	-6.26	100	103	22.62	36.19	223.70	109.40	1680.17	821.64	7.511
65	-6.36	100	104	22.62	36.19	234.77	111.91	1691.90	806.45	7.206
66	-6.46	100	105	22.62	36.19	246.21	114.44	1703.82	791.97	6.920
67	-6.56	100	106	22.62	36.19	258.01	117.00	1715.93	778.14	6.651
68	-6.66	100	107	22.62	36.19	270.18	119.58	1728.21	764.93	6.397
69	-6.76	100	108	22.62	36.19	282.72	122.19	1740.66	752.30	6.157
70	-6.85	100	109	22.62	36.19	295.65	124.82	1753.26	740.22	5.930
71	-6.95	100	110	22.62	36.19	308.97	127.48	1766.00	728.64	5.716
72	-7.05	100	111	22.62	36.19	322.69	130.16	1778.53	717.39	5.512
73	-7.15	100	112	22.62	36.19	336.80	132.86	1790.25	706.23	5.315
74	-7.25	100	113	22.62	36.19	351.32	135.59	1802.07	695.51	5.129
75	-7.35	100	114	22.62	36.19	366.26	138.34	1814.01	685.20	4.953
76	-7.45	100	115	22.62	36.19	381.61	141.12	1826.05	675.29	4.785
77	-7.55	100	116	22.62	36.19	397.38	143.92	1838.19	665.75	4.626

Fondazione

Combinazione n° 1 - STR (A1-M1-R3)

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	-0.90	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.80	100	110	22.62	22.62	1.19	0.00	894.12	0.00	754.290
3	-0.70	100	110	22.62	22.62	4.72	0.00	894.12	0.00	189.351
4	-0.60	100	110	22.62	22.62	10.58	0.00	894.12	0.00	84.505
5	-0.50	100	110	22.62	22.62	18.73	0.00	894.12	0.00	47.732
6	-0.40	100	110	22.62	22.62	29.15	0.00	894.12	0.00	30.676
7	0.76	100	110	22.62	31.67	-1183.97	0.00	-1244.96	0.00	1.052
8	0.85	100	110	22.62	31.67	-1147.02	0.00	-1244.96	0.00	1.085
9	0.95	100	110	22.62	31.67	-1110.17	0.00	-1244.96	0.00	1.121
10	1.05	100	110	22.62	31.67	-1073.43	0.00	-1244.96	0.00	1.160
11	1.15	100	110	22.62	31.67	-1036.84	0.00	-1244.96	0.00	1.201
12	1.25	100	110	22.62	31.67	-1000.42	0.00	-1244.96	0.00	1.244
13	1.35	100	110	22.62	31.67	-964.20	0.00	-1244.96	0.00	1.291
14	1.45	100	110	22.62	31.67	-928.22	0.00	-1244.96	0.00	1.341
15	1.55	100	110	22.62	31.67	-892.49	0.00	-1244.96	0.00	1.395

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
16	1.65	100	110	22.62	22.62	-857.05	0.00	-894.12	0.00	1.043
17	1.74	100	110	22.62	22.62	-821.92	0.00	-894.12	0.00	1.088
18	1.84	100	110	22.62	22.62	-787.13	0.00	-894.12	0.00	1.136
19	1.94	100	110	22.62	22.62	-752.72	0.00	-894.12	0.00	1.188
20	2.04	100	110	22.62	22.62	-718.71	0.00	-894.12	0.00	1.244
21	2.14	100	110	22.62	22.62	-685.13	0.00	-894.12	0.00	1.305
22	2.24	100	110	22.62	22.62	-652.00	0.00	-894.12	0.00	1.371
23	2.34	100	110	22.62	22.62	-619.36	0.00	-894.12	0.00	1.444
24	2.44	100	110	22.62	22.62	-587.23	0.00	-894.12	0.00	1.523
25	2.54	100	110	22.62	22.62	-555.64	0.00	-894.12	0.00	1.609
26	2.64	100	110	22.62	22.62	-524.63	0.00	-894.12	0.00	1.704
27	2.73	100	110	22.62	22.62	-494.21	0.00	-894.12	0.00	1.809
28	2.83	100	110	22.62	22.62	-464.42	0.00	-894.12	0.00	1.925
29	2.93	100	110	22.62	22.62	-435.29	0.00	-894.12	0.00	2.054
30	3.03	100	110	22.62	22.62	-406.84	0.00	-894.12	0.00	2.198
31	3.13	100	110	22.62	22.62	-379.10	0.00	-894.12	0.00	2.359
32	3.23	100	110	22.62	22.62	-352.10	0.00	-894.12	0.00	2.539
33	3.33	100	110	22.62	22.62	-325.87	0.00	-894.12	0.00	2.744
34	3.43	100	110	22.62	22.62	-300.44	0.00	-894.12	0.00	2.976
35	3.53	100	110	22.62	22.62	-275.83	0.00	-894.12	0.00	3.242
36	3.63	100	110	22.62	22.62	-252.08	0.00	-894.12	0.00	3.547
37	3.72	100	110	22.62	22.62	-229.20	0.00	-894.12	0.00	3.901
38	3.82	100	110	22.62	22.62	-207.24	0.00	-894.12	0.00	4.314
39	3.92	100	110	22.62	22.62	-186.22	0.00	-894.12	0.00	4.801
40	4.02	100	110	22.62	22.62	-166.17	0.00	-894.12	0.00	5.381
41	4.12	100	110	22.62	22.62	-147.11	0.00	-894.12	0.00	6.078
42	4.22	100	110	22.62	22.62	-129.08	0.00	-894.12	0.00	6.927
43	4.32	100	110	22.62	22.62	-112.09	0.00	-894.12	0.00	7.977
44	4.42	100	110	22.62	22.62	-96.19	0.00	-894.12	0.00	9.295
45	4.52	100	110	22.62	22.62	-81.40	0.00	-894.12	0.00	10.984
46	4.62	100	110	22.62	22.62	-67.75	0.00	-894.12	0.00	13.198
47	4.71	100	110	22.62	22.62	-55.26	0.00	-894.12	0.00	16.181
48	4.81	100	110	22.62	22.62	-43.96	0.00	-894.12	0.00	20.338
49	4.91	100	110	22.62	22.62	-33.89	0.00	-894.12	0.00	26.383
50	5.01	100	110	22.62	22.62	-25.07	0.00	-894.12	0.00	35.666
51	5.11	100	110	22.62	22.62	-17.53	0.00	-894.12	0.00	51.013
52	5.21	100	110	22.62	22.62	-11.29	0.00	-894.12	0.00	79.175
53	5.31	100	110	22.62	22.62	-6.39	0.00	-894.12	0.00	139.818
54	5.41	100	110	22.62	22.62	-2.86	0.00	-894.12	0.00	312.513
55	5.51	100	110	22.62	22.62	-0.72	0.00	0.00	0.00	1000.000
56	5.61	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000

Combinazione n° 2 - STR (A1-M1-R3)

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	-0.90	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.80	100	110	22.62	22.62	1.14	0.00	894.12	0.00	781.221
3	-0.70	100	110	22.62	22.62	4.56	0.00	894.12	0.00	196.070
4	-0.60	100	110	22.62	22.62	10.22	0.00	894.12	0.00	87.484
5	-0.50	100	110	22.62	22.62	18.10	0.00	894.12	0.00	49.404
6	-0.40	100	110	22.62	22.62	28.17	0.00	894.12	0.00	31.744
7	0.76	100	110	22.62	31.67	-1138.73	0.00	-1244.96	0.00	1.093
8	0.85	100	110	22.62	31.67	-1102.70	0.00	-1244.96	0.00	1.129
9	0.95	100	110	22.62	31.67	-1066.79	0.00	-1244.96	0.00	1.167
10	1.05	100	110	22.62	31.67	-1031.03	0.00	-1244.96	0.00	1.207
11	1.15	100	110	22.62	31.67	-995.45	0.00	-1244.96	0.00	1.251
12	1.25	100	110	22.62	31.67	-960.08	0.00	-1244.96	0.00	1.297
13	1.35	100	110	22.62	31.67	-924.93	0.00	-1244.96	0.00	1.346

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
14	1.45	100	110	22.62	31.67	-890.05	0.00	-1244.96	0.00	1.399
15	1.55	100	110	22.62	31.67	-855.44	0.00	-1244.96	0.00	1.455
16	1.65	100	110	22.62	22.62	-821.14	0.00	-894.12	0.00	1.089
17	1.74	100	110	22.62	22.62	-787.18	0.00	-894.12	0.00	1.136
18	1.84	100	110	22.62	22.62	-753.58	0.00	-894.12	0.00	1.187
19	1.94	100	110	22.62	22.62	-720.36	0.00	-894.12	0.00	1.241
20	2.04	100	110	22.62	22.62	-687.56	0.00	-894.12	0.00	1.300
21	2.14	100	110	22.62	22.62	-655.19	0.00	-894.12	0.00	1.365
22	2.24	100	110	22.62	22.62	-623.29	0.00	-894.12	0.00	1.435
23	2.34	100	110	22.62	22.62	-591.87	0.00	-894.12	0.00	1.511
24	2.44	100	110	22.62	22.62	-560.98	0.00	-894.12	0.00	1.594
25	2.54	100	110	22.62	22.62	-530.62	0.00	-894.12	0.00	1.685
26	2.64	100	110	22.62	22.62	-500.83	0.00	-894.12	0.00	1.785
27	2.73	100	110	22.62	22.62	-471.64	0.00	-894.12	0.00	1.896
28	2.83	100	110	22.62	22.62	-443.07	0.00	-894.12	0.00	2.018
29	2.93	100	110	22.62	22.62	-415.14	0.00	-894.12	0.00	2.154
30	3.03	100	110	22.62	22.62	-387.88	0.00	-894.12	0.00	2.305
31	3.13	100	110	22.62	22.62	-361.32	0.00	-894.12	0.00	2.475
32	3.23	100	110	22.62	22.62	-335.49	0.00	-894.12	0.00	2.665
33	3.33	100	110	22.62	22.62	-310.40	0.00	-894.12	0.00	2.881
34	3.43	100	110	22.62	22.62	-286.09	0.00	-894.12	0.00	3.125
35	3.53	100	110	22.62	22.62	-262.58	0.00	-894.12	0.00	3.405
36	3.63	100	110	22.62	22.62	-239.90	0.00	-894.12	0.00	3.727
37	3.72	100	110	22.62	22.62	-218.07	0.00	-894.12	0.00	4.100
38	3.82	100	110	22.62	22.62	-197.12	0.00	-894.12	0.00	4.536
39	3.92	100	110	22.62	22.62	-177.08	0.00	-894.12	0.00	5.049
40	4.02	100	110	22.62	22.62	-157.97	0.00	-894.12	0.00	5.660
41	4.12	100	110	22.62	22.62	-139.81	0.00	-894.12	0.00	6.395
42	4.22	100	110	22.62	22.62	-122.64	0.00	-894.12	0.00	7.291
43	4.32	100	110	22.62	22.62	-106.48	0.00	-894.12	0.00	8.397
44	4.42	100	110	22.62	22.62	-91.35	0.00	-894.12	0.00	9.788
45	4.52	100	110	22.62	22.62	-77.28	0.00	-894.12	0.00	11.570
46	4.62	100	110	22.62	22.62	-64.30	0.00	-894.12	0.00	13.905
47	4.71	100	110	22.62	22.62	-52.43	0.00	-894.12	0.00	17.052
48	4.81	100	110	22.62	22.62	-41.71	0.00	-894.12	0.00	21.438
49	4.91	100	110	22.62	22.62	-32.14	0.00	-894.12	0.00	27.816
50	5.01	100	110	22.62	22.62	-23.77	0.00	-894.12	0.00	37.613
51	5.11	100	110	22.62	22.62	-16.62	0.00	-894.12	0.00	53.810
52	5.21	100	110	22.62	22.62	-10.70	0.00	-894.12	0.00	83.535
53	5.31	100	110	22.62	22.62	-6.06	0.00	-894.12	0.00	147.552
54	5.41	100	110	22.62	22.62	-2.71	0.00	-894.12	0.00	329.872
55	5.51	100	110	22.62	22.62	-0.68	0.00	0.00	0.00	1000.000
56	5.61	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	-0.90	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.80	100	110	22.62	22.62	1.01	0.00	894.12	0.00	886.945
3	-0.70	100	110	22.62	22.62	4.02	0.00	894.12	0.00	222.400
4	-0.60	100	110	22.62	22.62	9.02	0.00	894.12	0.00	99.142
5	-0.50	100	110	22.62	22.62	15.98	0.00	894.12	0.00	55.935
6	-0.40	100	110	22.62	22.62	24.90	0.00	894.12	0.00	35.907
7	0.76	100	110	22.62	31.67	-365.72	0.00	-1244.96	0.00	3.404
8	0.85	100	110	22.62	31.67	-357.67	0.00	-1244.96	0.00	3.481
9	0.95	100	110	22.62	31.67	-349.37	0.00	-1244.96	0.00	3.563
10	1.05	100	110	22.62	31.67	-340.84	0.00	-1244.96	0.00	3.653
11	1.15	100	110	22.62	31.67	-332.10	0.00	-1244.96	0.00	3.749

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
12	1.25	100	110	22.62	31.67	-323.15	0.00	-1244.96	0.00	3.853
13	1.35	100	110	22.62	31.67	-314.03	0.00	-1244.96	0.00	3.964
14	1.45	100	110	22.62	31.67	-304.75	0.00	-1244.96	0.00	4.085
15	1.55	100	110	22.62	31.67	-295.31	0.00	-1244.96	0.00	4.216
16	1.65	100	110	22.62	22.62	-285.76	0.00	-894.12	0.00	3.129
17	1.74	100	110	22.62	22.62	-276.09	0.00	-894.12	0.00	3.239
18	1.84	100	110	22.62	22.62	-266.33	0.00	-894.12	0.00	3.357
19	1.94	100	110	22.62	22.62	-256.49	0.00	-894.12	0.00	3.486
20	2.04	100	110	22.62	22.62	-246.60	0.00	-894.12	0.00	3.626
21	2.14	100	110	22.62	22.62	-236.67	0.00	-894.12	0.00	3.778
22	2.24	100	110	22.62	22.62	-226.71	0.00	-894.12	0.00	3.944
23	2.34	100	110	22.62	22.62	-216.75	0.00	-894.12	0.00	4.125
24	2.44	100	110	22.62	22.62	-206.80	0.00	-894.12	0.00	4.324
25	2.54	100	110	22.62	22.62	-196.89	0.00	-894.12	0.00	4.541
26	2.64	100	110	22.62	22.62	-187.02	0.00	-894.12	0.00	4.781
27	2.73	100	110	22.62	22.62	-177.21	0.00	-894.12	0.00	5.045
28	2.83	100	110	22.62	22.62	-167.49	0.00	-894.12	0.00	5.338
29	2.93	100	110	22.62	22.62	-157.87	0.00	-894.12	0.00	5.664
30	3.03	100	110	22.62	22.62	-148.37	0.00	-894.12	0.00	6.026
31	3.13	100	110	22.62	22.62	-139.00	0.00	-894.12	0.00	6.433
32	3.23	100	110	22.62	22.62	-129.78	0.00	-894.12	0.00	6.889
33	3.33	100	110	22.62	22.62	-120.74	0.00	-894.12	0.00	7.406
34	3.43	100	110	22.62	22.62	-111.88	0.00	-894.12	0.00	7.992
35	3.53	100	110	22.62	22.62	-103.23	0.00	-894.12	0.00	8.662
36	3.63	100	110	22.62	22.62	-94.80	0.00	-894.12	0.00	9.432
37	3.72	100	110	22.62	22.62	-86.61	0.00	-894.12	0.00	10.324
38	3.82	100	110	22.62	22.62	-78.68	0.00	-894.12	0.00	11.364
39	3.92	100	110	22.62	22.62	-71.02	0.00	-894.12	0.00	12.589
40	4.02	100	110	22.62	22.62	-63.66	0.00	-894.12	0.00	14.045
41	4.12	100	110	22.62	22.62	-56.61	0.00	-894.12	0.00	15.795
42	4.22	100	110	22.62	22.62	-49.88	0.00	-894.12	0.00	17.924
43	4.32	100	110	22.62	22.62	-43.51	0.00	-894.12	0.00	20.552
44	4.42	100	110	22.62	22.62	-37.49	0.00	-894.12	0.00	23.849
45	4.52	100	110	22.62	22.62	-31.86	0.00	-894.12	0.00	28.068
46	4.62	100	110	22.62	22.62	-26.62	0.00	-894.12	0.00	33.589
47	4.71	100	110	22.62	22.62	-21.80	0.00	-894.12	0.00	41.018
48	4.81	100	110	22.62	22.62	-17.41	0.00	-894.12	0.00	51.357
49	4.91	100	110	22.62	22.62	-13.47	0.00	-894.12	0.00	66.366
50	5.01	100	110	22.62	22.62	-10.00	0.00	-894.12	0.00	89.382
51	5.11	100	110	22.62	22.62	-7.02	0.00	-894.12	0.00	127.371
52	5.21	100	110	22.62	22.62	-4.54	0.00	-894.12	0.00	196.969
53	5.31	100	110	22.62	22.62	-2.58	0.00	-894.12	0.00	346.601
54	5.41	100	110	22.62	22.62	-1.16	0.00	-894.12	0.00	771.988
55	5.51	100	110	22.62	22.62	-0.29	0.00	0.00	0.00	1000.000
56	5.61	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000

Combinazione n° 4 - STR (A1-M1-R3) H - V

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	-0.90	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	-0.80	100	110	22.62	22.62	0.98	0.00	894.12	0.00	913.983
3	-0.70	100	110	22.62	22.62	3.90	0.00	894.12	0.00	229.187
4	-0.60	100	110	22.62	22.62	8.75	0.00	894.12	0.00	102.170
5	-0.50	100	110	22.62	22.62	15.51	0.00	894.12	0.00	57.645
6	-0.40	100	110	22.62	22.62	24.16	0.00	894.12	0.00	37.006
7	0.76	100	110	22.62	31.67	-414.62	0.00	-1244.96	0.00	3.003
8	0.85	100	110	22.62	31.67	-404.46	0.00	-1244.96	0.00	3.078
9	0.95	100	110	22.62	31.67	-394.10	0.00	-1244.96	0.00	3.159

n°	Y	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
10	1.05	100	110	22.62	31.67	-383.56	0.00	-1244.96	0.00	3.246
11	1.15	100	110	22.62	31.67	-372.85	0.00	-1244.96	0.00	3.339
12	1.25	100	110	22.62	31.67	-362.00	0.00	-1244.96	0.00	3.439
13	1.35	100	110	22.62	31.67	-351.02	0.00	-1244.96	0.00	3.547
14	1.45	100	110	22.62	31.67	-339.93	0.00	-1244.96	0.00	3.662
15	1.55	100	110	22.62	31.67	-328.74	0.00	-1244.96	0.00	3.787
16	1.65	100	110	22.62	22.62	-317.48	0.00	-894.12	0.00	2.816
17	1.74	100	110	22.62	22.62	-306.15	0.00	-894.12	0.00	2.921
18	1.84	100	110	22.62	22.62	-294.78	0.00	-894.12	0.00	3.033
19	1.94	100	110	22.62	22.62	-283.39	0.00	-894.12	0.00	3.155
20	2.04	100	110	22.62	22.62	-271.98	0.00	-894.12	0.00	3.287
21	2.14	100	110	22.62	22.62	-260.58	0.00	-894.12	0.00	3.431
22	2.24	100	110	22.62	22.62	-249.21	0.00	-894.12	0.00	3.588
23	2.34	100	110	22.62	22.62	-237.88	0.00	-894.12	0.00	3.759
24	2.44	100	110	22.62	22.62	-226.61	0.00	-894.12	0.00	3.946
25	2.54	100	110	22.62	22.62	-215.42	0.00	-894.12	0.00	4.151
26	2.64	100	110	22.62	22.62	-204.32	0.00	-894.12	0.00	4.376
27	2.73	100	110	22.62	22.62	-193.33	0.00	-894.12	0.00	4.625
28	2.83	100	110	22.62	22.62	-182.47	0.00	-894.12	0.00	4.900
29	2.93	100	110	22.62	22.62	-171.75	0.00	-894.12	0.00	5.206
30	3.03	100	110	22.62	22.62	-161.20	0.00	-894.12	0.00	5.547
31	3.13	100	110	22.62	22.62	-150.82	0.00	-894.12	0.00	5.928
32	3.23	100	110	22.62	22.62	-140.65	0.00	-894.12	0.00	6.357
33	3.33	100	110	22.62	22.62	-130.68	0.00	-894.12	0.00	6.842
34	3.43	100	110	22.62	22.62	-120.95	0.00	-894.12	0.00	7.392
35	3.53	100	110	22.62	22.62	-111.47	0.00	-894.12	0.00	8.021
36	3.63	100	110	22.62	22.62	-102.25	0.00	-894.12	0.00	8.745
37	3.72	100	110	22.62	22.62	-93.31	0.00	-894.12	0.00	9.582
38	3.82	100	110	22.62	22.62	-84.67	0.00	-894.12	0.00	10.560
39	3.92	100	110	22.62	22.62	-76.35	0.00	-894.12	0.00	11.710
40	4.02	100	110	22.62	22.62	-68.37	0.00	-894.12	0.00	13.078
41	4.12	100	110	22.62	22.62	-60.73	0.00	-894.12	0.00	14.723
42	4.22	100	110	22.62	22.62	-53.46	0.00	-894.12	0.00	16.724
43	4.32	100	110	22.62	22.62	-46.58	0.00	-894.12	0.00	19.195
44	4.42	100	110	22.62	22.62	-40.10	0.00	-894.12	0.00	22.296
45	4.52	100	110	22.62	22.62	-34.04	0.00	-894.12	0.00	26.264
46	4.62	100	110	22.62	22.62	-28.42	0.00	-894.12	0.00	31.460
47	4.71	100	110	22.62	22.62	-23.25	0.00	-894.12	0.00	38.452
48	4.81	100	110	22.62	22.62	-18.56	0.00	-894.12	0.00	48.186
49	4.91	100	110	22.62	22.62	-14.35	0.00	-894.12	0.00	62.322
50	5.01	100	110	22.62	22.62	-10.64	0.00	-894.12	0.00	84.007
51	5.11	100	110	22.62	22.62	-7.46	0.00	-894.12	0.00	119.811
52	5.21	100	110	22.62	22.62	-4.82	0.00	-894.12	0.00	185.428
53	5.31	100	110	22.62	22.62	-2.74	0.00	-894.12	0.00	326.551
54	5.41	100	110	22.62	22.62	-1.23	0.00	-894.12	0.00	727.897
55	5.51	100	110	22.62	22.62	-0.31	0.00	0.00	0.00	1000.000
56	5.61	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000

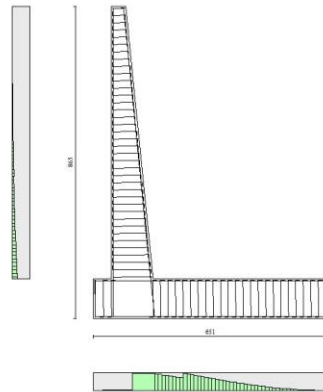


Fig. 10 - Paramento (Inviluppo)

Verifiche a taglio

Simbologia adottata

I_s	indice sezione
Y	ordinata sezione espressa in [m]
B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
A_{sw}	area ferri a taglio espresso in [cm ²]
$\cot\theta$	inclinazione delle bielle compresse, θ inclinazione dei puntoni di calcestruzzo
V_{Rcd}	resistenza di progetto a 'taglio compressione' espressa in [kN]
V_{Rsd}	resistenza di progetto a 'taglio trazione' espressa in [kN]
V_{Rd}	resistenza di progetto a taglio espresso in [kN]. Per elementi con armature trasversali resistenti al taglio ($A_{sw} > 0.0$) $V_{Rd} = \min(V_{Rcd}, V_{Rsd})$.
T	taglio agente espressa in [kN]
FS	fattore di sicurezza (rapporto tra sollecitazione resistente e sollecitazione agente)

Paramento

Combinazione n° 1 - STR (A1-M1-R3)

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	0.00	100	40	0.00	0.00	--	0.00	0.00	260.06	0.00	100.000
2	-0.10	100	41	0.00	0.00	--	0.00	0.00	263.50	0.00	100.000
3	-0.20	100	42	0.00	0.00	--	0.00	0.00	266.91	0.00	100.000
4	-0.30	100	43	0.00	0.00	--	0.00	0.00	270.29	0.00	100.000
5	-0.40	100	44	0.00	0.00	--	0.00	0.00	273.64	0.04	7705.082
6	-0.50	100	45	0.00	0.00	--	0.00	0.00	276.96	0.14	1910.699
7	-0.60	100	46	0.00	0.00	--	0.00	0.00	280.25	0.33	855.702
8	-0.70	100	47	0.00	0.00	--	0.00	0.00	283.51	0.58	486.967
9	-0.79	100	48	0.00	0.00	--	0.00	0.00	286.75	0.91	315.313
10	-0.89	100	49	0.00	0.00	--	0.00	0.00	289.96	1.31	221.402
11	-0.99	100	50	0.00	0.00	--	0.00	0.00	293.15	1.78	164.419
12	-1.09	100	51	0.00	0.00	--	0.00	0.00	296.31	2.33	127.214
13	-1.19	100	52	0.00	0.00	--	0.00	0.00	299.45	2.95	101.559
14	-1.29	100	53	0.00	0.00	--	0.00	0.00	302.57	3.64	83.103
15	-1.39	100	54	0.00	0.00	--	0.00	0.00	305.67	4.41	69.371
16	-1.49	100	55	0.00	0.00	--	0.00	0.00	308.76	5.24	58.869
17	-1.59	100	56	0.00	0.00	--	0.00	0.00	311.82	6.16	50.650
18	-1.69	100	57	0.00	0.00	--	0.00	0.00	314.86	7.14	44.093
19	-1.79	100	58	0.00	0.00	--	0.00	0.00	317.88	8.20	38.774
20	-1.89	100	59	0.00	0.00	--	0.00	0.00	320.89	9.33	34.397
21	-1.99	100	60	0.00	0.00	--	0.00	0.00	323.88	10.53	30.751
22	-2.09	100	61	0.00	0.00	--	0.00	0.00	326.86	11.81	27.678
23	-2.19	100	62	0.00	0.00	--	0.00	0.00	329.81	13.16	25.064
24	-2.28	100	63	0.00	0.00	--	0.00	0.00	332.76	14.58	22.820
25	-2.38	100	64	0.00	0.00	--	0.00	0.00	335.69	16.08	20.879
26	-2.48	100	65	0.00	0.00	--	0.00	0.00	338.60	17.65	19.188
27	-2.58	100	66	0.00	0.00	--	0.00	0.00	341.50	19.29	17.705
28	-2.68	100	67	0.00	0.00	--	0.00	0.00	344.39	21.00	16.397
29	-2.78	100	68	0.00	0.00	--	0.00	0.00	347.26	22.79	15.237
30	-2.88	100	69	0.00	0.00	--	0.00	0.00	350.12	24.65	14.203
31	-2.98	100	70	0.00	0.00	--	0.00	0.00	352.97	26.59	13.277
32	-3.08	100	71	0.00	0.00	--	0.00	0.00	355.81	28.59	12.444
33	-3.18	100	72	0.00	0.00	--	0.00	0.00	358.63	30.67	11.692
34	-3.28	100	73	0.00	0.00	--	0.00	0.00	361.44	32.83	11.011
35	-3.38	100	74	0.00	0.00	--	0.00	0.00	375.79	35.05	10.721
36	-3.48	100	75	0.00	0.00	--	0.00	0.00	378.66	37.35	10.138
37	-3.58	100	76	0.00	0.00	--	0.00	0.00	381.53	39.72	9.605
38	-3.68	100	77	0.00	0.00	--	0.00	0.00	384.38	42.17	9.115
39	-3.78	100	78	0.00	0.00	--	0.00	0.00	387.22	44.69	8.665
40	-3.87	100	79	0.00	0.00	--	0.00	0.00	390.05	47.28	8.250
41	-3.97	100	80	0.00	0.00	--	0.00	0.00	392.87	49.94	7.867
42	-4.07	100	81	0.00	0.00	--	0.00	0.00	395.69	52.68	7.511
43	-4.17	100	82	0.00	0.00	--	0.00	0.00	398.49	55.49	7.181
44	-4.27	100	83	0.00	0.00	--	0.00	0.00	401.28	58.37	6.874
45	-4.37	100	84	0.00	0.00	--	0.00	0.00	404.07	61.33	6.588
46	-4.47	100	85	0.00	0.00	--	0.00	0.00	406.85	64.36	6.321
47	-4.57	100	86	0.00	0.00	--	0.00	0.00	409.61	67.46	6.072
48	-4.67	100	87	0.00	0.00	--	0.00	0.00	412.38	70.64	5.838
49	-4.77	100	88	0.00	0.00	--	0.00	0.00	438.30	73.89	5.932
50	-4.87	100	89	0.00	0.00	--	0.00	0.00	441.18	77.21	5.714
51	-4.97	100	90	0.00	0.00	--	0.00	0.00	444.06	80.60	5.509
52	-5.07	100	91	0.00	0.00	--	0.00	0.00	446.92	84.07	5.316
53	-5.17	100	92	0.00	0.00	--	0.00	0.00	449.78	87.61	5.134
54	-5.27	100	93	0.00	0.00	--	0.00	0.00	452.64	91.22	4.962
55	-5.36	100	94	0.00	0.00	--	0.00	0.00	455.48	94.91	4.799
56	-5.46	100	95	0.00	0.00	--	0.00	0.00	458.32	98.67	4.645
57	-5.56	100	96	0.00	0.00	--	0.00	0.00	461.15	102.50	4.499
58	-5.66	100	97	0.00	0.00	--	0.00	0.00	463.98	106.41	4.360
59	-5.76	100	98	0.00	0.00	--	0.00	0.00	466.79	110.39	4.229

Sottovia SP42 - Relazione di calcolo Muri di appoggio

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IA7K	00	D10CL	SL0100002	A	86 di 159

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
60	-5.86	100	99	0.00	0.00	--	0.00	0.00	469.60	114.44	4.103
61	-5.96	100	100	0.00	0.00	--	0.00	0.00	472.41	118.57	3.984
62	-6.06	100	101	0.00	0.00	--	0.00	0.00	475.21	122.76	3.871
63	-6.16	100	102	0.00	0.00	--	0.00	0.00	478.00	127.03	3.763
64	-6.26	100	103	0.00	0.00	--	0.00	0.00	480.79	131.38	3.660
65	-6.36	100	104	0.00	0.00	--	0.00	0.00	483.57	135.80	3.561
66	-6.46	100	105	0.00	0.00	--	0.00	0.00	486.34	140.29	3.467
67	-6.56	100	106	0.00	0.00	--	0.00	0.00	489.11	144.85	3.377
68	-6.66	100	107	0.00	0.00	--	0.00	0.00	491.88	149.49	3.290
69	-6.76	100	108	0.00	0.00	--	0.00	0.00	494.63	154.20	3.208
70	-6.85	100	109	0.00	0.00	--	0.00	0.00	497.39	158.98	3.129
71	-6.95	100	110	0.00	0.00	--	0.00	0.00	500.14	163.83	3.053
72	-7.05	100	111	0.00	0.00	--	0.00	0.00	502.88	168.76	2.980
73	-7.15	100	112	0.00	0.00	--	0.00	0.00	505.62	173.76	2.910
74	-7.25	100	113	0.00	0.00	--	0.00	0.00	508.35	178.84	2.843
75	-7.35	100	114	0.00	0.00	--	0.00	0.00	511.08	183.98	2.778
76	-7.45	100	115	0.00	0.00	--	0.00	0.00	513.81	189.21	2.716
77	-7.55	100	116	0.00	0.00	--	0.00	0.00	516.53	194.50	2.656

Combinazione n° 2 - STR (A1-M1-R3)

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	0.00	100	40	0.00	0.00	--	0.00	0.00	260.06	0.00	100.000
2	-0.10	100	41	0.00	0.00	--	0.00	0.00	263.50	0.00	100.000
3	-0.20	100	42	0.00	0.00	--	0.00	0.00	266.91	0.00	100.000
4	-0.30	100	43	0.00	0.00	--	0.00	0.00	270.29	0.00	100.000
5	-0.40	100	44	0.00	0.00	--	0.00	0.00	273.64	0.04	7705.082
6	-0.50	100	45	0.00	0.00	--	0.00	0.00	276.96	0.14	1910.699
7	-0.60	100	46	0.00	0.00	--	0.00	0.00	280.25	0.33	855.702
8	-0.70	100	47	0.00	0.00	--	0.00	0.00	283.51	0.58	486.967
9	-0.79	100	48	0.00	0.00	--	0.00	0.00	286.75	0.91	315.313
10	-0.89	100	49	0.00	0.00	--	0.00	0.00	289.96	1.31	221.402
11	-0.99	100	50	0.00	0.00	--	0.00	0.00	293.15	1.78	164.419
12	-1.09	100	51	0.00	0.00	--	0.00	0.00	296.31	2.33	127.214
13	-1.19	100	52	0.00	0.00	--	0.00	0.00	299.45	2.95	101.559
14	-1.29	100	53	0.00	0.00	--	0.00	0.00	302.57	3.64	83.103
15	-1.39	100	54	0.00	0.00	--	0.00	0.00	305.67	4.41	69.371
16	-1.49	100	55	0.00	0.00	--	0.00	0.00	308.76	5.24	58.869
17	-1.59	100	56	0.00	0.00	--	0.00	0.00	311.82	6.16	50.650
18	-1.69	100	57	0.00	0.00	--	0.00	0.00	314.86	7.14	44.093
19	-1.79	100	58	0.00	0.00	--	0.00	0.00	317.88	8.20	38.774
20	-1.89	100	59	0.00	0.00	--	0.00	0.00	320.89	9.33	34.397
21	-1.99	100	60	0.00	0.00	--	0.00	0.00	323.88	10.53	30.751
22	-2.09	100	61	0.00	0.00	--	0.00	0.00	326.86	11.81	27.678
23	-2.19	100	62	0.00	0.00	--	0.00	0.00	329.81	13.16	25.064
24	-2.28	100	63	0.00	0.00	--	0.00	0.00	332.76	14.58	22.820
25	-2.38	100	64	0.00	0.00	--	0.00	0.00	335.69	16.08	20.879
26	-2.48	100	65	0.00	0.00	--	0.00	0.00	338.60	17.65	19.188
27	-2.58	100	66	0.00	0.00	--	0.00	0.00	341.50	19.29	17.705
28	-2.68	100	67	0.00	0.00	--	0.00	0.00	344.39	21.00	16.397
29	-2.78	100	68	0.00	0.00	--	0.00	0.00	347.26	22.79	15.237
30	-2.88	100	69	0.00	0.00	--	0.00	0.00	350.12	24.65	14.203
31	-2.98	100	70	0.00	0.00	--	0.00	0.00	352.97	26.59	13.277
32	-3.08	100	71	0.00	0.00	--	0.00	0.00	355.81	28.59	12.444
33	-3.18	100	72	0.00	0.00	--	0.00	0.00	358.63	30.67	11.692
34	-3.28	100	73	0.00	0.00	--	0.00	0.00	361.44	32.83	11.011
35	-3.38	100	74	0.00	0.00	--	0.00	0.00	375.79	35.05	10.721
36	-3.48	100	75	0.00	0.00	--	0.00	0.00	378.66	37.35	10.138

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
37	-3.58	100	76	0.00	0.00	--	0.00	0.00	381.53	39.72	9.605
38	-3.68	100	77	0.00	0.00	--	0.00	0.00	384.38	42.17	9.115
39	-3.78	100	78	0.00	0.00	--	0.00	0.00	387.22	44.69	8.665
40	-3.87	100	79	0.00	0.00	--	0.00	0.00	390.05	47.28	8.250
41	-3.97	100	80	0.00	0.00	--	0.00	0.00	392.87	49.94	7.867
42	-4.07	100	81	0.00	0.00	--	0.00	0.00	395.69	52.68	7.511
43	-4.17	100	82	0.00	0.00	--	0.00	0.00	398.49	55.49	7.181
44	-4.27	100	83	0.00	0.00	--	0.00	0.00	401.28	58.37	6.874
45	-4.37	100	84	0.00	0.00	--	0.00	0.00	404.07	61.33	6.588
46	-4.47	100	85	0.00	0.00	--	0.00	0.00	406.85	64.36	6.321
47	-4.57	100	86	0.00	0.00	--	0.00	0.00	409.61	67.46	6.072
48	-4.67	100	87	0.00	0.00	--	0.00	0.00	412.38	70.64	5.838
49	-4.77	100	88	0.00	0.00	--	0.00	0.00	438.30	73.89	5.932
50	-4.87	100	89	0.00	0.00	--	0.00	0.00	441.18	77.21	5.714
51	-4.97	100	90	0.00	0.00	--	0.00	0.00	444.06	80.60	5.509
52	-5.07	100	91	0.00	0.00	--	0.00	0.00	446.92	84.07	5.316
53	-5.17	100	92	0.00	0.00	--	0.00	0.00	449.78	87.61	5.134
54	-5.27	100	93	0.00	0.00	--	0.00	0.00	452.64	91.22	4.962
55	-5.36	100	94	0.00	0.00	--	0.00	0.00	455.48	94.91	4.799
56	-5.46	100	95	0.00	0.00	--	0.00	0.00	458.32	98.67	4.645
57	-5.56	100	96	0.00	0.00	--	0.00	0.00	461.15	102.50	4.499
58	-5.66	100	97	0.00	0.00	--	0.00	0.00	463.98	106.41	4.360
59	-5.76	100	98	0.00	0.00	--	0.00	0.00	466.79	110.39	4.229
60	-5.86	100	99	0.00	0.00	--	0.00	0.00	469.60	114.44	4.103
61	-5.96	100	100	0.00	0.00	--	0.00	0.00	472.41	118.57	3.984
62	-6.06	100	101	0.00	0.00	--	0.00	0.00	475.21	122.76	3.871
63	-6.16	100	102	0.00	0.00	--	0.00	0.00	478.00	127.03	3.763
64	-6.26	100	103	0.00	0.00	--	0.00	0.00	480.79	131.38	3.660
65	-6.36	100	104	0.00	0.00	--	0.00	0.00	483.57	135.80	3.561
66	-6.46	100	105	0.00	0.00	--	0.00	0.00	486.34	140.29	3.467
67	-6.56	100	106	0.00	0.00	--	0.00	0.00	489.11	144.85	3.377
68	-6.66	100	107	0.00	0.00	--	0.00	0.00	491.88	149.49	3.290
69	-6.76	100	108	0.00	0.00	--	0.00	0.00	494.63	154.20	3.208
70	-6.85	100	109	0.00	0.00	--	0.00	0.00	497.39	158.98	3.129
71	-6.95	100	110	0.00	0.00	--	0.00	0.00	500.14	163.83	3.053
72	-7.05	100	111	0.00	0.00	--	0.00	0.00	502.88	168.76	2.980
73	-7.15	100	112	0.00	0.00	--	0.00	0.00	505.62	173.76	2.910
74	-7.25	100	113	0.00	0.00	--	0.00	0.00	508.35	178.84	2.843
75	-7.35	100	114	0.00	0.00	--	0.00	0.00	511.08	183.98	2.778
76	-7.45	100	115	0.00	0.00	--	0.00	0.00	513.81	189.21	2.716
77	-7.55	100	116	0.00	0.00	--	0.00	0.00	516.53	194.50	2.656

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	0.00	100	40	0.00	0.00	--	0.00	0.00	260.06	0.00	100.000
2	-0.10	100	41	0.00	0.00	--	0.00	0.00	263.50	0.03	9410.501
3	-0.20	100	42	0.00	0.00	--	0.00	0.00	266.91	0.06	4708.379
4	-0.30	100	43	0.00	0.00	--	0.00	0.00	270.29	0.09	3140.584
5	-0.40	100	44	0.00	0.00	--	0.00	0.00	273.64	0.14	1897.892
6	-0.50	100	45	0.00	0.00	--	0.00	0.00	276.96	0.26	1059.600
7	-0.60	100	46	0.00	0.00	--	0.00	0.00	280.25	0.44	641.203
8	-0.70	100	47	0.00	0.00	--	0.00	0.00	283.51	0.67	422.829
9	-0.79	100	48	0.00	0.00	--	0.00	0.00	286.75	0.96	298.075
10	-0.89	100	49	0.00	0.00	--	0.00	0.00	289.96	1.31	221.021
11	-0.99	100	50	0.00	0.00	--	0.00	0.00	293.15	1.72	170.410
12	-1.09	100	51	0.00	0.00	--	0.00	0.00	296.31	2.19	135.488
13	-1.19	100	52	0.00	0.00	--	0.00	0.00	299.45	2.71	110.411

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
14	-1.29	100	53	0.00	0.00	--	0.00	0.00	302.57	3.30	91.806
15	-1.39	100	54	0.00	0.00	--	0.00	0.00	305.67	3.94	77.625
16	-1.49	100	55	0.00	0.00	--	0.00	0.00	308.76	4.64	66.567
17	-1.59	100	56	0.00	0.00	--	0.00	0.00	311.82	5.40	57.774
18	-1.69	100	57	0.00	0.00	--	0.00	0.00	314.86	6.21	50.665
19	-1.79	100	58	0.00	0.00	--	0.00	0.00	317.88	7.09	44.834
20	-1.89	100	59	0.00	0.00	--	0.00	0.00	320.89	8.02	39.990
21	-1.99	100	60	0.00	0.00	--	0.00	0.00	323.88	9.02	35.919
22	-2.09	100	61	0.00	0.00	--	0.00	0.00	326.86	10.07	32.465
23	-2.19	100	62	0.00	0.00	--	0.00	0.00	329.81	11.18	29.507
24	-2.28	100	63	0.00	0.00	--	0.00	0.00	332.76	12.35	26.954
25	-2.38	100	64	0.00	0.00	--	0.00	0.00	335.69	13.57	24.735
26	-2.48	100	65	0.00	0.00	--	0.00	0.00	338.60	14.86	22.792
27	-2.58	100	66	0.00	0.00	--	0.00	0.00	341.50	16.20	21.081
28	-2.68	100	67	0.00	0.00	--	0.00	0.00	344.39	17.60	19.566
29	-2.78	100	68	0.00	0.00	--	0.00	0.00	347.26	19.06	18.218
30	-2.88	100	69	0.00	0.00	--	0.00	0.00	350.12	20.58	17.013
31	-2.98	100	70	0.00	0.00	--	0.00	0.00	352.97	22.16	15.931
32	-3.08	100	71	0.00	0.00	--	0.00	0.00	355.81	23.79	14.955
33	-3.18	100	72	0.00	0.00	--	0.00	0.00	358.63	25.49	14.072
34	-3.28	100	73	0.00	0.00	--	0.00	0.00	361.44	27.24	13.270
35	-3.38	100	74	0.00	0.00	--	0.00	0.00	375.79	29.05	12.937
36	-3.48	100	75	0.00	0.00	--	0.00	0.00	378.66	30.92	12.248
37	-3.58	100	76	0.00	0.00	--	0.00	0.00	381.53	32.84	11.616
38	-3.68	100	77	0.00	0.00	--	0.00	0.00	384.38	34.83	11.036
39	-3.78	100	78	0.00	0.00	--	0.00	0.00	387.22	36.87	10.501
40	-3.87	100	79	0.00	0.00	--	0.00	0.00	390.05	38.98	10.007
41	-3.97	100	80	0.00	0.00	--	0.00	0.00	392.87	41.14	9.550
42	-4.07	100	81	0.00	0.00	--	0.00	0.00	395.69	43.36	9.126
43	-4.17	100	82	0.00	0.00	--	0.00	0.00	398.49	45.64	8.732
44	-4.27	100	83	0.00	0.00	--	0.00	0.00	401.28	47.97	8.365
45	-4.37	100	84	0.00	0.00	--	0.00	0.00	404.07	50.37	8.023
46	-4.47	100	85	0.00	0.00	--	0.00	0.00	406.85	52.82	7.703
47	-4.57	100	86	0.00	0.00	--	0.00	0.00	409.61	55.33	7.403
48	-4.67	100	87	0.00	0.00	--	0.00	0.00	412.38	57.90	7.122
49	-4.77	100	88	0.00	0.00	--	0.00	0.00	438.30	60.53	7.241
50	-4.87	100	89	0.00	0.00	--	0.00	0.00	441.18	63.22	6.979
51	-4.97	100	90	0.00	0.00	--	0.00	0.00	444.06	65.96	6.732
52	-5.07	100	91	0.00	0.00	--	0.00	0.00	446.92	68.77	6.499
53	-5.17	100	92	0.00	0.00	--	0.00	0.00	449.78	71.63	6.279
54	-5.27	100	93	0.00	0.00	--	0.00	0.00	452.64	74.55	6.072
55	-5.36	100	94	0.00	0.00	--	0.00	0.00	455.48	77.53	5.875
56	-5.46	100	95	0.00	0.00	--	0.00	0.00	458.32	80.57	5.689
57	-5.56	100	96	0.00	0.00	--	0.00	0.00	461.15	83.66	5.512
58	-5.66	100	97	0.00	0.00	--	0.00	0.00	463.98	86.82	5.344
59	-5.76	100	98	0.00	0.00	--	0.00	0.00	466.79	90.03	5.185
60	-5.86	100	99	0.00	0.00	--	0.00	0.00	469.60	93.30	5.033
61	-5.96	100	100	0.00	0.00	--	0.00	0.00	472.41	96.63	4.889
62	-6.06	100	101	0.00	0.00	--	0.00	0.00	475.21	100.02	4.751
63	-6.16	100	102	0.00	0.00	--	0.00	0.00	478.00	103.46	4.620
64	-6.26	100	103	0.00	0.00	--	0.00	0.00	480.79	106.97	4.495
65	-6.36	100	104	0.00	0.00	--	0.00	0.00	483.57	110.53	4.375
66	-6.46	100	105	0.00	0.00	--	0.00	0.00	486.34	114.15	4.260
67	-6.56	100	106	0.00	0.00	--	0.00	0.00	489.11	117.83	4.151
68	-6.66	100	107	0.00	0.00	--	0.00	0.00	491.88	121.57	4.046
69	-6.76	100	108	0.00	0.00	--	0.00	0.00	494.63	125.37	3.945
70	-6.85	100	109	0.00	0.00	--	0.00	0.00	497.39	129.22	3.849
71	-6.95	100	110	0.00	0.00	--	0.00	0.00	500.14	133.14	3.757
72	-7.05	100	111	0.00	0.00	--	0.00	0.00	502.88	137.11	3.668
73	-7.15	100	112	0.00	0.00	--	0.00	0.00	505.62	141.14	3.582
74	-7.25	100	113	0.00	0.00	--	0.00	0.00	508.35	145.23	3.500
75	-7.35	100	114	0.00	0.00	--	0.00	0.00	511.08	149.38	3.421

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
76	-7.45	100	115	0.00	0.00	--	0.00	0.00	513.81	153.58	3.345
77	-7.55	100	116	0.00	0.00	--	0.00	0.00	516.53	157.85	3.272

Combinazione n° 4 - STR (A1-M1-R3) H - V

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	0.00	100	40	0.00	0.00	--	0.00	0.00	260.06	0.00	100.000
2	-0.10	100	41	0.00	0.00	--	0.00	0.00	263.50	0.03	9410.501
3	-0.20	100	42	0.00	0.00	--	0.00	0.00	266.91	0.06	4708.379
4	-0.30	100	43	0.00	0.00	--	0.00	0.00	270.29	0.09	3140.584
5	-0.40	100	44	0.00	0.00	--	0.00	0.00	273.64	0.14	1907.689
6	-0.50	100	45	0.00	0.00	--	0.00	0.00	276.96	0.26	1071.995
7	-0.60	100	46	0.00	0.00	--	0.00	0.00	280.25	0.43	651.406
8	-0.70	100	47	0.00	0.00	--	0.00	0.00	283.51	0.66	430.672
9	-0.79	100	48	0.00	0.00	--	0.00	0.00	286.75	0.94	304.119
10	-0.89	100	49	0.00	0.00	--	0.00	0.00	289.96	1.28	225.765
11	-0.99	100	50	0.00	0.00	--	0.00	0.00	293.15	1.68	174.214
12	-1.09	100	51	0.00	0.00	--	0.00	0.00	296.31	2.14	138.598
13	-1.19	100	52	0.00	0.00	--	0.00	0.00	299.45	2.65	113.000
14	-1.29	100	53	0.00	0.00	--	0.00	0.00	302.57	3.22	93.996
15	-1.39	100	54	0.00	0.00	--	0.00	0.00	305.67	3.84	79.502
16	-1.49	100	55	0.00	0.00	--	0.00	0.00	308.76	4.53	68.193
17	-1.59	100	56	0.00	0.00	--	0.00	0.00	311.82	5.27	59.199
18	-1.69	100	57	0.00	0.00	--	0.00	0.00	314.86	6.06	51.924
19	-1.79	100	58	0.00	0.00	--	0.00	0.00	317.88	6.92	45.955
20	-1.89	100	59	0.00	0.00	--	0.00	0.00	320.89	7.83	40.995
21	-1.99	100	60	0.00	0.00	--	0.00	0.00	323.88	8.79	36.827
22	-2.09	100	61	0.00	0.00	--	0.00	0.00	326.86	9.82	33.289
23	-2.19	100	62	0.00	0.00	--	0.00	0.00	329.81	10.90	30.259
24	-2.28	100	63	0.00	0.00	--	0.00	0.00	332.76	12.04	27.643
25	-2.38	100	64	0.00	0.00	--	0.00	0.00	335.69	13.23	25.369
26	-2.48	100	65	0.00	0.00	--	0.00	0.00	338.60	14.48	23.378
27	-2.58	100	66	0.00	0.00	--	0.00	0.00	341.50	15.79	21.624
28	-2.68	100	67	0.00	0.00	--	0.00	0.00	344.39	17.16	20.072
29	-2.78	100	68	0.00	0.00	--	0.00	0.00	347.26	18.58	18.690
30	-2.88	100	69	0.00	0.00	--	0.00	0.00	350.12	20.06	17.454
31	-2.98	100	70	0.00	0.00	--	0.00	0.00	352.97	21.60	16.345
32	-3.08	100	71	0.00	0.00	--	0.00	0.00	355.81	23.19	15.344
33	-3.18	100	72	0.00	0.00	--	0.00	0.00	358.63	24.84	14.439
34	-3.28	100	73	0.00	0.00	--	0.00	0.00	361.44	26.54	13.617
35	-3.38	100	74	0.00	0.00	--	0.00	0.00	375.79	28.31	13.275
36	-3.48	100	75	0.00	0.00	--	0.00	0.00	378.66	30.13	12.568
37	-3.58	100	76	0.00	0.00	--	0.00	0.00	381.53	32.01	11.921
38	-3.68	100	77	0.00	0.00	--	0.00	0.00	384.38	33.94	11.325
39	-3.78	100	78	0.00	0.00	--	0.00	0.00	387.22	35.93	10.777
40	-3.87	100	79	0.00	0.00	--	0.00	0.00	390.05	37.98	10.270
41	-3.97	100	80	0.00	0.00	--	0.00	0.00	392.87	40.08	9.801
42	-4.07	100	81	0.00	0.00	--	0.00	0.00	395.69	42.25	9.366
43	-4.17	100	82	0.00	0.00	--	0.00	0.00	398.49	44.46	8.962
44	-4.27	100	83	0.00	0.00	--	0.00	0.00	401.28	46.74	8.586
45	-4.37	100	84	0.00	0.00	--	0.00	0.00	404.07	49.07	8.234
46	-4.47	100	85	0.00	0.00	--	0.00	0.00	406.85	51.46	7.906
47	-4.57	100	86	0.00	0.00	--	0.00	0.00	409.61	53.91	7.598
48	-4.67	100	87	0.00	0.00	--	0.00	0.00	412.38	56.41	7.310
49	-4.77	100	88	0.00	0.00	--	0.00	0.00	438.30	58.97	7.432
50	-4.87	100	89	0.00	0.00	--	0.00	0.00	441.18	61.59	7.164
51	-4.97	100	90	0.00	0.00	--	0.00	0.00	444.06	64.26	6.910
52	-5.07	100	91	0.00	0.00	--	0.00	0.00	446.92	66.99	6.671

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
53	-5.17	100	92	0.00	0.00	--	0.00	0.00	449.78	69.78	6.446
54	-5.27	100	93	0.00	0.00	--	0.00	0.00	452.64	72.62	6.233
55	-5.36	100	94	0.00	0.00	--	0.00	0.00	455.48	75.52	6.031
56	-5.46	100	95	0.00	0.00	--	0.00	0.00	458.32	78.48	5.840
57	-5.56	100	96	0.00	0.00	--	0.00	0.00	461.15	81.50	5.658
58	-5.66	100	97	0.00	0.00	--	0.00	0.00	463.98	84.57	5.486
59	-5.76	100	98	0.00	0.00	--	0.00	0.00	466.79	87.70	5.323
60	-5.86	100	99	0.00	0.00	--	0.00	0.00	469.60	90.88	5.167
61	-5.96	100	100	0.00	0.00	--	0.00	0.00	472.41	94.13	5.019
62	-6.06	100	101	0.00	0.00	--	0.00	0.00	475.21	97.43	4.878
63	-6.16	100	102	0.00	0.00	--	0.00	0.00	478.00	100.78	4.743
64	-6.26	100	103	0.00	0.00	--	0.00	0.00	480.79	104.20	4.614
65	-6.36	100	104	0.00	0.00	--	0.00	0.00	483.57	107.67	4.491
66	-6.46	100	105	0.00	0.00	--	0.00	0.00	486.34	111.19	4.374
67	-6.56	100	106	0.00	0.00	--	0.00	0.00	489.11	114.78	4.261
68	-6.66	100	107	0.00	0.00	--	0.00	0.00	491.88	118.42	4.154
69	-6.76	100	108	0.00	0.00	--	0.00	0.00	494.63	122.11	4.051
70	-6.85	100	109	0.00	0.00	--	0.00	0.00	497.39	125.87	3.952
71	-6.95	100	110	0.00	0.00	--	0.00	0.00	500.14	129.68	3.857
72	-7.05	100	111	0.00	0.00	--	0.00	0.00	502.88	133.55	3.766
73	-7.15	100	112	0.00	0.00	--	0.00	0.00	505.62	137.47	3.678
74	-7.25	100	113	0.00	0.00	--	0.00	0.00	508.35	141.46	3.594
75	-7.35	100	114	0.00	0.00	--	0.00	0.00	511.08	145.49	3.513
76	-7.45	100	115	0.00	0.00	--	0.00	0.00	513.81	149.59	3.435
77	-7.55	100	116	0.00	0.00	--	0.00	0.00	516.53	153.74	3.360

Fondazione

Combinazione n° 1 - STR (A1-M1-R3)

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	-0.90	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000
2	-0.80	100	110	0.00	0.00	--	0.00	0.00	402.06	-23.66	16.994
3	-0.70	100	110	0.00	0.00	--	0.00	0.00	402.06	-47.03	8.550
4	-0.60	100	110	0.00	0.00	--	0.00	0.00	402.06	-70.10	5.736
5	-0.50	100	110	0.00	0.00	--	0.00	0.00	402.06	-92.88	4.329
6	-0.40	100	110	0.00	0.00	--	0.00	0.00	402.06	-115.37	3.485
7	0.76	100	110	0.00	0.00	--	0.00	0.00	427.25	-373.58	1.144
8	0.85	100	110	0.00	0.00	--	0.00	0.00	427.25	-372.83	1.146
9	0.95	100	110	0.00	0.00	--	0.00	0.00	427.25	-371.79	1.149
10	1.05	100	110	0.00	0.00	--	0.00	0.00	427.25	-370.47	1.153
11	1.15	100	110	0.00	0.00	--	0.00	0.00	427.25	-368.87	1.158
12	1.25	100	110	0.00	0.00	--	0.00	0.00	427.25	-366.97	1.164
13	1.35	100	110	0.00	0.00	--	0.00	0.00	427.25	-364.79	1.171
14	1.45	100	110	0.00	0.00	--	0.00	0.00	427.25	-362.33	1.179
15	1.55	100	110	0.00	0.00	--	0.00	0.00	427.25	-359.57	1.188
16	1.65	100	110	0.00	0.00	--	0.00	0.00	402.06	-356.53	1.128
17	1.74	100	110	0.00	0.00	--	0.00	0.00	402.06	-353.21	1.138
18	1.84	100	110	0.00	0.00	--	0.00	0.00	402.06	-349.60	1.150
19	1.94	100	110	0.00	0.00	--	0.00	0.00	402.06	-345.70	1.163
20	2.04	100	110	0.00	0.00	--	0.00	0.00	402.06	-341.51	1.177
21	2.14	100	110	0.00	0.00	--	0.00	0.00	402.06	-337.04	1.193
22	2.24	100	110	0.00	0.00	--	0.00	0.00	402.06	-332.28	1.210
23	2.34	100	110	0.00	0.00	--	0.00	0.00	402.06	-327.23	1.229
24	2.44	100	110	0.00	0.00	--	0.00	0.00	402.06	-321.90	1.249

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
25	2.54	100	110	0.00	0.00	--	0.00	0.00	402.06	-316.28	1.271
26	2.64	100	110	0.00	0.00	--	0.00	0.00	402.06	-310.38	1.295
27	2.73	100	110	0.00	0.00	--	0.00	0.00	402.06	-304.19	1.322
28	2.83	100	110	0.00	0.00	--	0.00	0.00	402.06	-297.71	1.351
29	2.93	100	110	0.00	0.00	--	0.00	0.00	402.06	-290.95	1.382
30	3.03	100	110	0.00	0.00	--	0.00	0.00	402.06	-283.89	1.416
31	3.13	100	110	0.00	0.00	--	0.00	0.00	402.06	-276.56	1.454
32	3.23	100	110	0.00	0.00	--	0.00	0.00	402.06	-268.93	1.495
33	3.33	100	110	0.00	0.00	--	0.00	0.00	402.06	-261.02	1.540
34	3.43	100	110	0.00	0.00	--	0.00	0.00	402.06	-252.83	1.590
35	3.53	100	110	0.00	0.00	--	0.00	0.00	402.06	-244.34	1.645
36	3.63	100	110	0.00	0.00	--	0.00	0.00	402.06	-235.57	1.707
37	3.72	100	110	0.00	0.00	--	0.00	0.00	402.06	-226.52	1.775
38	3.82	100	110	0.00	0.00	--	0.00	0.00	402.06	-217.17	1.851
39	3.92	100	110	0.00	0.00	--	0.00	0.00	402.06	-207.54	1.937
40	4.02	100	110	0.00	0.00	--	0.00	0.00	402.06	-197.63	2.034
41	4.12	100	110	0.00	0.00	--	0.00	0.00	402.06	-187.42	2.145
42	4.22	100	110	0.00	0.00	--	0.00	0.00	402.06	-176.93	2.272
43	4.32	100	110	0.00	0.00	--	0.00	0.00	402.06	-166.16	2.420
44	4.42	100	110	0.00	0.00	--	0.00	0.00	402.06	-155.10	2.592
45	4.52	100	110	0.00	0.00	--	0.00	0.00	402.06	-143.75	2.797
46	4.62	100	110	0.00	0.00	--	0.00	0.00	402.06	-132.11	3.043
47	4.71	100	110	0.00	0.00	--	0.00	0.00	402.06	-120.19	3.345
48	4.81	100	110	0.00	0.00	--	0.00	0.00	402.06	-107.98	3.723
49	4.91	100	110	0.00	0.00	--	0.00	0.00	402.06	-95.49	4.211
50	5.01	100	110	0.00	0.00	--	0.00	0.00	402.06	-82.71	4.861
51	5.11	100	110	0.00	0.00	--	0.00	0.00	402.06	-69.64	5.774
52	5.21	100	110	0.00	0.00	--	0.00	0.00	402.06	-56.28	7.143
53	5.31	100	110	0.00	0.00	--	0.00	0.00	402.06	-42.64	9.429
54	5.41	100	110	0.00	0.00	--	0.00	0.00	402.06	-28.71	14.002
55	5.51	100	110	0.00	0.00	--	0.00	0.00	402.06	-14.50	27.727
56	5.61	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000

Combinazione n° 2 - STR (A1-M1-R3)

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	-0.90	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000
2	-0.80	100	110	0.00	0.00	--	0.00	0.00	402.06	-22.85	17.599
3	-0.70	100	110	0.00	0.00	--	0.00	0.00	402.06	-45.42	8.851
4	-0.60	100	110	0.00	0.00	--	0.00	0.00	402.06	-67.73	5.936
5	-0.50	100	110	0.00	0.00	--	0.00	0.00	402.06	-89.78	4.478
6	-0.40	100	110	0.00	0.00	--	0.00	0.00	402.06	-111.55	3.604
7	0.76	100	110	0.00	0.00	--	0.00	0.00	427.25	-364.63	1.172
8	0.85	100	110	0.00	0.00	--	0.00	0.00	427.25	-363.48	1.175
9	0.95	100	110	0.00	0.00	--	0.00	0.00	427.25	-362.07	1.180
10	1.05	100	110	0.00	0.00	--	0.00	0.00	427.25	-360.40	1.185
11	1.15	100	110	0.00	0.00	--	0.00	0.00	427.25	-358.47	1.192
12	1.25	100	110	0.00	0.00	--	0.00	0.00	427.25	-356.27	1.199
13	1.35	100	110	0.00	0.00	--	0.00	0.00	427.25	-353.81	1.208
14	1.45	100	110	0.00	0.00	--	0.00	0.00	427.25	-351.09	1.217
15	1.55	100	110	0.00	0.00	--	0.00	0.00	427.25	-348.11	1.227
16	1.65	100	110	0.00	0.00	--	0.00	0.00	402.06	-344.86	1.166
17	1.74	100	110	0.00	0.00	--	0.00	0.00	402.06	-341.36	1.178
18	1.84	100	110	0.00	0.00	--	0.00	0.00	402.06	-337.59	1.191
19	1.94	100	110	0.00	0.00	--	0.00	0.00	402.06	-333.56	1.205
20	2.04	100	110	0.00	0.00	--	0.00	0.00	402.06	-329.26	1.221
21	2.14	100	110	0.00	0.00	--	0.00	0.00	402.06	-324.71	1.238
22	2.24	100	110	0.00	0.00	--	0.00	0.00	402.06	-319.89	1.257

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
23	2.34	100	110	0.00	0.00	--	0.00	0.00	402.06	-314.81	1.277
24	2.44	100	110	0.00	0.00	--	0.00	0.00	402.06	-309.46	1.299
25	2.54	100	110	0.00	0.00	--	0.00	0.00	402.06	-303.86	1.323
26	2.64	100	110	0.00	0.00	--	0.00	0.00	402.06	-297.99	1.349
27	2.73	100	110	0.00	0.00	--	0.00	0.00	402.06	-291.86	1.378
28	2.83	100	110	0.00	0.00	--	0.00	0.00	402.06	-285.47	1.408
29	2.93	100	110	0.00	0.00	--	0.00	0.00	402.06	-278.81	1.442
30	3.03	100	110	0.00	0.00	--	0.00	0.00	402.06	-271.90	1.479
31	3.13	100	110	0.00	0.00	--	0.00	0.00	402.06	-264.72	1.519
32	3.23	100	110	0.00	0.00	--	0.00	0.00	402.06	-257.28	1.563
33	3.33	100	110	0.00	0.00	--	0.00	0.00	402.06	-249.57	1.611
34	3.43	100	110	0.00	0.00	--	0.00	0.00	402.06	-241.61	1.664
35	3.53	100	110	0.00	0.00	--	0.00	0.00	402.06	-233.38	1.723
36	3.63	100	110	0.00	0.00	--	0.00	0.00	402.06	-224.89	1.788
37	3.72	100	110	0.00	0.00	--	0.00	0.00	402.06	-216.13	1.860
38	3.82	100	110	0.00	0.00	--	0.00	0.00	402.06	-207.12	1.941
39	3.92	100	110	0.00	0.00	--	0.00	0.00	402.06	-197.84	2.032
40	4.02	100	110	0.00	0.00	--	0.00	0.00	402.06	-188.30	2.135
41	4.12	100	110	0.00	0.00	--	0.00	0.00	402.06	-178.50	2.252
42	4.22	100	110	0.00	0.00	--	0.00	0.00	402.06	-168.44	2.387
43	4.32	100	110	0.00	0.00	--	0.00	0.00	402.06	-158.11	2.543
44	4.42	100	110	0.00	0.00	--	0.00	0.00	402.06	-147.52	2.725
45	4.52	100	110	0.00	0.00	--	0.00	0.00	402.06	-136.67	2.942
46	4.62	100	110	0.00	0.00	--	0.00	0.00	402.06	-125.56	3.202
47	4.71	100	110	0.00	0.00	--	0.00	0.00	402.06	-114.18	3.521
48	4.81	100	110	0.00	0.00	--	0.00	0.00	402.06	-102.54	3.921
49	4.91	100	110	0.00	0.00	--	0.00	0.00	402.06	-90.64	4.436
50	5.01	100	110	0.00	0.00	--	0.00	0.00	402.06	-78.48	5.123
51	5.11	100	110	0.00	0.00	--	0.00	0.00	402.06	-66.06	6.087
52	5.21	100	110	0.00	0.00	--	0.00	0.00	402.06	-53.37	7.533
53	5.31	100	110	0.00	0.00	--	0.00	0.00	402.06	-40.42	9.947
54	5.41	100	110	0.00	0.00	--	0.00	0.00	402.06	-27.21	14.776
55	5.51	100	110	0.00	0.00	--	0.00	0.00	402.06	-13.74	29.271
56	5.61	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000

Combinazione n° 3 - STR (A1-M1-R3) H + V

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	-0.90	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000
2	-0.80	100	110	0.00	0.00	--	0.00	0.00	402.06	-20.13	19.971
3	-0.70	100	110	0.00	0.00	--	0.00	0.00	402.06	-40.08	10.031
4	-0.60	100	110	0.00	0.00	--	0.00	0.00	402.06	-59.85	6.717
5	-0.50	100	110	0.00	0.00	--	0.00	0.00	402.06	-79.44	5.061
6	-0.40	100	110	0.00	0.00	--	0.00	0.00	402.06	-98.85	4.067
7	0.76	100	110	0.00	0.00	--	0.00	0.00	427.25	-79.98	5.342
8	0.85	100	110	0.00	0.00	--	0.00	0.00	427.25	-82.60	5.173
9	0.95	100	110	0.00	0.00	--	0.00	0.00	427.25	-85.04	5.024
10	1.05	100	110	0.00	0.00	--	0.00	0.00	427.25	-87.30	4.894
11	1.15	100	110	0.00	0.00	--	0.00	0.00	427.25	-89.38	4.780
12	1.25	100	110	0.00	0.00	--	0.00	0.00	427.25	-91.29	4.680
13	1.35	100	110	0.00	0.00	--	0.00	0.00	427.25	-93.02	4.593
14	1.45	100	110	0.00	0.00	--	0.00	0.00	427.25	-94.58	4.518
15	1.55	100	110	0.00	0.00	--	0.00	0.00	427.25	-95.95	4.453
16	1.65	100	110	0.00	0.00	--	0.00	0.00	402.06	-97.15	4.138
17	1.74	100	110	0.00	0.00	--	0.00	0.00	402.06	-98.17	4.095
18	1.84	100	110	0.00	0.00	--	0.00	0.00	402.06	-99.02	4.060
19	1.94	100	110	0.00	0.00	--	0.00	0.00	402.06	-99.69	4.033
20	2.04	100	110	0.00	0.00	--	0.00	0.00	402.06	-100.18	4.013

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
21	2.14	100	110	0.00	0.00	--	0.00	0.00	402.06	-100.50	4.001
22	2.24	100	110	0.00	0.00	--	0.00	0.00	402.06	-100.63	3.995
23	2.34	100	110	0.00	0.00	--	0.00	0.00	402.06	-100.59	3.997
24	2.44	100	110	0.00	0.00	--	0.00	0.00	402.06	-100.38	4.005
25	2.54	100	110	0.00	0.00	--	0.00	0.00	402.06	-99.98	4.021
26	2.64	100	110	0.00	0.00	--	0.00	0.00	402.06	-99.41	4.044
27	2.73	100	110	0.00	0.00	--	0.00	0.00	402.06	-98.67	4.075
28	2.83	100	110	0.00	0.00	--	0.00	0.00	402.06	-97.74	4.113
29	2.93	100	110	0.00	0.00	--	0.00	0.00	402.06	-96.64	4.160
30	3.03	100	110	0.00	0.00	--	0.00	0.00	402.06	-95.36	4.216
31	3.13	100	110	0.00	0.00	--	0.00	0.00	402.06	-93.91	4.281
32	3.23	100	110	0.00	0.00	--	0.00	0.00	402.06	-92.27	4.357
33	3.33	100	110	0.00	0.00	--	0.00	0.00	402.06	-90.47	4.444
34	3.43	100	110	0.00	0.00	--	0.00	0.00	402.06	-88.48	4.544
35	3.53	100	110	0.00	0.00	--	0.00	0.00	402.06	-86.32	4.658
36	3.63	100	110	0.00	0.00	--	0.00	0.00	402.06	-83.98	4.788
37	3.72	100	110	0.00	0.00	--	0.00	0.00	402.06	-81.46	4.936
38	3.82	100	110	0.00	0.00	--	0.00	0.00	402.06	-78.76	5.105
39	3.92	100	110	0.00	0.00	--	0.00	0.00	402.06	-75.89	5.298
40	4.02	100	110	0.00	0.00	--	0.00	0.00	402.06	-72.84	5.519
41	4.12	100	110	0.00	0.00	--	0.00	0.00	402.06	-69.62	5.775
42	4.22	100	110	0.00	0.00	--	0.00	0.00	402.06	-66.22	6.072
43	4.32	100	110	0.00	0.00	--	0.00	0.00	402.06	-62.64	6.419
44	4.42	100	110	0.00	0.00	--	0.00	0.00	402.06	-58.88	6.828
45	4.52	100	110	0.00	0.00	--	0.00	0.00	402.06	-54.95	7.317
46	4.62	100	110	0.00	0.00	--	0.00	0.00	402.06	-50.84	7.909
47	4.71	100	110	0.00	0.00	--	0.00	0.00	402.06	-46.55	8.637
48	4.81	100	110	0.00	0.00	--	0.00	0.00	402.06	-42.09	9.553
49	4.91	100	110	0.00	0.00	--	0.00	0.00	402.06	-37.44	10.737
50	5.01	100	110	0.00	0.00	--	0.00	0.00	402.06	-32.63	12.323
51	5.11	100	110	0.00	0.00	--	0.00	0.00	402.06	-27.63	14.551
52	5.21	100	110	0.00	0.00	--	0.00	0.00	402.06	-22.46	17.902
53	5.31	100	110	0.00	0.00	--	0.00	0.00	402.06	-17.11	23.499
54	5.41	100	110	0.00	0.00	--	0.00	0.00	402.06	-11.58	34.710
55	5.51	100	110	0.00	0.00	--	0.00	0.00	402.06	-5.88	68.375
56	5.61	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000

Combinazione n° 4 - STR (A1-M1-R3) H - V

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
1	-0.90	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000
2	-0.80	100	110	0.00	0.00	--	0.00	0.00	402.06	-19.54	20.581
3	-0.70	100	110	0.00	0.00	--	0.00	0.00	402.06	-38.89	10.337
4	-0.60	100	110	0.00	0.00	--	0.00	0.00	402.06	-58.08	6.923
5	-0.50	100	110	0.00	0.00	--	0.00	0.00	402.06	-77.08	5.216
6	-0.40	100	110	0.00	0.00	--	0.00	0.00	402.06	-95.91	4.192
7	0.76	100	110	0.00	0.00	--	0.00	0.00	427.25	-101.61	4.205
8	0.85	100	110	0.00	0.00	--	0.00	0.00	427.25	-103.69	4.120
9	0.95	100	110	0.00	0.00	--	0.00	0.00	427.25	-105.61	4.046
10	1.05	100	110	0.00	0.00	--	0.00	0.00	427.25	-107.35	3.980
11	1.15	100	110	0.00	0.00	--	0.00	0.00	427.25	-108.91	3.923
12	1.25	100	110	0.00	0.00	--	0.00	0.00	427.25	-110.31	3.873
13	1.35	100	110	0.00	0.00	--	0.00	0.00	427.25	-111.53	3.831
14	1.45	100	110	0.00	0.00	--	0.00	0.00	427.25	-112.57	3.795
15	1.55	100	110	0.00	0.00	--	0.00	0.00	427.25	-113.45	3.766
16	1.65	100	110	0.00	0.00	--	0.00	0.00	402.06	-114.15	3.522
17	1.74	100	110	0.00	0.00	--	0.00	0.00	402.06	-114.67	3.506
18	1.84	100	110	0.00	0.00	--	0.00	0.00	402.06	-115.03	3.495

n°	Y	B	H	A _{sw}	s	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[m]	[cm]	[cm]	[cmq]	[cm]		[kN]	[kN]	[kN]	[kN]	
19	1.94	100	110	0.00	0.00	--	0.00	0.00	402.06	-115.21	3.490
20	2.04	100	110	0.00	0.00	--	0.00	0.00	402.06	-115.21	3.490
21	2.14	100	110	0.00	0.00	--	0.00	0.00	402.06	-115.05	3.495
22	2.24	100	110	0.00	0.00	--	0.00	0.00	402.06	-114.71	3.505
23	2.34	100	110	0.00	0.00	--	0.00	0.00	402.06	-114.19	3.521
24	2.44	100	110	0.00	0.00	--	0.00	0.00	402.06	-113.51	3.542
25	2.54	100	110	0.00	0.00	--	0.00	0.00	402.06	-112.65	3.569
26	2.64	100	110	0.00	0.00	--	0.00	0.00	402.06	-111.61	3.602
27	2.73	100	110	0.00	0.00	--	0.00	0.00	402.06	-110.41	3.642
28	2.83	100	110	0.00	0.00	--	0.00	0.00	402.06	-109.03	3.688
29	2.93	100	110	0.00	0.00	--	0.00	0.00	402.06	-107.47	3.741
30	3.03	100	110	0.00	0.00	--	0.00	0.00	402.06	-105.75	3.802
31	3.13	100	110	0.00	0.00	--	0.00	0.00	402.06	-103.85	3.872
32	3.23	100	110	0.00	0.00	--	0.00	0.00	402.06	-101.77	3.951
33	3.33	100	110	0.00	0.00	--	0.00	0.00	402.06	-99.52	4.040
34	3.43	100	110	0.00	0.00	--	0.00	0.00	402.06	-97.10	4.140
35	3.53	100	110	0.00	0.00	--	0.00	0.00	402.06	-94.51	4.254
36	3.63	100	110	0.00	0.00	--	0.00	0.00	402.06	-91.74	4.382
37	3.72	100	110	0.00	0.00	--	0.00	0.00	402.06	-88.80	4.528
38	3.82	100	110	0.00	0.00	--	0.00	0.00	402.06	-85.69	4.692
39	3.92	100	110	0.00	0.00	--	0.00	0.00	402.06	-82.40	4.879
40	4.02	100	110	0.00	0.00	--	0.00	0.00	402.06	-78.94	5.093
41	4.12	100	110	0.00	0.00	--	0.00	0.00	402.06	-75.31	5.339
42	4.22	100	110	0.00	0.00	--	0.00	0.00	402.06	-71.50	5.623
43	4.32	100	110	0.00	0.00	--	0.00	0.00	402.06	-67.52	5.955
44	4.42	100	110	0.00	0.00	--	0.00	0.00	402.06	-63.37	6.345
45	4.52	100	110	0.00	0.00	--	0.00	0.00	402.06	-59.04	6.810
46	4.62	100	110	0.00	0.00	--	0.00	0.00	402.06	-54.54	7.372
47	4.71	100	110	0.00	0.00	--	0.00	0.00	402.06	-49.87	8.063
48	4.81	100	110	0.00	0.00	--	0.00	0.00	402.06	-45.02	8.931
49	4.91	100	110	0.00	0.00	--	0.00	0.00	402.06	-40.00	10.052
50	5.01	100	110	0.00	0.00	--	0.00	0.00	402.06	-34.80	11.552
51	5.11	100	110	0.00	0.00	--	0.00	0.00	402.06	-29.44	13.658
52	5.21	100	110	0.00	0.00	--	0.00	0.00	402.06	-23.90	16.825
53	5.31	100	110	0.00	0.00	--	0.00	0.00	402.06	-18.18	22.113
54	5.41	100	110	0.00	0.00	--	0.00	0.00	402.06	-12.29	32.702
55	5.51	100	110	0.00	0.00	--	0.00	0.00	402.06	-6.23	64.494
56	5.61	100	110	0.00	0.00	--	0.00	0.00	402.06	0.00	100.000

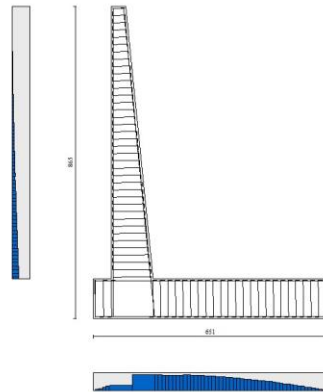


Fig. 11 - Paramento (Inviluppo)

Verifica delle tensioni

Simbologia adottata

n°	indice sezione
Y	ordinata sezione, espressa in [m]
B	larghezza sezione, espresso in [cm]
H	altezza sezione, espressa in [cm]
A_{fi}	area ferri inferiori, espresso in [cm ²]
A_{fs}	area ferri superiori, espressa in [cm ²]
M	momento agente, espressa in [kNm]
N	sforzo normale agente, espressa in [kN]
σ_c	tensione di compressione nel cls, espressa in [kPa]
σ_{fi}	tensione nei ferri inferiori, espressa in [kPa]
σ_{fs}	tensione nei ferri superiori, espressa in [kPa]

Combinazioni SLER

Paramento

Combinazione n° 13 - SLER

Tensione massima di compressione nel calcestruzzo 19920 [kPa]

Tensione massima di trazione dell'acciaio 360000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	0.00	100	40	22.62	22.62	0.00	0.00	0	0	0
2	-0.10	100	41	22.62	22.62	0.00	0.99	2	30	32
3	-0.20	100	42	22.62	22.62	0.01	2.00	4	58	64
4	-0.30	100	43	22.62	22.62	0.02	3.03	7	85	98
5	-0.40	100	44	22.62	22.62	0.04	4.09	9	109	132
6	-0.50	100	45	22.62	22.62	0.07	5.17	12	131	169
7	-0.60	100	46	22.62	22.62	0.12	6.28	14	148	209
8	-0.70	100	47	22.62	22.62	0.18	7.41	18	161	253
9	-0.79	100	48	22.62	22.62	0.28	8.57	21	167	302
10	-0.89	100	49	22.62	22.62	0.40	9.75	25	167	358
11	-0.99	100	50	22.62	22.62	0.57	10.95	30	160	420
12	-1.09	100	51	22.62	22.62	0.78	12.18	35	145	489
13	-1.19	100	52	22.62	22.62	1.03	13.43	41	121	565
14	-1.29	100	53	22.62	22.62	1.35	14.71	48	90	649
15	-1.39	100	54	22.62	22.62	1.72	16.01	55	48	743
16	-1.49	100	55	22.62	22.62	2.15	17.34	63	16	849
17	-1.59	100	56	22.62	22.62	2.66	18.68	73	111	970
18	-1.69	100	57	22.62	22.62	3.25	20.06	83	245	1108
19	-1.79	100	58	22.62	22.62	3.92	21.46	96	426	1262
20	-1.89	100	59	22.62	22.62	4.67	22.88	110	661	1434
21	-1.99	100	60	22.62	22.62	5.52	24.32	125	956	1623
22	-2.09	100	61	22.62	22.62	6.46	25.79	142	1314	1828
23	-2.19	100	62	22.62	22.62	7.51	27.29	161	1738	2048
24	-2.28	100	63	22.62	22.62	8.67	28.81	181	2227	2283
25	-2.38	100	64	22.62	22.62	9.95	30.35	202	2783	2532
26	-2.48	100	65	22.62	22.62	11.34	31.92	224	3406	2796
27	-2.58	100	66	22.62	22.62	12.86	33.51	248	4096	3073
28	-2.68	100	67	22.62	22.62	14.52	35.12	272	4853	3363
29	-2.78	100	68	22.62	22.62	16.31	36.76	298	5678	3667
30	-2.88	100	69	22.62	22.62	18.24	38.43	325	6569	3985
31	-2.98	100	70	22.62	22.62	20.32	40.12	354	7528	4316
32	-3.08	100	71	22.62	22.62	22.55	41.83	383	8556	4660
33	-3.18	100	72	22.62	22.62	24.94	43.56	414	9651	5017
34	-3.28	100	73	22.62	22.62	27.50	45.32	445	10815	5388
35	-3.38	100	74	22.62	27.14	30.23	47.11	455	10276	5578
36	-3.48	100	75	22.62	27.14	33.13	48.92	486	11374	5958
37	-3.58	100	76	22.62	27.14	36.21	50.75	519	12530	6351
38	-3.68	100	77	22.62	27.14	39.48	52.61	553	13744	6756
39	-3.78	100	78	22.62	27.14	42.94	54.49	587	15017	7174
40	-3.87	100	79	22.62	27.14	46.60	56.40	623	16350	7605
41	-3.97	100	80	22.62	27.14	50.46	58.33	660	17742	8047
42	-4.07	100	81	22.62	27.14	54.53	60.28	697	19193	8502
43	-4.17	100	82	22.62	27.14	58.82	62.26	736	20704	8970
44	-4.27	100	83	22.62	27.14	63.32	64.26	775	22276	9449
45	-4.37	100	84	22.62	27.14	68.05	66.29	816	23908	9941
46	-4.47	100	85	22.62	27.14	73.01	68.34	857	25600	10444

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
47	-4.57	100	86	22.62	27.14	78.20	70.42	899	27353	10960
48	-4.67	100	87	22.62	27.14	83.64	72.51	943	29167	11488
49	-4.77	100	88	22.62	36.19	89.32	74.64	904	23859	11297
50	-4.87	100	89	22.62	36.19	95.25	76.79	945	25334	11809
51	-4.97	100	90	22.62	36.19	101.45	78.96	986	26856	12331
52	-5.07	100	91	22.62	36.19	107.90	81.15	1028	28424	12865
53	-5.17	100	92	22.62	36.19	114.63	83.37	1071	30040	13408
54	-5.27	100	93	22.62	36.19	121.63	85.62	1115	31702	13963
55	-5.36	100	94	22.62	36.19	128.90	87.89	1160	33412	14527
56	-5.46	100	95	22.62	36.19	136.47	90.18	1205	35168	15102
57	-5.56	100	96	22.62	36.19	144.32	92.50	1251	36972	15687
58	-5.66	100	97	22.62	36.19	152.48	94.84	1298	38823	16283
59	-5.76	100	98	22.62	36.19	160.93	97.20	1345	40721	16889
60	-5.86	100	99	22.62	36.19	169.69	99.59	1393	42667	17504
61	-5.96	100	100	22.62	36.19	178.76	102.01	1442	44661	18130
62	-6.06	100	101	22.62	36.19	188.15	104.45	1492	46702	18765
63	-6.16	100	102	22.62	36.19	197.87	106.91	1542	48791	19411
64	-6.26	100	103	22.62	36.19	207.91	109.40	1593	50927	20066
65	-6.36	100	104	22.62	36.19	218.29	111.91	1645	53112	20731
66	-6.46	100	105	22.62	36.19	229.01	114.44	1698	55344	21405
67	-6.56	100	106	22.62	36.19	240.08	117.00	1751	57625	22090
68	-6.66	100	107	22.62	36.19	251.50	119.58	1804	59953	22783
69	-6.76	100	108	22.62	36.19	263.27	122.19	1859	62329	23486
70	-6.85	100	109	22.62	36.19	275.41	124.82	1914	64754	24199
71	-6.95	100	110	22.62	36.19	287.91	127.48	1970	67227	24921
72	-7.05	100	111	22.62	36.19	300.79	130.16	2026	69748	25652
73	-7.15	100	112	22.62	36.19	314.04	132.86	2084	72317	26392
74	-7.25	100	113	22.62	36.19	327.68	135.59	2141	74935	27141
75	-7.35	100	114	22.62	36.19	341.71	138.34	2200	77601	27900
76	-7.45	100	115	22.62	36.19	356.13	141.12	2259	80315	28667
77	-7.55	100	116	22.62	36.19	370.96	143.92	2318	83078	29444

Combinazione n° 16 - SLER

Tensione massima di compressione nel calcestruzzo 19920 [kPa]

Tensione massima di trazione dell'acciaio 360000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	0.00	100	40	22.62	22.62	0.00	0.00	0	0	0
2	-0.10	100	41	22.62	22.62	0.00	0.99	2	30	32
3	-0.20	100	42	22.62	22.62	0.01	2.00	4	58	64
4	-0.30	100	43	22.62	22.62	0.02	3.03	7	85	98
5	-0.40	100	44	22.62	22.62	0.04	4.09	9	109	132
6	-0.50	100	45	22.62	22.62	0.07	5.17	12	131	169
7	-0.60	100	46	22.62	22.62	0.12	6.28	14	148	209
8	-0.70	100	47	22.62	22.62	0.18	7.41	18	161	253
9	-0.79	100	48	22.62	22.62	0.28	8.57	21	167	302
10	-0.89	100	49	22.62	22.62	0.40	9.75	25	167	358
11	-0.99	100	50	22.62	22.62	0.57	10.95	30	160	420
12	-1.09	100	51	22.62	22.62	0.78	12.18	35	145	489
13	-1.19	100	52	22.62	22.62	1.03	13.43	41	121	565
14	-1.29	100	53	22.62	22.62	1.35	14.71	48	90	649
15	-1.39	100	54	22.62	22.62	1.72	16.01	55	48	743

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
16	-1.49	100	55	22.62	22.62	2.15	17.34	63	16	849
17	-1.59	100	56	22.62	22.62	2.66	18.68	73	111	970
18	-1.69	100	57	22.62	22.62	3.25	20.06	83	245	1108
19	-1.79	100	58	22.62	22.62	3.92	21.46	96	426	1262
20	-1.89	100	59	22.62	22.62	4.67	22.88	110	661	1434
21	-1.99	100	60	22.62	22.62	5.52	24.32	125	956	1623
22	-2.09	100	61	22.62	22.62	6.46	25.79	142	1314	1828
23	-2.19	100	62	22.62	22.62	7.51	27.29	161	1738	2048
24	-2.28	100	63	22.62	22.62	8.67	28.81	181	2227	2283
25	-2.38	100	64	22.62	22.62	9.95	30.35	202	2783	2532
26	-2.48	100	65	22.62	22.62	11.34	31.92	224	3406	2796
27	-2.58	100	66	22.62	22.62	12.86	33.51	248	4096	3073
28	-2.68	100	67	22.62	22.62	14.52	35.12	272	4853	3363
29	-2.78	100	68	22.62	22.62	16.31	36.76	298	5678	3667
30	-2.88	100	69	22.62	22.62	18.24	38.43	325	6569	3985
31	-2.98	100	70	22.62	22.62	20.32	40.12	354	7528	4316
32	-3.08	100	71	22.62	22.62	22.55	41.83	383	8556	4660
33	-3.18	100	72	22.62	22.62	24.94	43.56	414	9651	5017
34	-3.28	100	73	22.62	22.62	27.50	45.32	445	10815	5388
35	-3.38	100	74	22.62	27.14	30.23	47.11	455	10276	5578
36	-3.48	100	75	22.62	27.14	33.13	48.92	486	11374	5958
37	-3.58	100	76	22.62	27.14	36.21	50.75	519	12530	6351
38	-3.68	100	77	22.62	27.14	39.48	52.61	553	13744	6756
39	-3.78	100	78	22.62	27.14	42.94	54.49	587	15017	7174
40	-3.87	100	79	22.62	27.14	46.60	56.40	623	16350	7605
41	-3.97	100	80	22.62	27.14	50.46	58.33	660	17742	8047
42	-4.07	100	81	22.62	27.14	54.53	60.28	697	19193	8502
43	-4.17	100	82	22.62	27.14	58.82	62.26	736	20704	8970
44	-4.27	100	83	22.62	27.14	63.32	64.26	775	22276	9449
45	-4.37	100	84	22.62	27.14	68.05	66.29	816	23908	9941
46	-4.47	100	85	22.62	27.14	73.01	68.34	857	25600	10444
47	-4.57	100	86	22.62	27.14	78.20	70.42	899	27353	10960
48	-4.67	100	87	22.62	27.14	83.64	72.51	943	29167	11488
49	-4.77	100	88	22.62	36.19	89.32	74.64	904	23859	11297
50	-4.87	100	89	22.62	36.19	95.25	76.79	945	25334	11809
51	-4.97	100	90	22.62	36.19	101.45	78.96	986	26856	12331
52	-5.07	100	91	22.62	36.19	107.90	81.15	1028	28424	12865
53	-5.17	100	92	22.62	36.19	114.63	83.37	1071	30040	13408
54	-5.27	100	93	22.62	36.19	121.63	85.62	1115	31702	13963
55	-5.36	100	94	22.62	36.19	128.90	87.89	1160	33412	14527
56	-5.46	100	95	22.62	36.19	136.47	90.18	1205	35168	15102
57	-5.56	100	96	22.62	36.19	144.32	92.50	1251	36972	15687
58	-5.66	100	97	22.62	36.19	152.48	94.84	1298	38823	16283
59	-5.76	100	98	22.62	36.19	160.93	97.20	1345	40721	16889
60	-5.86	100	99	22.62	36.19	169.69	99.59	1393	42667	17504
61	-5.96	100	100	22.62	36.19	178.76	102.01	1442	44661	18130
62	-6.06	100	101	22.62	36.19	188.15	104.45	1492	46702	18765
63	-6.16	100	102	22.62	36.19	197.87	106.91	1542	48791	19411
64	-6.26	100	103	22.62	36.19	207.91	109.40	1593	50927	20066
65	-6.36	100	104	22.62	36.19	218.29	111.91	1645	53112	20731
66	-6.46	100	105	22.62	36.19	229.01	114.44	1698	55344	21405
67	-6.56	100	106	22.62	36.19	240.08	117.00	1751	57625	22090
68	-6.66	100	107	22.62	36.19	251.50	119.58	1804	59953	22783
69	-6.76	100	108	22.62	36.19	263.27	122.19	1859	62329	23486
70	-6.85	100	109	22.62	36.19	275.41	124.82	1914	64754	24199
71	-6.95	100	110	22.62	36.19	287.91	127.48	1970	67227	24921
72	-7.05	100	111	22.62	36.19	300.79	130.16	2026	69748	25652
73	-7.15	100	112	22.62	36.19	314.04	132.86	2084	72317	26392
74	-7.25	100	113	22.62	36.19	327.68	135.59	2141	74935	27141
75	-7.35	100	114	22.62	36.19	341.71	138.34	2200	77601	27900
76	-7.45	100	115	22.62	36.19	356.13	141.12	2259	80315	28667
77	-7.55	100	116	22.62	36.19	370.96	143.92	2318	83078	29444

Fondazione

Combinazione n° 13 - SLER

Tensione massima di compressione nel calcestruzzo 14940 [kPa]

Tensione massima di trazione dell'acciaio 360000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	-0.90	100	110	22.62	22.62	0.00	0.00	0	0	0
2	-0.80	100	110	22.62	22.62	1.02	0.00	8	459	90
3	-0.70	100	110	22.62	22.62	4.07	0.00	31	1829	358
4	-0.60	100	110	22.62	22.62	9.12	0.00	70	4102	803
5	-0.50	100	110	22.62	22.62	16.16	0.00	124	7268	1422
6	-0.40	100	110	22.62	22.62	25.17	0.00	193	11321	2215
7	0.76	100	110	22.62	31.67	-411.15	0.00	2779	33350	133487
8	0.85	100	110	22.62	31.67	-401.74	0.00	2716	32586	130432
9	0.95	100	110	22.62	31.67	-392.08	0.00	2651	31803	127295
10	1.05	100	110	22.62	31.67	-382.19	0.00	2584	31000	124083
11	1.15	100	110	22.62	31.67	-372.08	0.00	2515	30181	120802
12	1.25	100	110	22.62	31.67	-361.78	0.00	2446	29345	117457
13	1.35	100	110	22.62	31.67	-351.30	0.00	2375	28495	114055
14	1.45	100	110	22.62	31.67	-340.67	0.00	2303	27632	110602
15	1.55	100	110	22.62	31.67	-329.89	0.00	2230	26758	107104
16	1.65	100	110	22.62	22.62	-319.00	0.00	2443	28075	143476
17	1.74	100	110	22.62	22.62	-308.00	0.00	2359	27107	138530
18	1.84	100	110	22.62	22.62	-296.92	0.00	2274	26132	133547
19	1.94	100	110	22.62	22.62	-285.78	0.00	2189	25151	128535
20	2.04	100	110	22.62	22.62	-274.59	0.00	2103	24167	123503
21	2.14	100	110	22.62	22.62	-263.38	0.00	2017	23180	118459
22	2.24	100	110	22.62	22.62	-252.15	0.00	1931	22192	113412
23	2.34	100	110	22.62	22.62	-240.94	0.00	1846	21205	108370
24	2.44	100	110	22.62	22.62	-229.76	0.00	1760	20221	103341
25	2.54	100	110	22.62	22.62	-218.63	0.00	1675	19242	98334
26	2.64	100	110	22.62	22.62	-207.57	0.00	1590	18268	93357
27	2.73	100	110	22.62	22.62	-196.59	0.00	1506	17302	88420
28	2.83	100	110	22.62	22.62	-185.71	0.00	1423	16345	83529
29	2.93	100	110	22.62	22.62	-174.96	0.00	1340	15399	78694
30	3.03	100	110	22.62	22.62	-164.36	0.00	1259	14465	73923
31	3.13	100	110	22.62	22.62	-153.91	0.00	1179	13546	69225
32	3.23	100	110	22.62	22.62	-143.64	0.00	1100	12642	64607
33	3.33	100	110	22.62	22.62	-133.58	0.00	1023	11756	60079
34	3.43	100	110	22.62	22.62	-123.73	0.00	948	10889	55649
35	3.53	100	110	22.62	22.62	-114.11	0.00	874	10043	51325
36	3.63	100	110	22.62	22.62	-104.75	0.00	802	9219	47115
37	3.72	100	110	22.62	22.62	-95.67	0.00	733	8420	43029
38	3.82	100	110	22.62	22.62	-86.88	0.00	665	7646	39074
39	3.92	100	110	22.62	22.62	-78.39	0.00	600	6900	35260
40	4.02	100	110	22.62	22.62	-70.24	0.00	538	6182	31593
41	4.12	100	110	22.62	22.62	-62.44	0.00	478	5495	28084
42	4.22	100	110	22.62	22.62	-55.01	0.00	421	4841	24740
43	4.32	100	110	22.62	22.62	-47.96	0.00	367	4221	21569
44	4.42	100	110	22.62	22.62	-41.31	0.00	316	3636	18581

n°	Y	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
45	4.52	100	110	22.62	22.62	-35.09	0.00	269	3088	15783
46	4.62	100	110	22.62	22.62	-29.31	0.00	225	2580	13185
47	4.71	100	110	22.62	22.62	-24.00	0.00	184	2112	10793
48	4.81	100	110	22.62	22.62	-19.16	0.00	147	1686	8618
49	4.91	100	110	22.62	22.62	-14.82	0.00	114	1305	6667
50	5.01	100	110	22.62	22.62	-11.00	0.00	84	968	4949
51	5.11	100	110	22.62	22.62	-7.72	0.00	59	679	3472
52	5.21	100	110	22.62	22.62	-4.99	0.00	38	439	2245
53	5.31	100	110	22.62	22.62	-2.84	0.00	22	250	1275
54	5.41	100	110	22.62	22.62	-1.27	0.00	10	112	572
55	5.51	100	110	22.62	22.62	-0.32	0.00	2	28	144
56	5.61	100	110	22.62	22.62	0.00	0.00	0	0	0

Combinazione n° 16 - SLER

Tensione massima di compressione nel calcestruzzo 14940 [kPa]

Tensione massima di trazione dell'acciaio 360000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	-0.90	100	110	22.62	22.62	0.00	0.00	0	0	0
2	-0.80	100	110	22.62	22.62	0.99	0.00	8	446	87
3	-0.70	100	110	22.62	22.62	3.95	0.00	30	1779	348
4	-0.60	100	110	22.62	22.62	8.87	0.00	68	3990	781
5	-0.50	100	110	22.62	22.62	15.72	0.00	120	7073	1384
6	-0.40	100	110	22.62	22.62	24.50	0.00	188	11018	2156
7	0.76	100	110	22.62	31.67	-380.11	0.00	2570	30831	123407
8	0.85	100	110	22.62	31.67	-371.32	0.00	2510	30119	120554
9	0.95	100	110	22.62	31.67	-362.31	0.00	2449	29388	117628
10	1.05	100	110	22.62	31.67	-353.09	0.00	2387	28640	114634
11	1.15	100	110	22.62	31.67	-343.67	0.00	2323	27876	111579
12	1.25	100	110	22.62	31.67	-334.09	0.00	2258	27099	108467
13	1.35	100	110	22.62	31.67	-324.35	0.00	2193	26309	105304
14	1.45	100	110	22.62	31.67	-314.46	0.00	2126	25507	102096
15	1.55	100	110	22.62	31.67	-304.46	0.00	2058	24696	98848
16	1.65	100	110	22.62	22.62	-294.35	0.00	2255	25906	132391
17	1.74	100	110	22.62	22.62	-284.15	0.00	2177	25008	127805
18	1.84	100	110	22.62	22.62	-273.89	0.00	2098	24105	123186
19	1.94	100	110	22.62	22.62	-263.56	0.00	2019	23196	118543
20	2.04	100	110	22.62	22.62	-253.20	0.00	1940	22284	113884
21	2.14	100	110	22.62	22.62	-242.82	0.00	1860	21371	109216
22	2.24	100	110	22.62	22.62	-232.44	0.00	1780	20457	104546
23	2.34	100	110	22.62	22.62	-222.08	0.00	1701	19545	99883
24	2.44	100	110	22.62	22.62	-211.74	0.00	1622	18635	95235
25	2.54	100	110	22.62	22.62	-201.45	0.00	1543	17730	90608
26	2.64	100	110	22.62	22.62	-191.23	0.00	1465	16830	86010
27	2.73	100	110	22.62	22.62	-181.09	0.00	1387	15938	81450
28	2.83	100	110	22.62	22.62	-171.05	0.00	1310	15054	76935
29	2.93	100	110	22.62	22.62	-161.13	0.00	1234	14181	72473
30	3.03	100	110	22.62	22.62	-151.34	0.00	1159	13320	68070
31	3.13	100	110	22.62	22.62	-141.71	0.00	1085	12472	63736
32	3.23	100	110	22.62	22.62	-132.24	0.00	1013	11638	59478
33	3.33	100	110	22.62	22.62	-122.96	0.00	942	10822	55303
34	3.43	100	110	22.62	22.62	-113.88	0.00	872	10022	51219

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
35	3.53	100	110	22.62	22.62	-105.02	0.00	804	9243	47234
36	3.63	100	110	22.62	22.62	-96.39	0.00	738	8484	43356
37	3.72	100	110	22.62	22.62	-88.03	0.00	674	7747	39591
38	3.82	100	110	22.62	22.62	-79.93	0.00	612	7034	35949
39	3.92	100	110	22.62	22.62	-72.12	0.00	552	6347	32436
40	4.02	100	110	22.62	22.62	-64.61	0.00	495	5687	29061
41	4.12	100	110	22.62	22.62	-57.43	0.00	440	5054	25830
42	4.22	100	110	22.62	22.62	-50.59	0.00	387	4452	22752
43	4.32	100	110	22.62	22.62	-44.10	0.00	338	3881	19835
44	4.42	100	110	22.62	22.62	-37.99	0.00	291	3343	17085
45	4.52	100	110	22.62	22.62	-32.26	0.00	247	2840	14511
46	4.62	100	110	22.62	22.62	-26.95	0.00	206	2372	12121
47	4.71	100	110	22.62	22.62	-22.06	0.00	169	1942	9922
48	4.81	100	110	22.62	22.62	-17.61	0.00	135	1550	7922
49	4.91	100	110	22.62	22.62	-13.62	0.00	104	1199	6128
50	5.01	100	110	22.62	22.62	-10.11	0.00	77	890	4548
51	5.11	100	110	22.62	22.62	-7.09	0.00	54	624	3191
52	5.21	100	110	22.62	22.62	-4.59	0.00	35	404	2062
53	5.31	100	110	22.62	22.62	-2.61	0.00	20	229	1172
54	5.41	100	110	22.62	22.62	-1.17	0.00	9	103	526
55	5.51	100	110	22.62	22.62	-0.30	0.00	2	26	133
56	5.61	100	110	22.62	22.62	0.00	0.00	0	0	0

Combinazioni SLEF

Paramento

Combinazione n° 14 - SLEF

Tensione massima di compressione nel calcestruzzo 33200 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	0.00	100	40	22.62	22.62	0.00	0.00	0	0	0
2	-0.10	100	41	22.62	22.62	0.00	0.99	2	30	32
3	-0.20	100	42	22.62	22.62	0.01	2.00	4	58	64
4	-0.30	100	43	22.62	22.62	0.02	3.03	7	85	98
5	-0.40	100	44	22.62	22.62	0.04	4.09	9	109	132
6	-0.50	100	45	22.62	22.62	0.07	5.17	12	131	169
7	-0.60	100	46	22.62	22.62	0.12	6.28	14	148	209
8	-0.70	100	47	22.62	22.62	0.18	7.41	18	161	253
9	-0.79	100	48	22.62	22.62	0.28	8.57	21	167	302
10	-0.89	100	49	22.62	22.62	0.40	9.75	25	167	358
11	-0.99	100	50	22.62	22.62	0.57	10.95	30	160	420
12	-1.09	100	51	22.62	22.62	0.78	12.18	35	145	489
13	-1.19	100	52	22.62	22.62	1.03	13.43	41	121	565

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
14	-1.29	100	53	22.62	22.62	1.35	14.71	48	90	649
15	-1.39	100	54	22.62	22.62	1.72	16.01	55	48	743
16	-1.49	100	55	22.62	22.62	2.15	17.34	63	16	849
17	-1.59	100	56	22.62	22.62	2.66	18.68	73	111	970
18	-1.69	100	57	22.62	22.62	3.25	20.06	83	245	1108
19	-1.79	100	58	22.62	22.62	3.92	21.46	96	426	1262
20	-1.89	100	59	22.62	22.62	4.67	22.88	110	661	1434
21	-1.99	100	60	22.62	22.62	5.52	24.32	125	956	1623
22	-2.09	100	61	22.62	22.62	6.46	25.79	142	1314	1828
23	-2.19	100	62	22.62	22.62	7.51	27.29	161	1738	2048
24	-2.28	100	63	22.62	22.62	8.67	28.81	181	2227	2283
25	-2.38	100	64	22.62	22.62	9.95	30.35	202	2783	2532
26	-2.48	100	65	22.62	22.62	11.34	31.92	224	3406	2796
27	-2.58	100	66	22.62	22.62	12.86	33.51	248	4096	3073
28	-2.68	100	67	22.62	22.62	14.52	35.12	272	4853	3363
29	-2.78	100	68	22.62	22.62	16.31	36.76	298	5678	3667
30	-2.88	100	69	22.62	22.62	18.24	38.43	325	6569	3985
31	-2.98	100	70	22.62	22.62	20.32	40.12	354	7528	4316
32	-3.08	100	71	22.62	22.62	22.55	41.83	383	8556	4660
33	-3.18	100	72	22.62	22.62	24.94	43.56	414	9651	5017
34	-3.28	100	73	22.62	22.62	27.50	45.32	445	10815	5388
35	-3.38	100	74	22.62	27.14	30.23	47.11	455	10276	5578
36	-3.48	100	75	22.62	27.14	33.13	48.92	486	11374	5958
37	-3.58	100	76	22.62	27.14	36.21	50.75	519	12530	6351
38	-3.68	100	77	22.62	27.14	39.48	52.61	553	13744	6756
39	-3.78	100	78	22.62	27.14	42.94	54.49	587	15017	7174
40	-3.87	100	79	22.62	27.14	46.60	56.40	623	16350	7605
41	-3.97	100	80	22.62	27.14	50.46	58.33	660	17742	8047
42	-4.07	100	81	22.62	27.14	54.53	60.28	697	19193	8502
43	-4.17	100	82	22.62	27.14	58.82	62.26	736	20704	8970
44	-4.27	100	83	22.62	27.14	63.32	64.26	775	22276	9449
45	-4.37	100	84	22.62	27.14	68.05	66.29	816	23908	9941
46	-4.47	100	85	22.62	27.14	73.01	68.34	857	25600	10444
47	-4.57	100	86	22.62	27.14	78.20	70.42	899	27353	10960
48	-4.67	100	87	22.62	27.14	83.64	72.51	943	29167	11488
49	-4.77	100	88	22.62	36.19	89.32	74.64	904	23859	11297
50	-4.87	100	89	22.62	36.19	95.25	76.79	945	25334	11809
51	-4.97	100	90	22.62	36.19	101.45	78.96	986	26856	12331
52	-5.07	100	91	22.62	36.19	107.90	81.15	1028	28424	12865
53	-5.17	100	92	22.62	36.19	114.63	83.37	1071	30040	13408
54	-5.27	100	93	22.62	36.19	121.63	85.62	1115	31702	13963
55	-5.36	100	94	22.62	36.19	128.90	87.89	1160	33412	14527
56	-5.46	100	95	22.62	36.19	136.47	90.18	1205	35168	15102
57	-5.56	100	96	22.62	36.19	144.32	92.50	1251	36972	15687
58	-5.66	100	97	22.62	36.19	152.48	94.84	1298	38823	16283
59	-5.76	100	98	22.62	36.19	160.93	97.20	1345	40721	16889
60	-5.86	100	99	22.62	36.19	169.69	99.59	1393	42667	17504
61	-5.96	100	100	22.62	36.19	178.76	102.01	1442	44661	18130
62	-6.06	100	101	22.62	36.19	188.15	104.45	1492	46702	18765
63	-6.16	100	102	22.62	36.19	197.87	106.91	1542	48791	19411
64	-6.26	100	103	22.62	36.19	207.91	109.40	1593	50927	20066
65	-6.36	100	104	22.62	36.19	218.29	111.91	1645	53112	20731
66	-6.46	100	105	22.62	36.19	229.01	114.44	1698	55344	21405
67	-6.56	100	106	22.62	36.19	240.08	117.00	1751	57625	22090
68	-6.66	100	107	22.62	36.19	251.50	119.58	1804	59953	22783
69	-6.76	100	108	22.62	36.19	263.27	122.19	1859	62329	23486
70	-6.85	100	109	22.62	36.19	275.41	124.82	1914	64754	24199
71	-6.95	100	110	22.62	36.19	287.91	127.48	1970	67227	24921
72	-7.05	100	111	22.62	36.19	300.79	130.16	2026	69748	25652
73	-7.15	100	112	22.62	36.19	314.04	132.86	2084	72317	26392
74	-7.25	100	113	22.62	36.19	327.68	135.59	2141	74935	27141
75	-7.35	100	114	22.62	36.19	341.71	138.34	2200	77601	27900

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
76	-7.45	100	115	22.62	36.19	356.13	141.12	2259	80315	28667
77	-7.55	100	116	22.62	36.19	370.96	143.92	2318	83078	29444

Combinazione n° 17 - SLEF

Tensione massima di compressione nel calcestruzzo 33200 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	0.00	100	40	22.62	22.62	0.00	0.00	0	0	0
2	-0.10	100	41	22.62	22.62	0.00	0.99	2	30	32
3	-0.20	100	42	22.62	22.62	0.01	2.00	4	58	64
4	-0.30	100	43	22.62	22.62	0.02	3.03	7	85	98
5	-0.40	100	44	22.62	22.62	0.04	4.09	9	109	132
6	-0.50	100	45	22.62	22.62	0.07	5.17	12	131	169
7	-0.60	100	46	22.62	22.62	0.12	6.28	14	148	209
8	-0.70	100	47	22.62	22.62	0.18	7.41	18	161	253
9	-0.79	100	48	22.62	22.62	0.28	8.57	21	167	302
10	-0.89	100	49	22.62	22.62	0.40	9.75	25	167	358
11	-0.99	100	50	22.62	22.62	0.57	10.95	30	160	420
12	-1.09	100	51	22.62	22.62	0.78	12.18	35	145	489
13	-1.19	100	52	22.62	22.62	1.03	13.43	41	121	565
14	-1.29	100	53	22.62	22.62	1.35	14.71	48	90	649
15	-1.39	100	54	22.62	22.62	1.72	16.01	55	48	743
16	-1.49	100	55	22.62	22.62	2.15	17.34	63	16	849
17	-1.59	100	56	22.62	22.62	2.66	18.68	73	111	970
18	-1.69	100	57	22.62	22.62	3.25	20.06	83	245	1108
19	-1.79	100	58	22.62	22.62	3.92	21.46	96	426	1262
20	-1.89	100	59	22.62	22.62	4.67	22.88	110	661	1434
21	-1.99	100	60	22.62	22.62	5.52	24.32	125	956	1623
22	-2.09	100	61	22.62	22.62	6.46	25.79	142	1314	1828
23	-2.19	100	62	22.62	22.62	7.51	27.29	161	1738	2048
24	-2.28	100	63	22.62	22.62	8.67	28.81	181	2227	2283
25	-2.38	100	64	22.62	22.62	9.95	30.35	202	2783	2532
26	-2.48	100	65	22.62	22.62	11.34	31.92	224	3406	2796
27	-2.58	100	66	22.62	22.62	12.86	33.51	248	4096	3073
28	-2.68	100	67	22.62	22.62	14.52	35.12	272	4853	3363
29	-2.78	100	68	22.62	22.62	16.31	36.76	298	5678	3667
30	-2.88	100	69	22.62	22.62	18.24	38.43	325	6569	3985
31	-2.98	100	70	22.62	22.62	20.32	40.12	354	7528	4316
32	-3.08	100	71	22.62	22.62	22.55	41.83	383	8556	4660
33	-3.18	100	72	22.62	22.62	24.94	43.56	414	9651	5017
34	-3.28	100	73	22.62	22.62	27.50	45.32	445	10815	5388
35	-3.38	100	74	22.62	27.14	30.23	47.11	455	10276	5578
36	-3.48	100	75	22.62	27.14	33.13	48.92	486	11374	5958
37	-3.58	100	76	22.62	27.14	36.21	50.75	519	12530	6351
38	-3.68	100	77	22.62	27.14	39.48	52.61	553	13744	6756
39	-3.78	100	78	22.62	27.14	42.94	54.49	587	15017	7174
40	-3.87	100	79	22.62	27.14	46.60	56.40	623	16350	7605
41	-3.97	100	80	22.62	27.14	50.46	58.33	660	17742	8047
42	-4.07	100	81	22.62	27.14	54.53	60.28	697	19193	8502
43	-4.17	100	82	22.62	27.14	58.82	62.26	736	20704	8970
44	-4.27	100	83	22.62	27.14	63.32	64.26	775	22276	9449

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
45	-4.37	100	84	22.62	27.14	68.05	66.29	816	23908	9941
46	-4.47	100	85	22.62	27.14	73.01	68.34	857	25600	10444
47	-4.57	100	86	22.62	27.14	78.20	70.42	899	27353	10960
48	-4.67	100	87	22.62	27.14	83.64	72.51	943	29167	11488
49	-4.77	100	88	22.62	36.19	89.32	74.64	904	23859	11297
50	-4.87	100	89	22.62	36.19	95.25	76.79	945	25334	11809
51	-4.97	100	90	22.62	36.19	101.45	78.96	986	26856	12331
52	-5.07	100	91	22.62	36.19	107.90	81.15	1028	28424	12865
53	-5.17	100	92	22.62	36.19	114.63	83.37	1071	30040	13408
54	-5.27	100	93	22.62	36.19	121.63	85.62	1115	31702	13963
55	-5.36	100	94	22.62	36.19	128.90	87.89	1160	33412	14527
56	-5.46	100	95	22.62	36.19	136.47	90.18	1205	35168	15102
57	-5.56	100	96	22.62	36.19	144.32	92.50	1251	36972	15687
58	-5.66	100	97	22.62	36.19	152.48	94.84	1298	38823	16283
59	-5.76	100	98	22.62	36.19	160.93	97.20	1345	40721	16889
60	-5.86	100	99	22.62	36.19	169.69	99.59	1393	42667	17504
61	-5.96	100	100	22.62	36.19	178.76	102.01	1442	44661	18130
62	-6.06	100	101	22.62	36.19	188.15	104.45	1492	46702	18765
63	-6.16	100	102	22.62	36.19	197.87	106.91	1542	48791	19411
64	-6.26	100	103	22.62	36.19	207.91	109.40	1593	50927	20066
65	-6.36	100	104	22.62	36.19	218.29	111.91	1645	53112	20731
66	-6.46	100	105	22.62	36.19	229.01	114.44	1698	55344	21405
67	-6.56	100	106	22.62	36.19	240.08	117.00	1751	57625	22090
68	-6.66	100	107	22.62	36.19	251.50	119.58	1804	59953	22783
69	-6.76	100	108	22.62	36.19	263.27	122.19	1859	62329	23486
70	-6.85	100	109	22.62	36.19	275.41	124.82	1914	64754	24199
71	-6.95	100	110	22.62	36.19	287.91	127.48	1970	67227	24921
72	-7.05	100	111	22.62	36.19	300.79	130.16	2026	69748	25652
73	-7.15	100	112	22.62	36.19	314.04	132.86	2084	72317	26392
74	-7.25	100	113	22.62	36.19	327.68	135.59	2141	74935	27141
75	-7.35	100	114	22.62	36.19	341.71	138.34	2200	77601	27900
76	-7.45	100	115	22.62	36.19	356.13	141.12	2259	80315	28667
77	-7.55	100	116	22.62	36.19	370.96	143.92	2318	83078	29444

Fondazione

Combinazione n° 14 - SLEF

Tensione massima di compressione nel calcestruzzo 24900 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	-0.90	100	110	22.62	22.62	0.00	0.00	0	0	0
2	-0.80	100	110	22.62	22.62	0.95	0.00	7	427	84
3	-0.70	100	110	22.62	22.62	3.79	0.00	29	1705	334
4	-0.60	100	110	22.62	22.62	8.51	0.00	65	3827	749
5	-0.50	100	110	22.62	22.62	15.09	0.00	116	6785	1328
6	-0.40	100	110	22.62	22.62	23.51	0.00	180	10574	2069
7	0.76	100	110	22.62	31.67	-334.79	0.00	2263	27156	108695

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
8	0.85	100	110	22.62	31.67	-326.91	0.00	2210	26516	106135
9	0.95	100	110	22.62	31.67	-318.84	0.00	2155	25862	103515
10	1.05	100	110	22.62	31.67	-310.59	0.00	2100	25193	100839
11	1.15	100	110	22.62	31.67	-302.20	0.00	2043	24512	98112
12	1.25	100	110	22.62	31.67	-293.65	0.00	1985	23819	95339
13	1.35	100	110	22.62	31.67	-284.99	0.00	1927	23116	92525
14	1.45	100	110	22.62	31.67	-276.20	0.00	1867	22404	89674
15	1.55	100	110	22.62	31.67	-267.32	0.00	1807	21683	86791
16	1.65	100	110	22.62	22.62	-258.36	0.00	1799	22738	116204
17	1.74	100	110	22.62	22.62	-249.33	0.00	1910	21943	112141
18	1.84	100	110	22.62	22.62	-240.24	0.00	1840	21144	108055
19	1.94	100	110	22.62	22.62	-231.12	0.00	1770	20341	103950
20	2.04	100	110	22.62	22.62	-221.97	0.00	1700	19535	99834
21	2.14	100	110	22.62	22.62	-212.81	0.00	1630	18729	95714
22	2.24	100	110	22.62	22.62	-203.65	0.00	1560	17923	91596
23	2.34	100	110	22.62	22.62	-194.51	0.00	1490	17119	87487
24	2.44	100	110	22.62	22.62	-185.41	0.00	1420	16318	83393
25	2.54	100	110	22.62	22.62	-176.36	0.00	1351	15521	79320
26	2.64	100	110	22.62	22.62	-167.37	0.00	1282	14730	75277
27	2.73	100	110	22.62	22.62	-158.45	0.00	1214	13946	71268
28	2.83	100	110	22.62	22.62	-149.63	0.00	1146	13169	67301
29	2.93	100	110	22.62	22.62	-140.92	0.00	1079	12403	63383
30	3.03	100	110	22.62	22.62	-132.33	0.00	1014	11647	59519
31	3.13	100	110	22.62	22.62	-123.88	0.00	949	10903	55717
32	3.23	100	110	22.62	22.62	-115.58	0.00	885	10172	51983
33	3.33	100	110	22.62	22.62	-107.44	0.00	823	9456	48324
34	3.43	100	110	22.62	22.62	-99.49	0.00	762	8756	44746
35	3.53	100	110	22.62	22.62	-91.73	0.00	703	8073	41257
36	3.63	100	110	22.62	22.62	-84.18	0.00	645	7409	37862
37	3.72	100	110	22.62	22.62	-76.86	0.00	589	6764	34568
38	3.82	100	110	22.62	22.62	-69.77	0.00	534	6141	31382
39	3.92	100	110	22.62	22.62	-62.94	0.00	482	5540	28310
40	4.02	100	110	22.62	22.62	-56.38	0.00	432	4962	25359
41	4.12	100	110	22.62	22.62	-50.11	0.00	384	4410	22536
42	4.22	100	110	22.62	22.62	-44.13	0.00	338	3884	19847
43	4.32	100	110	22.62	22.62	-38.46	0.00	295	3385	17299
44	4.42	100	110	22.62	22.62	-33.13	0.00	254	2915	14899
45	4.52	100	110	22.62	22.62	-28.13	0.00	215	2476	12652
46	4.62	100	110	22.62	22.62	-23.49	0.00	180	2068	10567
47	4.71	100	110	22.62	22.62	-19.23	0.00	147	1692	8648
48	4.81	100	110	22.62	22.62	-15.35	0.00	118	1351	6904
49	4.91	100	110	22.62	22.62	-11.87	0.00	91	1045	5340
50	5.01	100	110	22.62	22.62	-8.81	0.00	67	775	3963
51	5.11	100	110	22.62	22.62	-6.18	0.00	47	544	2779
52	5.21	100	110	22.62	22.62	-3.99	0.00	31	352	1796
53	5.31	100	110	22.62	22.62	-2.27	0.00	17	200	1020
54	5.41	100	110	22.62	22.62	-1.02	0.00	8	90	458
55	5.51	100	110	22.62	22.62	-0.26	0.00	2	23	116
56	5.61	100	110	22.62	22.62	0.00	0.00	0	0	0

Combinazione n° 17 - SLEF

Tensione massima di compressione nel calcestruzzo 24900 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y [m]	B [cm]	H [cm]	Afi [cmq]	Afs [cmq]	M [kNm]	N [kN]	σc [kPa]	σfi [kPa]	σfs [kPa]
1	-0.90	100	110	22.62	22.62	0.00	0.00	0	0	0
2	-0.80	100	110	22.62	22.62	0.89	0.00	7	399	78
3	-0.70	100	110	22.62	22.62	3.54	0.00	27	1593	312
4	-0.60	100	110	22.62	22.62	7.95	0.00	61	3577	700
5	-0.50	100	110	22.62	22.62	14.11	0.00	108	6345	1242
6	-0.40	100	110	22.62	22.62	21.99	0.00	168	9892	1936
7	0.76	100	110	22.62	31.67	-266.22	0.00	1800	21594	86433
8	0.85	100	110	22.62	31.67	-259.69	0.00	1756	21064	84313
9	0.95	100	110	22.62	31.67	-253.04	0.00	1711	20524	82152
10	1.05	100	110	22.62	31.67	-246.26	0.00	1665	19975	79953
11	1.15	100	110	22.62	31.67	-239.39	0.00	1618	19417	77721
12	1.25	100	110	22.62	31.67	-232.42	0.00	1571	18852	75458
13	1.35	100	110	22.62	31.67	-225.36	0.00	1523	18280	73168
14	1.45	100	110	22.62	31.67	-218.24	0.00	1475	17702	70855
15	1.55	100	110	22.62	31.67	-211.05	0.00	1427	17119	68522
16	1.65	100	110	22.62	22.62	-203.82	0.00	1561	17938	91673
17	1.74	100	110	22.62	22.62	-196.55	0.00	1506	17298	88401
18	1.84	100	110	22.62	22.62	-189.24	0.00	1450	16655	85117
19	1.94	100	110	22.62	22.62	-181.93	0.00	1394	16011	81826
20	2.04	100	110	22.62	22.62	-174.60	0.00	1337	15367	78531
21	2.14	100	110	22.62	22.62	-167.28	0.00	1281	14723	75240
22	2.24	100	110	22.62	22.62	-159.98	0.00	1225	14080	71955
23	2.34	100	110	22.62	22.62	-152.71	0.00	1170	13440	68683
24	2.44	100	110	22.62	22.62	-145.47	0.00	1114	12803	65429
25	2.54	100	110	22.62	22.62	-138.28	0.00	1059	12170	62196
26	2.64	100	110	22.62	22.62	-131.16	0.00	1005	11543	58991
27	2.73	100	110	22.62	22.62	-124.10	0.00	951	10922	55817
28	2.83	100	110	22.62	22.62	-117.13	0.00	897	10308	52681
29	2.93	100	110	22.62	22.62	-110.25	0.00	844	9703	49587
30	3.03	100	110	22.62	22.62	-103.47	0.00	793	9107	46539
31	3.13	100	110	22.62	22.62	-96.81	0.00	742	8521	43544
32	3.23	100	110	22.62	22.62	-90.28	0.00	692	7945	40605
33	3.33	100	110	22.62	22.62	-83.88	0.00	643	7383	37728
34	3.43	100	110	22.62	22.62	-77.64	0.00	595	6833	34918
35	3.53	100	110	22.62	22.62	-71.55	0.00	548	6297	32180
36	3.63	100	110	22.62	22.62	-65.63	0.00	503	5776	29518
37	3.72	100	110	22.62	22.62	-59.89	0.00	459	5271	26938
38	3.82	100	110	22.62	22.62	-54.35	0.00	416	4783	24444
39	3.92	100	110	22.62	22.62	-49.01	0.00	375	4313	22042
40	4.02	100	110	22.62	22.62	-43.88	0.00	336	3862	19736
41	4.12	100	110	22.62	22.62	-38.98	0.00	299	3431	17532
42	4.22	100	110	22.62	22.62	-34.32	0.00	263	3020	15434
43	4.32	100	110	22.62	22.62	-29.90	0.00	229	2631	13447
44	4.42	100	110	22.62	22.62	-25.74	0.00	197	2265	11577
45	4.52	100	110	22.62	22.62	-21.85	0.00	167	1923	9828
46	4.62	100	110	22.62	22.62	-18.24	0.00	140	1605	8204
47	4.71	100	110	22.62	22.62	-14.92	0.00	114	1313	6712
48	4.81	100	110	22.62	22.62	-11.91	0.00	91	1048	5356
49	4.91	100	110	22.62	22.62	-9.21	0.00	71	810	4141
50	5.01	100	110	22.62	22.62	-6.83	0.00	52	601	3072
51	5.11	100	110	22.62	22.62	-4.79	0.00	37	422	2154
52	5.21	100	110	22.62	22.62	-3.09	0.00	24	272	1392
53	5.31	100	110	22.62	22.62	-1.76	0.00	13	155	790
54	5.41	100	110	22.62	22.62	-0.79	0.00	6	69	355
55	5.51	100	110	22.62	22.62	-0.20	0.00	2	18	89
56	5.61	100	110	22.62	22.62	0.00	0.00	0	0	0

Paramento

Combinazione n° 15 - SLEQ

Tensione massima di compressione nel calcestruzzo 14940 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	0.00	100	40	22.62	22.62	0.00	0.00	0	0	0
2	-0.10	100	41	22.62	22.62	0.00	0.99	2	30	32
3	-0.20	100	42	22.62	22.62	0.01	2.00	4	58	64
4	-0.30	100	43	22.62	22.62	0.02	3.03	7	85	98
5	-0.40	100	44	22.62	22.62	0.04	4.09	9	109	132
6	-0.50	100	45	22.62	22.62	0.07	5.17	12	131	169
7	-0.60	100	46	22.62	22.62	0.12	6.28	14	148	209
8	-0.70	100	47	22.62	22.62	0.18	7.41	18	161	253
9	-0.79	100	48	22.62	22.62	0.28	8.57	21	167	302
10	-0.89	100	49	22.62	22.62	0.40	9.75	25	167	358
11	-0.99	100	50	22.62	22.62	0.57	10.95	30	160	420
12	-1.09	100	51	22.62	22.62	0.78	12.18	35	145	489
13	-1.19	100	52	22.62	22.62	1.03	13.43	41	121	565
14	-1.29	100	53	22.62	22.62	1.35	14.71	48	90	649
15	-1.39	100	54	22.62	22.62	1.72	16.01	55	48	743
16	-1.49	100	55	22.62	22.62	2.15	17.34	63	16	849
17	-1.59	100	56	22.62	22.62	2.66	18.68	73	111	970
18	-1.69	100	57	22.62	22.62	3.25	20.06	83	245	1108
19	-1.79	100	58	22.62	22.62	3.92	21.46	96	426	1262
20	-1.89	100	59	22.62	22.62	4.67	22.88	110	661	1434
21	-1.99	100	60	22.62	22.62	5.52	24.32	125	956	1623
22	-2.09	100	61	22.62	22.62	6.46	25.79	142	1314	1828
23	-2.19	100	62	22.62	22.62	7.51	27.29	161	1738	2048
24	-2.28	100	63	22.62	22.62	8.67	28.81	181	2227	2283
25	-2.38	100	64	22.62	22.62	9.95	30.35	202	2783	2532
26	-2.48	100	65	22.62	22.62	11.34	31.92	224	3406	2796
27	-2.58	100	66	22.62	22.62	12.86	33.51	248	4096	3073
28	-2.68	100	67	22.62	22.62	14.52	35.12	272	4853	3363
29	-2.78	100	68	22.62	22.62	16.31	36.76	298	5678	3667
30	-2.88	100	69	22.62	22.62	18.24	38.43	325	6569	3985
31	-2.98	100	70	22.62	22.62	20.32	40.12	354	7528	4316
32	-3.08	100	71	22.62	22.62	22.55	41.83	383	8556	4660
33	-3.18	100	72	22.62	22.62	24.94	43.56	414	9651	5017
34	-3.28	100	73	22.62	22.62	27.50	45.32	445	10815	5388
35	-3.38	100	74	22.62	27.14	30.23	47.11	455	10276	5578
36	-3.48	100	75	22.62	27.14	33.13	48.92	486	11374	5958
37	-3.58	100	76	22.62	27.14	36.21	50.75	519	12530	6351
38	-3.68	100	77	22.62	27.14	39.48	52.61	553	13744	6756
39	-3.78	100	78	22.62	27.14	42.94	54.49	587	15017	7174
40	-3.87	100	79	22.62	27.14	46.60	56.40	623	16350	7605
41	-3.97	100	80	22.62	27.14	50.46	58.33	660	17742	8047
42	-4.07	100	81	22.62	27.14	54.53	60.28	697	19193	8502
43	-4.17	100	82	22.62	27.14	58.82	62.26	736	20704	8970
44	-4.27	100	83	22.62	27.14	63.32	64.26	775	22276	9449

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
45	-4.37	100	84	22.62	27.14	68.05	66.29	816	23908	9941
46	-4.47	100	85	22.62	27.14	73.01	68.34	857	25600	10444
47	-4.57	100	86	22.62	27.14	78.20	70.42	899	27353	10960
48	-4.67	100	87	22.62	27.14	83.64	72.51	943	29167	11488
49	-4.77	100	88	22.62	36.19	89.32	74.64	904	23859	11297
50	-4.87	100	89	22.62	36.19	95.25	76.79	945	25334	11809
51	-4.97	100	90	22.62	36.19	101.45	78.96	986	26856	12331
52	-5.07	100	91	22.62	36.19	107.90	81.15	1028	28424	12865
53	-5.17	100	92	22.62	36.19	114.63	83.37	1071	30040	13408
54	-5.27	100	93	22.62	36.19	121.63	85.62	1115	31702	13963
55	-5.36	100	94	22.62	36.19	128.90	87.89	1160	33412	14527
56	-5.46	100	95	22.62	36.19	136.47	90.18	1205	35168	15102
57	-5.56	100	96	22.62	36.19	144.32	92.50	1251	36972	15687
58	-5.66	100	97	22.62	36.19	152.48	94.84	1298	38823	16283
59	-5.76	100	98	22.62	36.19	160.93	97.20	1345	40721	16889
60	-5.86	100	99	22.62	36.19	169.69	99.59	1393	42667	17504
61	-5.96	100	100	22.62	36.19	178.76	102.01	1442	44661	18130
62	-6.06	100	101	22.62	36.19	188.15	104.45	1492	46702	18765
63	-6.16	100	102	22.62	36.19	197.87	106.91	1542	48791	19411
64	-6.26	100	103	22.62	36.19	207.91	109.40	1593	50927	20066
65	-6.36	100	104	22.62	36.19	218.29	111.91	1645	53112	20731
66	-6.46	100	105	22.62	36.19	229.01	114.44	1698	55344	21405
67	-6.56	100	106	22.62	36.19	240.08	117.00	1751	57625	22090
68	-6.66	100	107	22.62	36.19	251.50	119.58	1804	59953	22783
69	-6.76	100	108	22.62	36.19	263.27	122.19	1859	62329	23486
70	-6.85	100	109	22.62	36.19	275.41	124.82	1914	64754	24199
71	-6.95	100	110	22.62	36.19	287.91	127.48	1970	67227	24921
72	-7.05	100	111	22.62	36.19	300.79	130.16	2026	69748	25652
73	-7.15	100	112	22.62	36.19	314.04	132.86	2084	72317	26392
74	-7.25	100	113	22.62	36.19	327.68	135.59	2141	74935	27141
75	-7.35	100	114	22.62	36.19	341.71	138.34	2200	77601	27900
76	-7.45	100	115	22.62	36.19	356.13	141.12	2259	80315	28667
77	-7.55	100	116	22.62	36.19	370.96	143.92	2318	83078	29444

Fondazione

Combinazione n° 15 - SLEQ

Tensione massima di compressione nel calcestruzzo 11205 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	-0.90	100	110	22.62	22.62	0.00	0.00	0	0	0
2	-0.80	100	110	22.62	22.62	0.89	0.00	7	399	78
3	-0.70	100	110	22.62	22.62	3.54	0.00	27	1593	312
4	-0.60	100	110	22.62	22.62	7.95	0.00	61	3577	700
5	-0.50	100	110	22.62	22.62	14.11	0.00	108	6345	1242
6	-0.40	100	110	22.62	22.62	21.99	0.00	168	9892	1936
7	0.76	100	110	22.62	31.67	-266.22	0.00	1800	21594	86433

n°	Y	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
8	0.85	100	110	22.62	31.67	-259.69	0.00	1756	21064	84313
9	0.95	100	110	22.62	31.67	-253.04	0.00	1711	20524	82152
10	1.05	100	110	22.62	31.67	-246.26	0.00	1665	19975	79953
11	1.15	100	110	22.62	31.67	-239.39	0.00	1618	19417	77721
12	1.25	100	110	22.62	31.67	-232.42	0.00	1571	18852	75458
13	1.35	100	110	22.62	31.67	-225.36	0.00	1523	18280	73168
14	1.45	100	110	22.62	31.67	-218.24	0.00	1475	17702	70855
15	1.55	100	110	22.62	31.67	-211.05	0.00	1427	17119	68522
16	1.65	100	110	22.62	22.62	-203.82	0.00	1561	17938	91673
17	1.74	100	110	22.62	22.62	-196.55	0.00	1506	17298	88401
18	1.84	100	110	22.62	22.62	-189.24	0.00	1450	16655	85117
19	1.94	100	110	22.62	22.62	-181.93	0.00	1394	16011	81826
20	2.04	100	110	22.62	22.62	-174.60	0.00	1337	15367	78531
21	2.14	100	110	22.62	22.62	-167.28	0.00	1281	14723	75240
22	2.24	100	110	22.62	22.62	-159.98	0.00	1225	14080	71955
23	2.34	100	110	22.62	22.62	-152.71	0.00	1170	13440	68683
24	2.44	100	110	22.62	22.62	-145.47	0.00	1114	12803	65429
25	2.54	100	110	22.62	22.62	-138.28	0.00	1059	12170	62196
26	2.64	100	110	22.62	22.62	-131.16	0.00	1005	11543	58991
27	2.73	100	110	22.62	22.62	-124.10	0.00	951	10922	55817
28	2.83	100	110	22.62	22.62	-117.13	0.00	897	10308	52681
29	2.93	100	110	22.62	22.62	-110.25	0.00	844	9703	49587
30	3.03	100	110	22.62	22.62	-103.47	0.00	793	9107	46539
31	3.13	100	110	22.62	22.62	-96.81	0.00	742	8521	43544
32	3.23	100	110	22.62	22.62	-90.28	0.00	692	7945	40605
33	3.33	100	110	22.62	22.62	-83.88	0.00	643	7383	37728
34	3.43	100	110	22.62	22.62	-77.64	0.00	595	6833	34918
35	3.53	100	110	22.62	22.62	-71.55	0.00	548	6297	32180
36	3.63	100	110	22.62	22.62	-65.63	0.00	503	5776	29518
37	3.72	100	110	22.62	22.62	-59.89	0.00	459	5271	26938
38	3.82	100	110	22.62	22.62	-54.35	0.00	416	4783	24444
39	3.92	100	110	22.62	22.62	-49.01	0.00	375	4313	22042
40	4.02	100	110	22.62	22.62	-43.88	0.00	336	3862	19736
41	4.12	100	110	22.62	22.62	-38.98	0.00	299	3431	17532
42	4.22	100	110	22.62	22.62	-34.32	0.00	263	3020	15434
43	4.32	100	110	22.62	22.62	-29.90	0.00	229	2631	13447
44	4.42	100	110	22.62	22.62	-25.74	0.00	197	2265	11577
45	4.52	100	110	22.62	22.62	-21.85	0.00	167	1923	9828
46	4.62	100	110	22.62	22.62	-18.24	0.00	140	1605	8204
47	4.71	100	110	22.62	22.62	-14.92	0.00	114	1313	6712
48	4.81	100	110	22.62	22.62	-11.91	0.00	91	1048	5356
49	4.91	100	110	22.62	22.62	-9.21	0.00	71	810	4141
50	5.01	100	110	22.62	22.62	-6.83	0.00	52	601	3072
51	5.11	100	110	22.62	22.62	-4.79	0.00	37	422	2154
52	5.21	100	110	22.62	22.62	-3.09	0.00	24	272	1392
53	5.31	100	110	22.62	22.62	-1.76	0.00	13	155	790
54	5.41	100	110	22.62	22.62	-0.79	0.00	6	69	355
55	5.51	100	110	22.62	22.62	-0.20	0.00	2	18	89
56	5.61	100	110	22.62	22.62	0.00	0.00	0	0	0

Verifica a fessurazione

Simbologia adottata

n° indice sezione

Y ordinata sezione espressa in [m]

Sottovia SP42 - Relazione di calcolo Muri di appoggio

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IA7K	00	D10CL	SL0100002	A	110 di 159

B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
Af	area ferri zona tesa espresso in [cmq]
Aeff	area efficace espressa in [cmq]
M	momento agente espressa in [kNm]
Mpf	momento di prima fessurazione espressa in [kNm]
ε	deformazione espresso in %
Sm	spaziatura tra le fessure espressa in [mm]
w	apertura delle fessure espressa in [mm]

Combinazioni SLER

Paramento

Combinazione n° 13 - SLER

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	0.00	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.10	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000
3	-0.20	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000
4	-0.30	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000
5	-0.40	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000
6	-0.50	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000
7	-0.60	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000
8	-0.70	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000
9	-0.79	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000
10	-0.89	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000
11	-0.99	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000
12	-1.09	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000
13	-1.19	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000
14	-1.29	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000
15	-1.39	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000
16	-1.49	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000
17	-1.59	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000
18	-1.69	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000
19	-1.79	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000
20	-1.89	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000
21	-1.99	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000
22	-2.09	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000
23	-2.19	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000
24	-2.28	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000
25	-2.38	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000
26	-2.48	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
27	-2.58	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000
28	-2.68	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000
29	-2.78	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000
30	-2.88	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000
31	-2.98	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000
32	-3.08	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000
33	-3.18	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000
34	-3.28	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000
35	-3.38	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000
36	-3.48	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000
37	-3.58	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000
38	-3.68	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000
39	-3.78	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000
40	-3.87	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000
41	-3.97	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000
42	-4.07	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000
43	-4.17	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000
44	-4.27	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000
45	-4.37	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000
46	-4.47	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000
47	-4.57	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000
48	-4.67	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000
49	-4.77	100	88	36.19	1250.00	89.32	558.21	0.0000	0.00	0.000
50	-4.87	100	89	36.19	1250.00	95.25	567.20	0.0000	0.00	0.000
51	-4.97	100	90	36.19	1250.00	101.45	576.34	0.0000	0.00	0.000
52	-5.07	100	91	36.19	1250.00	107.90	585.65	0.0000	0.00	0.000
53	-5.17	100	92	36.19	1250.00	114.63	595.11	0.0000	0.00	0.000
54	-5.27	100	93	36.19	1250.00	121.63	604.72	0.0000	0.00	0.000
55	-5.36	100	94	36.19	1250.00	128.90	614.48	0.0000	0.00	0.000
56	-5.46	100	95	36.19	1250.00	136.47	624.38	0.0000	0.00	0.000
57	-5.56	100	96	36.19	1250.00	144.32	634.42	0.0000	0.00	0.000
58	-5.66	100	97	36.19	1250.00	152.48	644.61	0.0000	0.00	0.000
59	-5.76	100	98	36.19	1250.00	160.93	654.93	0.0000	0.00	0.000
60	-5.86	100	99	36.19	1250.00	169.69	665.38	0.0000	0.00	0.000
61	-5.96	100	100	36.19	1250.00	178.76	675.96	0.0000	0.00	0.000
62	-6.06	100	101	36.19	1250.00	188.15	686.67	0.0000	0.00	0.000
63	-6.16	100	102	36.19	1250.00	197.87	697.50	0.0000	0.00	0.000
64	-6.26	100	103	36.19	1250.00	207.91	708.45	0.0000	0.00	0.000
65	-6.36	100	104	36.19	1250.00	218.29	719.52	0.0000	0.00	0.000
66	-6.46	100	105	36.19	1250.00	229.01	730.72	0.0000	0.00	0.000
67	-6.56	100	106	36.19	1250.00	240.08	742.04	0.0000	0.00	0.000
68	-6.66	100	107	36.19	1250.00	251.50	753.48	0.0000	0.00	0.000
69	-6.76	100	108	36.19	1250.00	263.27	765.04	0.0000	0.00	0.000
70	-6.85	100	109	36.19	1250.00	275.41	776.72	0.0000	0.00	0.000
71	-6.95	100	110	36.19	1250.00	287.91	788.52	0.0000	0.00	0.000
72	-7.05	100	111	36.19	1250.00	300.79	800.44	0.0000	0.00	0.000
73	-7.15	100	112	36.19	1250.00	314.04	812.48	0.0000	0.00	0.000
74	-7.25	100	113	36.19	1250.00	327.68	824.64	0.0000	0.00	0.000
75	-7.35	100	114	36.19	1250.00	341.71	836.92	0.0000	0.00	0.000
76	-7.45	100	115	36.19	1250.00	356.13	849.32	0.0000	0.00	0.000
77	-7.55	100	116	36.19	1250.00	370.96	861.84	0.0000	0.00	0.000

Combinazione n° 16 - SLER

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
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	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	0.00	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.10	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000
3	-0.20	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000
4	-0.30	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000
5	-0.40	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000
6	-0.50	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000
7	-0.60	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000
8	-0.70	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000
9	-0.79	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000
10	-0.89	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000
11	-0.99	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000
12	-1.09	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000
13	-1.19	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000
14	-1.29	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000
15	-1.39	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000
16	-1.49	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000
17	-1.59	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000
18	-1.69	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000
19	-1.79	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000
20	-1.89	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000
21	-1.99	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000
22	-2.09	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000
23	-2.19	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000
24	-2.28	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000
25	-2.38	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000
26	-2.48	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000
27	-2.58	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000
28	-2.68	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000
29	-2.78	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000
30	-2.88	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000
31	-2.98	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000
32	-3.08	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000
33	-3.18	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000
34	-3.28	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000
35	-3.38	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000
36	-3.48	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000
37	-3.58	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000
38	-3.68	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000
39	-3.78	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000
40	-3.87	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000
41	-3.97	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000
42	-4.07	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000
43	-4.17	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000
44	-4.27	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000
45	-4.37	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000
46	-4.47	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000
47	-4.57	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000
48	-4.67	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000
49	-4.77	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000
50	-4.87	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000
51	-4.97	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000
52	-5.07	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000
53	-5.17	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000
54	-5.27	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000
55	-5.36	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000
56	-5.46	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000
57	-5.56	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000
58	-5.66	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000
59	-5.76	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000
60	-5.86	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000
61	-5.96	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000
62	-6.06	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000
63	-6.16	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
64	-6.26	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000
65	-6.36	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000
66	-6.46	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000
67	-6.56	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000
68	-6.66	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000
69	-6.76	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000
70	-6.85	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000
71	-6.95	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000
72	-7.05	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000
73	-7.15	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000
74	-7.25	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000
75	-7.35	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000
76	-7.45	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000
77	-7.55	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000

Fondazione

Combinazione n° 13 - SLER

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	-0.90	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.80	100	110	22.62	1250.00	1.02	600.43	0.0000	0.00	0.000
3	-0.70	100	110	22.62	1250.00	4.07	600.43	0.0000	0.00	0.000
4	-0.60	100	110	22.62	1250.00	9.12	600.43	0.0000	0.00	0.000
5	-0.50	100	110	22.62	1250.00	16.16	600.43	0.0000	0.00	0.000
6	-0.40	100	110	22.62	1250.00	25.17	600.43	0.0000	0.00	0.000
7	0.76	100	110	31.67	1250.00	-411.15	-622.68	0.0000	0.00	0.000
8	0.85	100	110	31.67	1250.00	-401.74	-622.68	0.0000	0.00	0.000
9	0.95	100	110	31.67	1250.00	-392.08	-622.68	0.0000	0.00	0.000
10	1.05	100	110	31.67	1250.00	-382.19	-622.68	0.0000	0.00	0.000
11	1.15	100	110	31.67	1250.00	-372.08	-622.68	0.0000	0.00	0.000
12	1.25	100	110	31.67	1250.00	-361.78	-622.68	0.0000	0.00	0.000
13	1.35	100	110	31.67	1250.00	-351.30	-622.68	0.0000	0.00	0.000
14	1.45	100	110	31.67	1250.00	-340.67	-622.68	0.0000	0.00	0.000
15	1.55	100	110	31.67	1250.00	-329.89	-622.68	0.0000	0.00	0.000
16	1.65	100	110	22.62	1250.00	-319.00	-600.43	0.0000	0.00	0.000
17	1.74	100	110	22.62	1250.00	-308.00	-600.43	0.0000	0.00	0.000
18	1.84	100	110	22.62	1250.00	-296.92	-600.43	0.0000	0.00	0.000
19	1.94	100	110	22.62	1250.00	-285.78	-600.43	0.0000	0.00	0.000
20	2.04	100	110	22.62	1250.00	-274.59	-600.43	0.0000	0.00	0.000
21	2.14	100	110	22.62	1250.00	-263.38	-600.43	0.0000	0.00	0.000
22	2.24	100	110	22.62	1250.00	-252.15	-600.43	0.0000	0.00	0.000
23	2.34	100	110	22.62	1250.00	-240.94	-600.43	0.0000	0.00	0.000
24	2.44	100	110	22.62	1250.00	-229.76	-600.43	0.0000	0.00	0.000
25	2.54	100	110	22.62	1250.00	-218.63	-600.43	0.0000	0.00	0.000
26	2.64	100	110	22.62	1250.00	-207.57	-600.43	0.0000	0.00	0.000
27	2.73	100	110	22.62	1250.00	-196.59	-600.43	0.0000	0.00	0.000
28	2.83	100	110	22.62	1250.00	-185.71	-600.43	0.0000	0.00	0.000
29	2.93	100	110	22.62	1250.00	-174.96	-600.43	0.0000	0.00	0.000
30	3.03	100	110	22.62	1250.00	-164.36	-600.43	0.0000	0.00	0.000
31	3.13	100	110	22.62	1250.00	-153.91	-600.43	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
32	3.23	100	110	22.62	1250.00	-143.64	-600.43	0.0000	0.00	0.000
33	3.33	100	110	22.62	1250.00	-133.58	-600.43	0.0000	0.00	0.000
34	3.43	100	110	22.62	1250.00	-123.73	-600.43	0.0000	0.00	0.000
35	3.53	100	110	22.62	1250.00	-114.11	-600.43	0.0000	0.00	0.000
36	3.63	100	110	22.62	1250.00	-104.75	-600.43	0.0000	0.00	0.000
37	3.72	100	110	22.62	1250.00	-95.67	-600.43	0.0000	0.00	0.000
38	3.82	100	110	22.62	1250.00	-86.88	-600.43	0.0000	0.00	0.000
39	3.92	100	110	22.62	1250.00	-78.39	-600.43	0.0000	0.00	0.000
40	4.02	100	110	22.62	1250.00	-70.24	-600.43	0.0000	0.00	0.000
41	4.12	100	110	22.62	1250.00	-62.44	-600.43	0.0000	0.00	0.000
42	4.22	100	110	22.62	1250.00	-55.01	-600.43	0.0000	0.00	0.000
43	4.32	100	110	22.62	1250.00	-47.96	-600.43	0.0000	0.00	0.000
44	4.42	100	110	22.62	1250.00	-41.31	-600.43	0.0000	0.00	0.000
45	4.52	100	110	22.62	1250.00	-35.09	-600.43	0.0000	0.00	0.000
46	4.62	100	110	22.62	1250.00	-29.31	-600.43	0.0000	0.00	0.000
47	4.71	100	110	22.62	1250.00	-24.00	-600.43	0.0000	0.00	0.000
48	4.81	100	110	22.62	1250.00	-19.16	-600.43	0.0000	0.00	0.000
49	4.91	100	110	22.62	1250.00	-14.82	-600.43	0.0000	0.00	0.000
50	5.01	100	110	22.62	1250.00	-11.00	-600.43	0.0000	0.00	0.000
51	5.11	100	110	22.62	1250.00	-7.72	-600.43	0.0000	0.00	0.000
52	5.21	100	110	22.62	1250.00	-4.99	-600.43	0.0000	0.00	0.000
53	5.31	100	110	22.62	1250.00	-2.84	-600.43	0.0000	0.00	0.000
54	5.41	100	110	22.62	1250.00	-1.27	-600.43	0.0000	0.00	0.000
55	5.51	100	110	22.62	1250.00	-0.32	-600.43	0.0000	0.00	0.000
56	5.61	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000

Combinazione n° 16 - SLER

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	-0.90	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.80	100	110	22.62	1250.00	0.99	600.43	0.0000	0.00	0.000
3	-0.70	100	110	22.62	1250.00	3.95	600.43	0.0000	0.00	0.000
4	-0.60	100	110	22.62	1250.00	8.87	600.43	0.0000	0.00	0.000
5	-0.50	100	110	22.62	1250.00	15.72	600.43	0.0000	0.00	0.000
6	-0.40	100	110	22.62	1250.00	24.50	600.43	0.0000	0.00	0.000
7	0.76	100	110	31.67	1250.00	-380.11	-622.68	0.0000	0.00	0.000
8	0.85	100	110	31.67	1250.00	-371.32	-622.68	0.0000	0.00	0.000
9	0.95	100	110	31.67	1250.00	-362.31	-622.68	0.0000	0.00	0.000
10	1.05	100	110	31.67	1250.00	-353.09	-622.68	0.0000	0.00	0.000
11	1.15	100	110	31.67	1250.00	-343.67	-622.68	0.0000	0.00	0.000
12	1.25	100	110	31.67	1250.00	-334.09	-622.68	0.0000	0.00	0.000
13	1.35	100	110	31.67	1250.00	-324.35	-622.68	0.0000	0.00	0.000
14	1.45	100	110	31.67	1250.00	-314.46	-622.68	0.0000	0.00	0.000
15	1.55	100	110	31.67	1250.00	-304.46	-622.68	0.0000	0.00	0.000
16	1.65	100	110	22.62	1250.00	-294.35	-600.43	0.0000	0.00	0.000
17	1.74	100	110	22.62	1250.00	-284.15	-600.43	0.0000	0.00	0.000
18	1.84	100	110	22.62	1250.00	-273.89	-600.43	0.0000	0.00	0.000
19	1.94	100	110	22.62	1250.00	-263.56	-600.43	0.0000	0.00	0.000
20	2.04	100	110	22.62	1250.00	-253.20	-600.43	0.0000	0.00	0.000
21	2.14	100	110	22.62	1250.00	-242.82	-600.43	0.0000	0.00	0.000
22	2.24	100	110	22.62	1250.00	-232.44	-600.43	0.0000	0.00	0.000
23	2.34	100	110	22.62	1250.00	-222.08	-600.43	0.0000	0.00	0.000
24	2.44	100	110	22.62	1250.00	-211.74	-600.43	0.0000	0.00	0.000
25	2.54	100	110	22.62	1250.00	-201.45	-600.43	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
26	2.64	100	110	22.62	1250.00	-191.23	-600.43	0.0000	0.00	0.000
27	2.73	100	110	22.62	1250.00	-181.09	-600.43	0.0000	0.00	0.000
28	2.83	100	110	22.62	1250.00	-171.05	-600.43	0.0000	0.00	0.000
29	2.93	100	110	22.62	1250.00	-161.13	-600.43	0.0000	0.00	0.000
30	3.03	100	110	22.62	1250.00	-151.34	-600.43	0.0000	0.00	0.000
31	3.13	100	110	22.62	1250.00	-141.71	-600.43	0.0000	0.00	0.000
32	3.23	100	110	22.62	1250.00	-132.24	-600.43	0.0000	0.00	0.000
33	3.33	100	110	22.62	1250.00	-122.96	-600.43	0.0000	0.00	0.000
34	3.43	100	110	22.62	1250.00	-113.88	-600.43	0.0000	0.00	0.000
35	3.53	100	110	22.62	1250.00	-105.02	-600.43	0.0000	0.00	0.000
36	3.63	100	110	22.62	1250.00	-96.39	-600.43	0.0000	0.00	0.000
37	3.72	100	110	22.62	1250.00	-88.03	-600.43	0.0000	0.00	0.000
38	3.82	100	110	22.62	1250.00	-79.93	-600.43	0.0000	0.00	0.000
39	3.92	100	110	22.62	1250.00	-72.12	-600.43	0.0000	0.00	0.000
40	4.02	100	110	22.62	1250.00	-64.61	-600.43	0.0000	0.00	0.000
41	4.12	100	110	22.62	1250.00	-57.43	-600.43	0.0000	0.00	0.000
42	4.22	100	110	22.62	1250.00	-50.59	-600.43	0.0000	0.00	0.000
43	4.32	100	110	22.62	1250.00	-44.10	-600.43	0.0000	0.00	0.000
44	4.42	100	110	22.62	1250.00	-37.99	-600.43	0.0000	0.00	0.000
45	4.52	100	110	22.62	1250.00	-32.26	-600.43	0.0000	0.00	0.000
46	4.62	100	110	22.62	1250.00	-26.95	-600.43	0.0000	0.00	0.000
47	4.71	100	110	22.62	1250.00	-22.06	-600.43	0.0000	0.00	0.000
48	4.81	100	110	22.62	1250.00	-17.61	-600.43	0.0000	0.00	0.000
49	4.91	100	110	22.62	1250.00	-13.62	-600.43	0.0000	0.00	0.000
50	5.01	100	110	22.62	1250.00	-10.11	-600.43	0.0000	0.00	0.000
51	5.11	100	110	22.62	1250.00	-7.09	-600.43	0.0000	0.00	0.000
52	5.21	100	110	22.62	1250.00	-4.59	-600.43	0.0000	0.00	0.000
53	5.31	100	110	22.62	1250.00	-2.61	-600.43	0.0000	0.00	0.000
54	5.41	100	110	22.62	1250.00	-1.17	-600.43	0.0000	0.00	0.000
55	5.51	100	110	22.62	1250.00	-0.30	-600.43	0.0000	0.00	0.000
56	5.61	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000

Combinazioni SLEF

Paramento

Combinazione n° 14 - SLEF

Apertura limite fessure $w_{lim}=0.30$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	0.00	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.10	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000
3	-0.20	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000
4	-0.30	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000
5	-0.40	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000
6	-0.50	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000
7	-0.60	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000
8	-0.70	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
9	-0.79	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000
10	-0.89	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000
11	-0.99	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000
12	-1.09	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000
13	-1.19	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000
14	-1.29	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000
15	-1.39	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000
16	-1.49	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000
17	-1.59	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000
18	-1.69	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000
19	-1.79	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000
20	-1.89	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000
21	-1.99	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000
22	-2.09	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000
23	-2.19	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000
24	-2.28	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000
25	-2.38	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000
26	-2.48	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000
27	-2.58	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000
28	-2.68	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000
29	-2.78	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000
30	-2.88	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000
31	-2.98	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000
32	-3.08	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000
33	-3.18	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000
34	-3.28	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000
35	-3.38	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000
36	-3.48	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000
37	-3.58	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000
38	-3.68	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000
39	-3.78	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000
40	-3.87	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000
41	-3.97	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000
42	-4.07	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000
43	-4.17	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000
44	-4.27	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000
45	-4.37	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000
46	-4.47	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000
47	-4.57	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000
48	-4.67	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000
49	-4.77	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000
50	-4.87	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000
51	-4.97	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000
52	-5.07	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000
53	-5.17	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000
54	-5.27	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000
55	-5.36	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000
56	-5.46	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000
57	-5.56	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000
58	-5.66	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000
59	-5.76	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000
60	-5.86	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000
61	-5.96	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000
62	-6.06	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000
63	-6.16	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000
64	-6.26	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000
65	-6.36	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000
66	-6.46	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000
67	-6.56	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000
68	-6.66	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000
69	-6.76	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000
70	-6.85	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
71	-6.95	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000
72	-7.05	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000
73	-7.15	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000
74	-7.25	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000
75	-7.35	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000
76	-7.45	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000
77	-7.55	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000

Combinazione n° 17 - SLEF

Apertura limite fessure $w_{lim}=0.30$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	0.00	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.10	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000
3	-0.20	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000
4	-0.30	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000
5	-0.40	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000
6	-0.50	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000
7	-0.60	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000
8	-0.70	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000
9	-0.79	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000
10	-0.89	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000
11	-0.99	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000
12	-1.09	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000
13	-1.19	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000
14	-1.29	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000
15	-1.39	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000
16	-1.49	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000
17	-1.59	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000
18	-1.69	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000
19	-1.79	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000
20	-1.89	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000
21	-1.99	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000
22	-2.09	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000
23	-2.19	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000
24	-2.28	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000
25	-2.38	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000
26	-2.48	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000
27	-2.58	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000
28	-2.68	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000
29	-2.78	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000
30	-2.88	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000
31	-2.98	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000
32	-3.08	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000
33	-3.18	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000
34	-3.28	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000
35	-3.38	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000
36	-3.48	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000
37	-3.58	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000
38	-3.68	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000
39	-3.78	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000
40	-3.87	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000
41	-3.97	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000
42	-4.07	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000
43	-4.17	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
44	-4.27	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000
45	-4.37	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000
46	-4.47	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000
47	-4.57	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000
48	-4.67	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000
49	-4.77	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000
50	-4.87	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000
51	-4.97	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000
52	-5.07	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000
53	-5.17	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000
54	-5.27	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000
55	-5.36	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000
56	-5.46	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000
57	-5.56	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000
58	-5.66	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000
59	-5.76	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000
60	-5.86	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000
61	-5.96	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000
62	-6.06	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000
63	-6.16	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000
64	-6.26	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000
65	-6.36	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000
66	-6.46	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000
67	-6.56	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000
68	-6.66	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000
69	-6.76	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000
70	-6.85	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000
71	-6.95	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000
72	-7.05	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000
73	-7.15	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000
74	-7.25	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000
75	-7.35	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000
76	-7.45	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000
77	-7.55	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000

Fondazione

Combinazione n° 14 - SLEF

Apertura limite fessure $w_{lim}=0.30$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	-0.90	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.80	100	110	22.62	1250.00	0.95	600.43	0.0000	0.00	0.000
3	-0.70	100	110	22.62	1250.00	3.79	600.43	0.0000	0.00	0.000
4	-0.60	100	110	22.62	1250.00	8.51	600.43	0.0000	0.00	0.000
5	-0.50	100	110	22.62	1250.00	15.09	600.43	0.0000	0.00	0.000
6	-0.40	100	110	22.62	1250.00	23.51	600.43	0.0000	0.00	0.000
7	0.76	100	110	31.67	1250.00	-334.79	-622.68	0.0000	0.00	0.000
8	0.85	100	110	31.67	1250.00	-326.91	-622.68	0.0000	0.00	0.000
9	0.95	100	110	31.67	1250.00	-318.84	-622.68	0.0000	0.00	0.000
10	1.05	100	110	31.67	1250.00	-310.59	-622.68	0.0000	0.00	0.000
11	1.15	100	110	31.67	1250.00	-302.20	-622.68	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
12	1.25	100	110	31.67	1250.00	-293.65	-622.68	0.0000	0.00	0.000
13	1.35	100	110	31.67	1250.00	-284.99	-622.68	0.0000	0.00	0.000
14	1.45	100	110	31.67	1250.00	-276.20	-622.68	0.0000	0.00	0.000
15	1.55	100	110	31.67	1250.00	-267.32	-622.68	0.0000	0.00	0.000
16	1.65	100	110	22.62	1250.00	-258.36	-600.43	0.0000	0.00	0.000
17	1.74	100	110	22.62	1250.00	-249.33	-600.43	0.0000	0.00	0.000
18	1.84	100	110	22.62	1250.00	-240.24	-600.43	0.0000	0.00	0.000
19	1.94	100	110	22.62	1250.00	-231.12	-600.43	0.0000	0.00	0.000
20	2.04	100	110	22.62	1250.00	-221.97	-600.43	0.0000	0.00	0.000
21	2.14	100	110	22.62	1250.00	-212.81	-600.43	0.0000	0.00	0.000
22	2.24	100	110	22.62	1250.00	-203.65	-600.43	0.0000	0.00	0.000
23	2.34	100	110	22.62	1250.00	-194.51	-600.43	0.0000	0.00	0.000
24	2.44	100	110	22.62	1250.00	-185.41	-600.43	0.0000	0.00	0.000
25	2.54	100	110	22.62	1250.00	-176.36	-600.43	0.0000	0.00	0.000
26	2.64	100	110	22.62	1250.00	-167.37	-600.43	0.0000	0.00	0.000
27	2.73	100	110	22.62	1250.00	-158.45	-600.43	0.0000	0.00	0.000
28	2.83	100	110	22.62	1250.00	-149.63	-600.43	0.0000	0.00	0.000
29	2.93	100	110	22.62	1250.00	-140.92	-600.43	0.0000	0.00	0.000
30	3.03	100	110	22.62	1250.00	-132.33	-600.43	0.0000	0.00	0.000
31	3.13	100	110	22.62	1250.00	-123.88	-600.43	0.0000	0.00	0.000
32	3.23	100	110	22.62	1250.00	-115.58	-600.43	0.0000	0.00	0.000
33	3.33	100	110	22.62	1250.00	-107.44	-600.43	0.0000	0.00	0.000
34	3.43	100	110	22.62	1250.00	-99.49	-600.43	0.0000	0.00	0.000
35	3.53	100	110	22.62	1250.00	-91.73	-600.43	0.0000	0.00	0.000
36	3.63	100	110	22.62	1250.00	-84.18	-600.43	0.0000	0.00	0.000
37	3.72	100	110	22.62	1250.00	-76.86	-600.43	0.0000	0.00	0.000
38	3.82	100	110	22.62	1250.00	-69.77	-600.43	0.0000	0.00	0.000
39	3.92	100	110	22.62	1250.00	-62.94	-600.43	0.0000	0.00	0.000
40	4.02	100	110	22.62	1250.00	-56.38	-600.43	0.0000	0.00	0.000
41	4.12	100	110	22.62	1250.00	-50.11	-600.43	0.0000	0.00	0.000
42	4.22	100	110	22.62	1250.00	-44.13	-600.43	0.0000	0.00	0.000
43	4.32	100	110	22.62	1250.00	-38.46	-600.43	0.0000	0.00	0.000
44	4.42	100	110	22.62	1250.00	-33.13	-600.43	0.0000	0.00	0.000
45	4.52	100	110	22.62	1250.00	-28.13	-600.43	0.0000	0.00	0.000
46	4.62	100	110	22.62	1250.00	-23.49	-600.43	0.0000	0.00	0.000
47	4.71	100	110	22.62	1250.00	-19.23	-600.43	0.0000	0.00	0.000
48	4.81	100	110	22.62	1250.00	-15.35	-600.43	0.0000	0.00	0.000
49	4.91	100	110	22.62	1250.00	-11.87	-600.43	0.0000	0.00	0.000
50	5.01	100	110	22.62	1250.00	-8.81	-600.43	0.0000	0.00	0.000
51	5.11	100	110	22.62	1250.00	-6.18	-600.43	0.0000	0.00	0.000
52	5.21	100	110	22.62	1250.00	-3.99	-600.43	0.0000	0.00	0.000
53	5.31	100	110	22.62	1250.00	-2.27	-600.43	0.0000	0.00	0.000
54	5.41	100	110	22.62	1250.00	-1.02	-600.43	0.0000	0.00	0.000
55	5.51	100	110	22.62	1250.00	-0.26	-600.43	0.0000	0.00	0.000
56	5.61	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000

Combinazione n° 17 - SLEF

Apertura limite fessure $w_{lim}=0.30$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	-0.90	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.80	100	110	22.62	1250.00	0.89	600.43	0.0000	0.00	0.000
3	-0.70	100	110	22.62	1250.00	3.54	600.43	0.0000	0.00	0.000
4	-0.60	100	110	22.62	1250.00	7.95	600.43	0.0000	0.00	0.000
5	-0.50	100	110	22.62	1250.00	14.11	600.43	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
6	-0.40	100	110	22.62	1250.00	21.99	600.43	0.0000	0.00	0.000
7	0.76	100	110	31.67	1250.00	-266.22	-622.68	0.0000	0.00	0.000
8	0.85	100	110	31.67	1250.00	-259.69	-622.68	0.0000	0.00	0.000
9	0.95	100	110	31.67	1250.00	-253.04	-622.68	0.0000	0.00	0.000
10	1.05	100	110	31.67	1250.00	-246.26	-622.68	0.0000	0.00	0.000
11	1.15	100	110	31.67	1250.00	-239.39	-622.68	0.0000	0.00	0.000
12	1.25	100	110	31.67	1250.00	-232.42	-622.68	0.0000	0.00	0.000
13	1.35	100	110	31.67	1250.00	-225.36	-622.68	0.0000	0.00	0.000
14	1.45	100	110	31.67	1250.00	-218.24	-622.68	0.0000	0.00	0.000
15	1.55	100	110	31.67	1250.00	-211.05	-622.68	0.0000	0.00	0.000
16	1.65	100	110	22.62	1250.00	-203.82	-600.43	0.0000	0.00	0.000
17	1.74	100	110	22.62	1250.00	-196.55	-600.43	0.0000	0.00	0.000
18	1.84	100	110	22.62	1250.00	-189.24	-600.43	0.0000	0.00	0.000
19	1.94	100	110	22.62	1250.00	-181.93	-600.43	0.0000	0.00	0.000
20	2.04	100	110	22.62	1250.00	-174.60	-600.43	0.0000	0.00	0.000
21	2.14	100	110	22.62	1250.00	-167.28	-600.43	0.0000	0.00	0.000
22	2.24	100	110	22.62	1250.00	-159.98	-600.43	0.0000	0.00	0.000
23	2.34	100	110	22.62	1250.00	-152.71	-600.43	0.0000	0.00	0.000
24	2.44	100	110	22.62	1250.00	-145.47	-600.43	0.0000	0.00	0.000
25	2.54	100	110	22.62	1250.00	-138.28	-600.43	0.0000	0.00	0.000
26	2.64	100	110	22.62	1250.00	-131.16	-600.43	0.0000	0.00	0.000
27	2.73	100	110	22.62	1250.00	-124.10	-600.43	0.0000	0.00	0.000
28	2.83	100	110	22.62	1250.00	-117.13	-600.43	0.0000	0.00	0.000
29	2.93	100	110	22.62	1250.00	-110.25	-600.43	0.0000	0.00	0.000
30	3.03	100	110	22.62	1250.00	-103.47	-600.43	0.0000	0.00	0.000
31	3.13	100	110	22.62	1250.00	-96.81	-600.43	0.0000	0.00	0.000
32	3.23	100	110	22.62	1250.00	-90.28	-600.43	0.0000	0.00	0.000
33	3.33	100	110	22.62	1250.00	-83.88	-600.43	0.0000	0.00	0.000
34	3.43	100	110	22.62	1250.00	-77.64	-600.43	0.0000	0.00	0.000
35	3.53	100	110	22.62	1250.00	-71.55	-600.43	0.0000	0.00	0.000
36	3.63	100	110	22.62	1250.00	-65.63	-600.43	0.0000	0.00	0.000
37	3.72	100	110	22.62	1250.00	-59.89	-600.43	0.0000	0.00	0.000
38	3.82	100	110	22.62	1250.00	-54.35	-600.43	0.0000	0.00	0.000
39	3.92	100	110	22.62	1250.00	-49.01	-600.43	0.0000	0.00	0.000
40	4.02	100	110	22.62	1250.00	-43.88	-600.43	0.0000	0.00	0.000
41	4.12	100	110	22.62	1250.00	-38.98	-600.43	0.0000	0.00	0.000
42	4.22	100	110	22.62	1250.00	-34.32	-600.43	0.0000	0.00	0.000
43	4.32	100	110	22.62	1250.00	-29.90	-600.43	0.0000	0.00	0.000
44	4.42	100	110	22.62	1250.00	-25.74	-600.43	0.0000	0.00	0.000
45	4.52	100	110	22.62	1250.00	-21.85	-600.43	0.0000	0.00	0.000
46	4.62	100	110	22.62	1250.00	-18.24	-600.43	0.0000	0.00	0.000
47	4.71	100	110	22.62	1250.00	-14.92	-600.43	0.0000	0.00	0.000
48	4.81	100	110	22.62	1250.00	-11.91	-600.43	0.0000	0.00	0.000
49	4.91	100	110	22.62	1250.00	-9.21	-600.43	0.0000	0.00	0.000
50	5.01	100	110	22.62	1250.00	-6.83	-600.43	0.0000	0.00	0.000
51	5.11	100	110	22.62	1250.00	-4.79	-600.43	0.0000	0.00	0.000
52	5.21	100	110	22.62	1250.00	-3.09	-600.43	0.0000	0.00	0.000
53	5.31	100	110	22.62	1250.00	-1.76	-600.43	0.0000	0.00	0.000
54	5.41	100	110	22.62	1250.00	-0.79	-600.43	0.0000	0.00	0.000
55	5.51	100	110	22.62	1250.00	-0.20	-600.43	0.0000	0.00	0.000
56	5.61	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000

Combinazioni SLEQ

Paramento

Combinazione n° 15 - SLEQ

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	0.00	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.10	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000
3	-0.20	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000
4	-0.30	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000
5	-0.40	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000
6	-0.50	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000
7	-0.60	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000
8	-0.70	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000
9	-0.79	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000
10	-0.89	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000
11	-0.99	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000
12	-1.09	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000
13	-1.19	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000
14	-1.29	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000
15	-1.39	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000
16	-1.49	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000
17	-1.59	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000
18	-1.69	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000
19	-1.79	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000
20	-1.89	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000
21	-1.99	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000
22	-2.09	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000
23	-2.19	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000
24	-2.28	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000
25	-2.38	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000
26	-2.48	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000
27	-2.58	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000
28	-2.68	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000
29	-2.78	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000
30	-2.88	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000
31	-2.98	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000
32	-3.08	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000
33	-3.18	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000
34	-3.28	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000
35	-3.38	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000
36	-3.48	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000
37	-3.58	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000
38	-3.68	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000
39	-3.78	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000
40	-3.87	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000
41	-3.97	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000
42	-4.07	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000
43	-4.17	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000
44	-4.27	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000
45	-4.37	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000
46	-4.47	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000
47	-4.57	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000
48	-4.67	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000
49	-4.77	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000
50	-4.87	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000
51	-4.97	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000
52	-5.07	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000
53	-5.17	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
54	-5.27	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000
55	-5.36	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000
56	-5.46	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000
57	-5.56	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000
58	-5.66	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000
59	-5.76	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000
60	-5.86	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000
61	-5.96	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000
62	-6.06	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000
63	-6.16	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000
64	-6.26	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000
65	-6.36	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000
66	-6.46	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000
67	-6.56	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000
68	-6.66	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000
69	-6.76	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000
70	-6.85	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000
71	-6.95	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000
72	-7.05	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000
73	-7.15	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000
74	-7.25	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000
75	-7.35	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000
76	-7.45	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000
77	-7.55	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000

Fondazione

Combinazione n° 15 - SLEQ

Apertura limite fessure $w_{lim}=0.20$

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	-0.90	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
2	-0.80	100	110	22.62	1250.00	0.89	600.43	0.0000	0.00	0.000
3	-0.70	100	110	22.62	1250.00	3.54	600.43	0.0000	0.00	0.000
4	-0.60	100	110	22.62	1250.00	7.95	600.43	0.0000	0.00	0.000
5	-0.50	100	110	22.62	1250.00	14.11	600.43	0.0000	0.00	0.000
6	-0.40	100	110	22.62	1250.00	21.99	600.43	0.0000	0.00	0.000
7	0.76	100	110	31.67	1250.00	-266.22	-622.68	0.0000	0.00	0.000
8	0.85	100	110	31.67	1250.00	-259.69	-622.68	0.0000	0.00	0.000
9	0.95	100	110	31.67	1250.00	-253.04	-622.68	0.0000	0.00	0.000
10	1.05	100	110	31.67	1250.00	-246.26	-622.68	0.0000	0.00	0.000
11	1.15	100	110	31.67	1250.00	-239.39	-622.68	0.0000	0.00	0.000
12	1.25	100	110	31.67	1250.00	-232.42	-622.68	0.0000	0.00	0.000
13	1.35	100	110	31.67	1250.00	-225.36	-622.68	0.0000	0.00	0.000
14	1.45	100	110	31.67	1250.00	-218.24	-622.68	0.0000	0.00	0.000
15	1.55	100	110	31.67	1250.00	-211.05	-622.68	0.0000	0.00	0.000
16	1.65	100	110	22.62	1250.00	-203.82	-600.43	0.0000	0.00	0.000
17	1.74	100	110	22.62	1250.00	-196.55	-600.43	0.0000	0.00	0.000
18	1.84	100	110	22.62	1250.00	-189.24	-600.43	0.0000	0.00	0.000
19	1.94	100	110	22.62	1250.00	-181.93	-600.43	0.0000	0.00	0.000
20	2.04	100	110	22.62	1250.00	-174.60	-600.43	0.0000	0.00	0.000
21	2.14	100	110	22.62	1250.00	-167.28	-600.43	0.0000	0.00	0.000

n°	Y	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[m]	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
22	2.24	100	110	22.62	1250.00	-159.98	-600.43	0.0000	0.00	0.000
23	2.34	100	110	22.62	1250.00	-152.71	-600.43	0.0000	0.00	0.000
24	2.44	100	110	22.62	1250.00	-145.47	-600.43	0.0000	0.00	0.000
25	2.54	100	110	22.62	1250.00	-138.28	-600.43	0.0000	0.00	0.000
26	2.64	100	110	22.62	1250.00	-131.16	-600.43	0.0000	0.00	0.000
27	2.73	100	110	22.62	1250.00	-124.10	-600.43	0.0000	0.00	0.000
28	2.83	100	110	22.62	1250.00	-117.13	-600.43	0.0000	0.00	0.000
29	2.93	100	110	22.62	1250.00	-110.25	-600.43	0.0000	0.00	0.000
30	3.03	100	110	22.62	1250.00	-103.47	-600.43	0.0000	0.00	0.000
31	3.13	100	110	22.62	1250.00	-96.81	-600.43	0.0000	0.00	0.000
32	3.23	100	110	22.62	1250.00	-90.28	-600.43	0.0000	0.00	0.000
33	3.33	100	110	22.62	1250.00	-83.88	-600.43	0.0000	0.00	0.000
34	3.43	100	110	22.62	1250.00	-77.64	-600.43	0.0000	0.00	0.000
35	3.53	100	110	22.62	1250.00	-71.55	-600.43	0.0000	0.00	0.000
36	3.63	100	110	22.62	1250.00	-65.63	-600.43	0.0000	0.00	0.000
37	3.72	100	110	22.62	1250.00	-59.89	-600.43	0.0000	0.00	0.000
38	3.82	100	110	22.62	1250.00	-54.35	-600.43	0.0000	0.00	0.000
39	3.92	100	110	22.62	1250.00	-49.01	-600.43	0.0000	0.00	0.000
40	4.02	100	110	22.62	1250.00	-43.88	-600.43	0.0000	0.00	0.000
41	4.12	100	110	22.62	1250.00	-38.98	-600.43	0.0000	0.00	0.000
42	4.22	100	110	22.62	1250.00	-34.32	-600.43	0.0000	0.00	0.000
43	4.32	100	110	22.62	1250.00	-29.90	-600.43	0.0000	0.00	0.000
44	4.42	100	110	22.62	1250.00	-25.74	-600.43	0.0000	0.00	0.000
45	4.52	100	110	22.62	1250.00	-21.85	-600.43	0.0000	0.00	0.000
46	4.62	100	110	22.62	1250.00	-18.24	-600.43	0.0000	0.00	0.000
47	4.71	100	110	22.62	1250.00	-14.92	-600.43	0.0000	0.00	0.000
48	4.81	100	110	22.62	1250.00	-11.91	-600.43	0.0000	0.00	0.000
49	4.91	100	110	22.62	1250.00	-9.21	-600.43	0.0000	0.00	0.000
50	5.01	100	110	22.62	1250.00	-6.83	-600.43	0.0000	0.00	0.000
51	5.11	100	110	22.62	1250.00	-4.79	-600.43	0.0000	0.00	0.000
52	5.21	100	110	22.62	1250.00	-3.09	-600.43	0.0000	0.00	0.000
53	5.31	100	110	22.62	1250.00	-1.76	-600.43	0.0000	0.00	0.000
54	5.41	100	110	22.62	1250.00	-0.79	-600.43	0.0000	0.00	0.000
55	5.51	100	110	22.62	1250.00	-0.20	-600.43	0.0000	0.00	0.000
56	5.61	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000

10.3 RISULTATI PER INVILUPPO

Spinta e forze

Simbologia adottata

Ic	Indice della combinazione
A	Tipo azione
I	Inclinazione della spinta, espressa in [°]
V	Valore dell'azione, espressa in [kN]
Cx, Cy	Componente in direzione X ed Y dell'azione, espressa in [kN]
Px, Py	Coordinata X ed Y del punto di applicazione dell'azione, espressa in [m]

Ic	A	V [kN]	I [°]	Cx [kN]	Cy [kN]	Px [m]	Py [m]
1	Spinta statica	349.37	4.93	348.08	30.00	5.61	-6.01
	Peso/Inerzia muro			0.00	319.36/0.00	1.30	-6.43
	Peso/Inerzia terrapieno			0.00	755.82/0.00	2.99	-3.84
	Peso dell'acqua sulla fondazione di valle				0.00	0.00	0.00
	Resistenza passiva terreno antistante			-14.72			

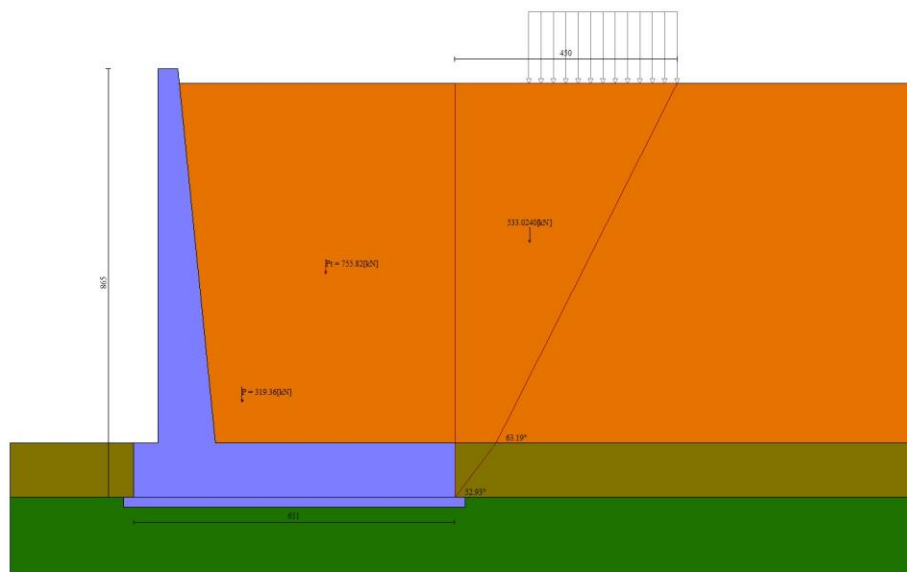


Fig. 12 - Cuneo di spinta (combinazione statica) (Combinazione n° 1)

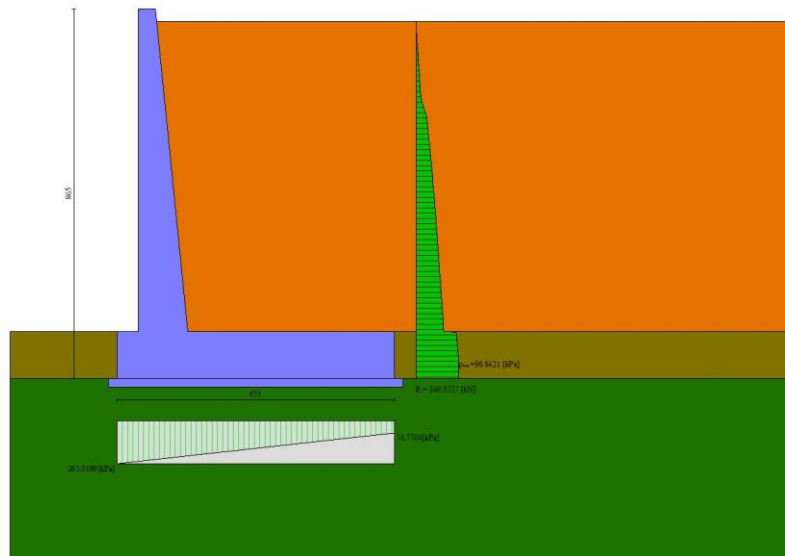


Fig. 13 - Diagramma delle pressioni (combinazione statica) (Combinazione n° 1)

Verifiche geotecniche

Quadro riassuntivo coeff. di sicurezza calcolati

Simbologia adottata

Cmb	Indice/Tipo combinazione
S	Sisma (H: componente orizzontale, V: componente verticale)
FS _{SCO}	Coeff. di sicurezza allo scorrimento
FS _{RIB}	Coeff. di sicurezza al ribaltamento
FS _{QLIM}	Coeff. di sicurezza a carico limite
FS _{STAB}	Coeff. di sicurezza a stabilità globale
FS _{HYD}	Coeff. di sicurezza a sifonamento
FS _{UPL}	Coeff. di sicurezza a sollevamento

Cmb	Sismica	FS _{SCO}	FS _{RIB}	FS _{QLIM}	FS _{STAB}	FS _{HYD}	FS _{SUPL}
1 - STR (A1-M1-R3)		1.198		1.568			
2 - STR (A1-M1-R3)		1.272		1.712			
3 - STR (A1-M1-R3)	H + V	1.854		2.576			
4 - STR (A1-M1-R3)	H - V	1.846		2.637			
5 - GEO (A2-M2-R2)					1.387		
6 - GEO (A2-M2-R2)					1.414		
7 - GEO (A2-M2-R2)	H + V				1.806		
8 - GEO (A2-M2-R2)	H - V				1.803		
9 - EQU (A1-M1-R3)			4.284				
10 - EQU (A1-M1-R3)			4.589				
11 - EQU (A1-M1-R3)	H + V		5.450				
12 - EQU (A1-M1-R3)	H - V		4.940				

Verifica a scorrimento fondazione

Simbologia adottata

n°	Indice combinazione
Rsa	Resistenza allo scorrimento per attrito, espresso in [kN]
Rpt	Resistenza passiva terreno antistante, espresso in [kN]
Rps	Resistenza passiva sperone, espresso in [kN]
Rp	Resistenza a carichi orizzontali pali (solo per fondazione mista), espresso in [kN]
Rt	Resistenza a carichi orizzontali tiranti (solo se presenti), espresso in [kN]
R	Resistenza allo scorrimento (somma di Rsa+Rpt+Rps+Rp), espresso in [kN]
T	Carico parallelo al piano di posa, espresso in [kN]
FS	Fattore di sicurezza (rapporto R/T)

n°	Rsa	Rpt	Rps	Rp	Rt	R	T	FS
	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	
1 - STR (A1-M1-R3)	402.25	14.72	0.00	--	--	416.97	348.08	1.198

Verifica a carico limite

Simbologia adottata

n°	Indice combinazione
N	Carico normale totale al piano di posa, espresso in [kN]
Qu	carico limite del terreno, espresso in [kN]
Qd	Portanza di progetto, espresso in [kN]
FS	Fattore di sicurezza (rapporto tra portanza di progetto e carico agente al piano di posa)

n°	N	Qu	Qd	FS
	[kN]	[kN]	[kN]	
1 - STR (A1-M1-R3)	1105.18	1732.95	1237.82	1.120

Dettagli calcolo portanza

Simbologia adottata

n°	Indice combinazione
Nc, Nq, N _γ	Fattori di capacità portante
ic, iq, i _γ	Fattori di inclinazione del carico
dc, dq, d _γ	Fattori di profondità del piano di posa
gc, gq, g _γ	Fattori di inclinazione del profilo topografico
bc, bq, b _γ	Fattori di inclinazione del piano di posa
sc, sq, s _γ	Fattori di forma della fondazione
pc, pq, p _γ	Fattori di riduzione per punzonamento secondo Vesic
r _γ fattore	Fattori per tener conto dell'effetto piastra. Per fondazioni che hanno larghezza maggiore di 2 m, il terzo termine della formula trinomia 0.5B _γ /N, viene moltiplicato per questo fattore
D	Affondamento del piano di posa, espresso in [m]
B'	Larghezza fondazione ridotta, espresso in [m]
H	Altezza del cuneo di rottura, espresso in [m]
γ	Peso di volume del terreno medio, espresso in [kN/mc]
φ	Angolo di attrito del terreno medio, espresso in [°]
c	Coesione del terreno medio, espresso in [kPa]

Per i coeff. che in tabella sono indicati con il simbolo '-' sono coeff. non presenti nel metodo scelto (Meyerhof).

n°	Nc Nq N _γ	ic iq i _γ	dc dq d _γ	gc gq g _γ	bc bq b _γ	sc sq s _γ	pc pq p _γ	r _γ	D	B' H	γ	φ	c
									[m]	[m]	[kN/mc]	[°]	[kPa]
1	30.140 18.401 15.668	0.649 0.649 0.174	1.059 1.029 1.029	-- -- --	-- -- --	-- -- --	-- -- --	0.872	1.10	6.51 5.63	15.90	30.00	0

Verifica a ribaltamento

Simbologia adottata

n°	Indice combinazione
Ms	Momento stabilizzante, espresso in [kNm]

Sottovia SP42 - Relazione di calcolo Muri di appoggio

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IA7K	00	D10CL	SL0100002	A	128 di 159

Mr Momento ribaltante, espresso in [kNm]

FS Fattore di sicurezza (rapporto tra momento stabilizzante e momento ribaltante)

La verifica viene eseguita rispetto allo spigolo inferiore esterno della fondazione

n°	Ms	Mr	FS
	[kNm]	[kNm]	
9 - EQU (A1-M1-R3)	3836.04	895.36	4.284

Verifica stabilità globale muro + terreno

Simbologia adottata

Ic Indice/Tipo combinazione

C Centro superficie di scorrimento, espresso in [m]

R Raggio, espresso in [m]

FS Fattore di sicurezza

Ic	C	R	FS
	[m]	[m]	
5 - GEO (A2-M2-R2)	-1.00; 0.50	11.29	1.387

Dettagli strisce verifiche stabilità

Simbologia adottata

Le ascisse X sono considerate positive verso monte

Le ordinate Y sono considerate positive verso l'alto

Origine in testa al muro (spigolo contro terra)

W peso della striscia espresso in [kN]

Qy carico sulla striscia espresso in [kN]

α angolo fra la base della striscia e l'orizzontale espresso in [°] (positivo antiorario)

ϕ angolo d'attrito del terreno lungo la base della striscia

c coesione del terreno lungo la base della striscia espressa in [kPa]

b larghezza della striscia espressa in [m]

u pressione neutra lungo la base della striscia espressa in [kPa]

Tx; Ty Resistenza al taglio fornita dai tiranti in direzione X ed Y espressa in [kPa]

n°	W	Qy	b	α	ϕ	c	u	Tx; Ty
	[kN]	[kN]	[m]	[°]	[°]	[kPa]	[kPa]	[kN]

n°	W [kN]	Qy [kN]	b [m]	α [°]	ϕ [°]	c [kPa]	u [kPa]	Tx; Ty [kN]
1	25.68	38.53	10.28 - 0.77	77.050	32.007	0	0.0	
2	63.49	50.03	0.77	64.032	32.007	0	0.0	
3	84.39	50.03	0.77	56.081	32.007	0	0.0	
4	100.11	50.03	0.77	49.579	32.007	0	0.0	
5	112.61	6.69	0.77	43.867	21.315	0	0.0	
6	122.53	0.00	0.77	38.665	21.315	0	0.0	
7	135.32	0.00	0.77	33.822	24.791	0	0.0	
8	142.34	0.00	0.77	29.241	24.791	0	0.0	
9	148.08	0.00	0.77	24.858	24.791	0	0.0	
10	152.80	0.00	0.77	20.626	24.791	0	0.0	
11	156.57	0.00	0.77	16.510	24.791	0	0.0	
12	159.47	0.00	0.77	12.480	24.791	0	0.0	
13	166.51	0.00	0.77	8.512	24.791	0	0.0	
14	133.76	0.00	0.77	4.585	24.791	0	0.0	
15	49.81	0.00	0.77	0.680	24.791	0	0.0	
16	47.02	0.00	0.77	-3.222	24.791	0	0.0	
17	46.00	0.00	0.77	-7.140	24.791	0	0.0	
18	44.20	0.00	0.77	-11.091	24.791	0	0.0	
19	41.59	0.00	0.77	-15.097	24.791	0	0.0	
20	38.12	0.00	0.77	-19.180	24.791	0	0.0	
21	33.75	0.00	0.77	-23.368	24.791	0	0.0	
22	28.38	0.00	0.77	-27.693	24.791	0	0.0	
23	21.90	0.00	0.77	-32.199	24.791	0	0.0	
24	14.15	0.00	0.77	-36.942	21.315	0	0.0	
25	4.88	0.00	-8.93 - 0.77	-41.515	21.315	0	0.0	

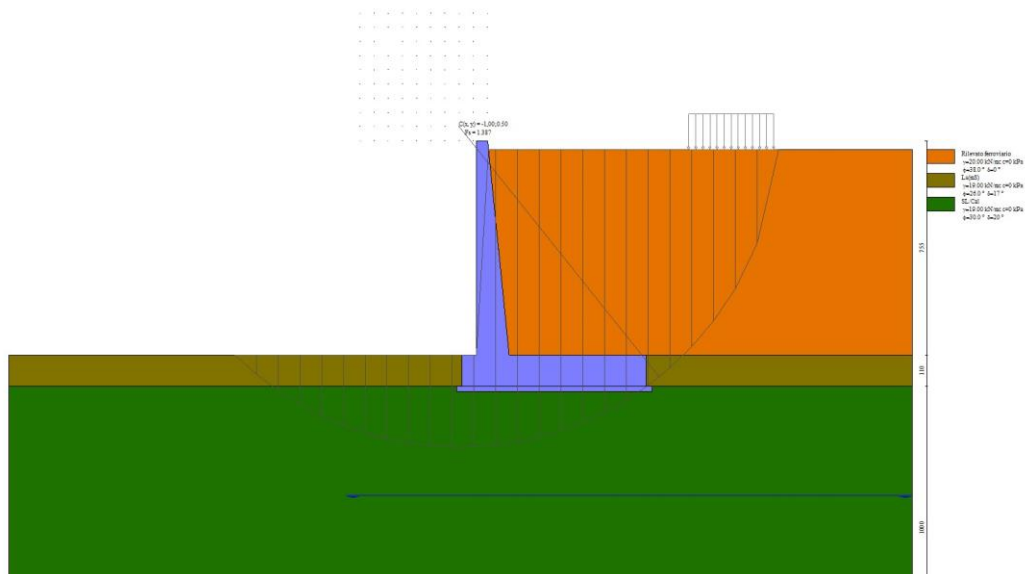


Fig. 14 - Stabilità fronte di scavo - Cerchio critico (Combinazione n° 5)

Sollecitazioni

Elementi calcolati a trave

Simbologia adottata

- N Sforzo normale, espresso in [kN]. Positivo se di compressione.
- T Taglio, espresso in [kN]. Positivo se diretto da monte verso valle
- M Momento, espresso in [kNm]. Positivo se tende le fibre contro terra (a monte)

Paramento

n°	X	N _{min}	N _{max}	T _{min}	T _{max}	M _{min}	M _{max}
	[m]	[kN]	[kN]	[kN]	[kN]	[kNm]	[kNm]
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-0.10	0.99	0.99	0.00	0.03	0.00	0.00
3	-0.20	2.00	2.00	0.00	0.06	0.01	0.02
4	-0.30	3.03	3.03	0.00	0.09	0.02	0.03
5	-0.40	4.09	4.09	0.03	0.14	0.04	0.06
6	-0.50	5.17	5.17	0.11	0.26	0.07	0.11
7	-0.60	6.28	6.28	0.24	0.44	0.12	0.17
8	-0.70	7.41	7.41	0.43	0.67	0.18	0.26
9	-0.79	8.57	8.57	0.67	0.96	0.28	0.38
10	-0.89	9.75	9.75	0.97	1.31	0.40	0.54
11	-0.99	10.95	10.95	1.32	1.78	0.57	0.74
12	-1.09	12.18	12.18	1.73	2.33	0.78	0.99
13	-1.19	13.43	13.43	2.18	2.95	1.03	1.29
14	-1.29	14.71	14.71	2.70	3.64	1.35	1.66
15	-1.39	16.01	16.01	3.26	4.41	1.72	2.13
16	-1.49	17.34	17.34	3.89	5.24	2.15	2.69
17	-1.59	18.68	18.68	4.56	6.16	2.66	3.35
18	-1.69	20.06	20.06	5.29	7.14	3.25	4.11
19	-1.79	21.46	21.46	6.07	8.20	3.92	4.97
20	-1.89	22.88	22.88	6.91	9.33	4.67	5.95
21	-1.99	24.32	24.32	7.80	10.53	5.52	7.05
22	-2.09	25.79	25.79	8.75	11.81	6.46	8.29
23	-2.19	27.29	27.29	9.75	13.16	7.51	9.66
24	-2.28	28.81	28.81	10.80	14.58	8.67	11.18
25	-2.38	30.35	30.35	11.91	16.08	9.95	12.84
26	-2.48	31.92	31.92	13.07	17.65	11.34	14.67
27	-2.58	33.51	33.51	14.29	19.29	12.86	16.67
28	-2.68	35.12	35.12	15.56	21.00	14.52	18.84
29	-2.78	36.76	36.76	16.88	22.79	16.31	21.19
30	-2.88	38.43	38.43	18.26	24.65	18.24	23.74
31	-2.98	40.12	40.12	19.69	26.59	20.32	26.48
32	-3.08	41.83	41.83	21.18	28.59	22.55	29.42
33	-3.18	43.56	43.56	22.72	30.67	24.94	32.58
34	-3.28	45.32	45.32	24.32	32.83	27.50	35.95
35	-3.38	47.11	47.11	25.96	35.05	30.23	39.55
36	-3.48	48.92	48.92	27.67	37.35	33.13	43.38
37	-3.58	50.75	50.75	29.42	39.72	36.21	47.46
38	-3.68	52.61	52.61	31.24	42.17	39.48	51.78
39	-3.78	54.49	54.49	33.10	44.69	42.94	56.36
40	-3.87	56.40	56.40	35.02	47.28	46.60	61.21
41	-3.97	58.33	58.33	36.99	49.94	50.46	66.32
42	-4.07	60.28	60.28	39.02	52.68	54.53	71.71

n°	X	Nmin	Nmax	Tmin	Tmax	Mmin	Mmax
	[m]	[kN]	[kN]	[kN]	[kN]	[kNm]	[kNm]
43	-4.17	62.26	62.26	41.10	55.49	58.82	77.39
44	-4.27	64.26	64.26	43.24	58.37	63.32	83.36
45	-4.37	66.29	66.29	45.43	61.33	68.05	89.63
46	-4.47	68.34	68.34	47.67	64.36	73.01	96.20
47	-4.57	70.42	70.42	49.97	67.46	78.20	103.09
48	-4.67	72.51	72.51	52.32	70.64	83.64	110.31
49	-4.77	74.64	74.64	54.73	73.89	89.32	117.85
50	-4.87	76.79	76.79	57.19	77.21	95.25	125.73
51	-4.97	78.96	78.96	59.71	80.60	101.45	133.96
52	-5.07	81.15	81.15	62.27	84.07	107.90	142.53
53	-5.17	83.37	83.37	64.90	87.61	114.63	151.47
54	-5.27	85.62	85.62	67.57	91.22	121.63	160.77
55	-5.36	87.89	87.89	70.30	94.91	128.90	170.45
56	-5.46	90.18	90.18	73.09	98.67	136.47	180.50
57	-5.56	92.50	92.50	75.93	102.50	144.32	190.95
58	-5.66	94.84	94.84	78.82	106.41	152.48	201.79
59	-5.76	97.20	97.20	81.77	110.39	160.93	213.04
60	-5.86	99.59	99.59	84.77	114.44	169.69	224.69
61	-5.96	102.01	102.01	87.83	118.57	178.76	236.77
62	-6.06	104.45	104.45	90.94	122.76	188.15	249.27
63	-6.16	106.91	106.91	94.10	127.03	197.87	262.20
64	-6.26	109.40	109.40	97.32	131.38	207.91	275.57
65	-6.36	111.91	111.91	100.59	135.80	218.29	289.39
66	-6.46	114.44	114.44	103.92	140.29	229.01	303.66
67	-6.56	117.00	117.00	107.30	144.85	240.08	318.40
68	-6.66	119.58	119.58	110.73	149.49	251.50	333.61
69	-6.76	122.19	122.19	114.22	154.20	263.27	349.29
70	-6.85	124.82	124.82	117.76	158.98	275.41	365.46
71	-6.95	127.48	127.48	121.36	163.83	287.91	382.12
72	-7.05	130.16	130.16	125.01	168.76	300.79	399.28
73	-7.15	132.86	132.86	128.71	173.76	314.04	416.95
74	-7.25	135.59	135.59	132.47	178.84	327.68	435.13
75	-7.35	138.34	138.34	136.28	183.98	341.71	453.83
76	-7.45	141.12	141.12	140.15	189.21	356.13	473.06
77	-7.55	143.92	143.92	144.07	194.50	370.96	492.83

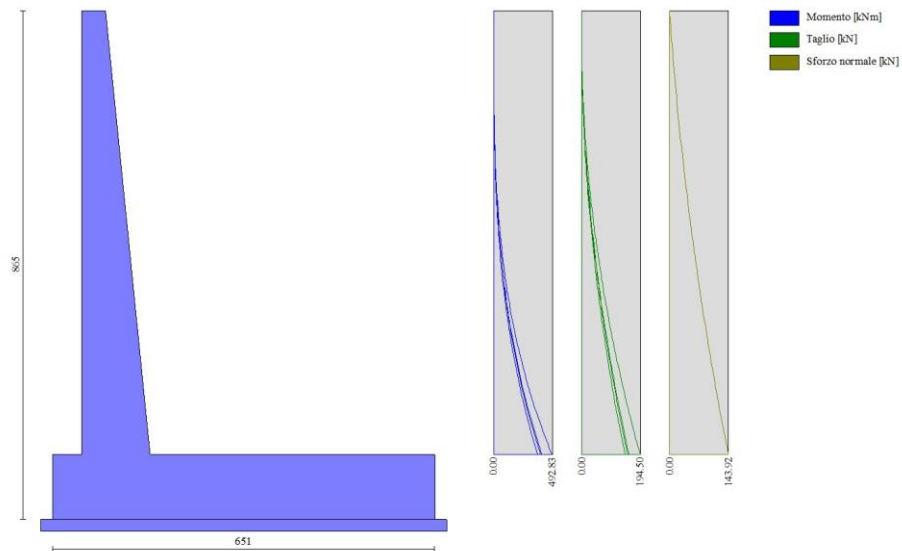


Fig. 15 - Paramento

Fondazione

n°	X [m]	Nmin [kN]	Nmax [kN]	Tmin [kN]	Tmax [kN]	Mmin [kNm]	Mmax [kNm]
1	-0.90	0.00	0.00	0.00	0.00	0.00	0.00
2	-0.80	0.00	0.00	17.73	23.66	0.89	1.19
3	-0.70	0.00	0.00	35.34	47.03	3.54	4.72
4	-0.60	0.00	0.00	52.84	70.10	7.95	10.58
5	-0.50	0.00	0.00	70.23	92.88	14.11	18.73
6	-0.40	0.00	0.00	87.50	115.37	21.99	29.15
7	0.76	0.00	0.00	-373.58	-65.29	-1183.97	-266.22
8	0.85	0.00	0.00	-372.83	-66.62	-1147.02	-259.69
9	0.95	0.00	0.00	-371.79	-67.85	-1110.17	-253.04
10	1.05	0.00	0.00	-370.47	-68.96	-1073.43	-246.26
11	1.15	0.00	0.00	-368.87	-69.97	-1036.84	-239.39
12	1.25	0.00	0.00	-366.97	-70.86	-1000.42	-232.42
13	1.35	0.00	0.00	-364.79	-71.64	-964.20	-225.36
14	1.45	0.00	0.00	-362.33	-72.31	-928.22	-218.24
15	1.55	0.00	0.00	-359.57	-72.86	-892.49	-211.05
16	1.65	0.00	0.00	-356.53	-73.31	-857.05	-203.82
17	1.74	0.00	0.00	-353.21	-73.65	-821.92	-196.55
18	1.84	0.00	0.00	-349.60	-73.87	-787.13	-189.24
19	1.94	0.00	0.00	-345.70	-73.98	-752.72	-181.93
20	2.04	0.00	0.00	-341.51	-73.99	-718.71	-174.60
21	2.14	0.00	0.00	-337.04	-73.88	-685.13	-167.28
22	2.24	0.00	0.00	-332.28	-73.66	-652.00	-159.98
23	2.34	0.00	0.00	-327.23	-73.32	-619.36	-152.71
24	2.44	0.00	0.00	-321.90	-72.88	-587.23	-145.47
25	2.54	0.00	0.00	-316.28	-72.33	-555.64	-138.28
26	2.64	0.00	0.00	-310.38	-71.66	-524.63	-131.16

n°	X	Nmin	Nmax	Tmin	Tmax	Mmin	Mmax
	[m]	[kN]	[kN]	[kN]	[kN]	[kNm]	[kNm]
27	2.73	0.00	0.00	-304.19	-70.88	-494.21	-124.10
28	2.83	0.00	0.00	-297.71	-70.00	-464.42	-117.13
29	2.93	0.00	0.00	-290.95	-69.00	-435.29	-110.25
30	3.03	0.00	0.00	-283.89	-67.89	-406.84	-103.47
31	3.13	0.00	0.00	-276.56	-66.67	-379.10	-96.81
32	3.23	0.00	0.00	-268.93	-65.33	-352.10	-90.28
33	3.33	0.00	0.00	-261.02	-63.89	-325.87	-83.88
34	3.43	0.00	0.00	-252.83	-62.34	-300.44	-77.64
35	3.53	0.00	0.00	-244.34	-60.67	-275.83	-71.55
36	3.63	0.00	0.00	-235.57	-58.89	-252.08	-65.63
37	3.72	0.00	0.00	-226.52	-57.00	-229.20	-59.89
38	3.82	0.00	0.00	-217.17	-55.00	-207.24	-54.35
39	3.92	0.00	0.00	-207.54	-52.89	-186.22	-49.01
40	4.02	0.00	0.00	-197.63	-50.67	-166.17	-43.88
41	4.12	0.00	0.00	-187.42	-48.34	-147.11	-38.98
42	4.22	0.00	0.00	-176.93	-45.89	-129.08	-34.32
43	4.32	0.00	0.00	-166.16	-43.34	-112.09	-29.90
44	4.42	0.00	0.00	-155.10	-40.67	-96.19	-25.74
45	4.52	0.00	0.00	-143.75	-37.89	-81.40	-21.85
46	4.62	0.00	0.00	-132.11	-35.01	-67.75	-18.24
47	4.71	0.00	0.00	-120.19	-32.01	-55.26	-14.92
48	4.81	0.00	0.00	-107.98	-28.89	-43.96	-11.91
49	4.91	0.00	0.00	-95.49	-25.67	-33.89	-9.21
50	5.01	0.00	0.00	-82.71	-22.34	-25.07	-6.83
51	5.11	0.00	0.00	-69.64	-18.89	-17.53	-4.79
52	5.21	0.00	0.00	-56.28	-15.34	-11.29	-3.09
53	5.31	0.00	0.00	-42.64	-11.67	-6.39	-1.76
54	5.41	0.00	0.00	-28.71	-7.89	-2.86	-0.79
55	5.51	0.00	0.00	-14.50	-4.00	-0.72	-0.20
56	5.61	0.00	0.00	0.00	0.00	0.00	0.00

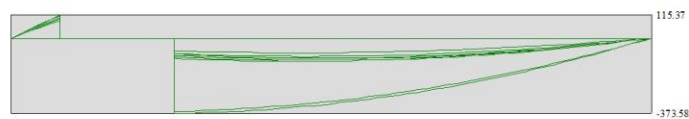
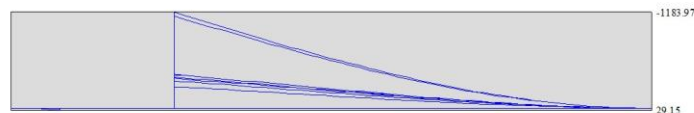
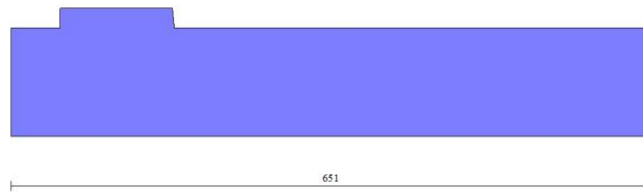


Fig. 16 - Fondazione

Verifiche strutturali

Verifiche a flessione

Elementi calcolati a trave

Simbologia adottata

n°	indice sezione
Y	ordinata sezione espressa in [m]
B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
Afi	area ferri inferiori espresso in [cmq]
Afs	area ferri superiori espressa in [cmq]
M	momento agente espressa in [kNm]
N	sforzio normale agente espressa in [kN]
Mu	momento ultimi espresso in [kNm]
Nu	sforzio normale ultimo espressa in [kN]
FS	fattore di sicurezza (rapporto tra sollecitazione ultima e sollecitazione agente)

Paramento

n°	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	100	40	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	100	41	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
3	100	42	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
4	100	43	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
5	100	44	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
6	100	45	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
7	100	46	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
8	100	47	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
9	100	48	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
10	100	49	22.62	22.62	0.54	9.75	461.94	8406.02	862.329
11	100	50	22.62	22.62	0.74	10.95	546.97	8125.82	741.938
12	100	51	22.62	22.62	0.99	12.18	634.28	7817.64	641.818
13	100	52	22.62	22.62	1.29	13.43	720.59	7476.16	556.554
14	100	53	22.62	22.62	1.66	14.71	804.66	7119.35	483.992
15	100	54	22.62	22.62	2.13	16.01	892.53	6698.40	418.375
16	100	55	22.62	22.62	2.69	17.34	976.32	6280.38	362.282
17	100	56	22.62	22.62	3.35	18.68	1052.95	5872.81	314.308

n°	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
18	100	57	22.62	22.62	4.11	20.06	1122.80	5484.83	273.443
19	100	58	22.62	22.62	4.97	21.46	1183.79	5109.98	238.160
20	100	59	22.62	22.62	5.95	22.88	1209.21	4648.92	203.206
21	100	60	22.62	22.62	7.05	24.32	1213.62	4184.98	172.051
22	100	61	22.62	22.62	8.29	25.79	1204.63	3749.35	145.356
23	100	62	22.62	22.62	9.66	27.29	1187.15	3354.00	122.908
24	100	63	22.62	22.62	11.18	28.81	1163.38	2998.90	104.102
25	100	64	22.62	22.62	12.84	30.35	1132.27	2675.42	88.151
26	100	65	22.62	22.62	14.67	31.92	1106.77	2407.36	75.425
27	100	66	22.62	22.62	16.67	33.51	1071.12	2153.04	64.253
28	100	67	22.62	22.62	18.84	35.12	1042.20	1942.88	55.315
29	100	68	22.62	22.62	21.19	36.76	1014.54	1759.80	47.868
30	100	69	22.62	22.62	23.74	38.43	986.38	1596.83	41.554
31	100	70	22.62	22.62	26.48	40.12	964.59	1461.47	36.432
32	100	71	22.62	22.62	29.42	41.83	947.70	1347.37	32.212
33	100	72	22.62	22.62	32.58	43.56	934.67	1249.97	28.692
34	100	73	22.62	22.62	35.95	45.32	924.74	1165.90	25.723
35	100	74	22.62	27.14	39.55	47.11	1085.12	1292.52	27.436
36	100	75	22.62	27.14	43.38	48.92	1078.63	1216.22	24.862
37	100	76	22.62	27.14	47.46	50.75	1074.19	1148.70	22.634
38	100	77	22.62	27.14	51.78	52.61	1071.48	1088.57	20.691
39	100	78	22.62	27.14	56.36	54.49	1070.24	1034.69	18.988
40	100	79	22.62	27.14	61.21	56.40	1070.27	986.18	17.486
41	100	80	22.62	27.14	66.32	58.33	1071.39	942.27	16.155
42	100	81	22.62	27.14	71.71	60.28	1073.46	902.37	14.969
43	100	82	22.62	27.14	77.39	62.26	1076.36	865.95	13.909
44	100	83	22.62	27.14	83.36	64.26	1080.00	832.61	12.956
45	100	84	22.62	27.14	89.63	66.29	1084.29	801.96	12.098
46	100	85	22.62	27.14	96.20	68.34	1089.16	773.71	11.321
47	100	86	22.62	27.14	103.09	70.42	1094.54	747.59	10.617
48	100	87	22.62	27.14	110.31	72.51	1100.40	723.38	9.976
49	100	88	22.62	36.19	117.85	74.64	1444.34	914.73	12.256
50	100	89	22.62	36.19	125.73	76.79	1452.68	887.16	11.554
51	100	90	22.62	36.19	133.96	78.96	1461.47	861.43	10.910
52	100	91	22.62	36.19	142.53	81.15	1470.69	837.36	10.318
53	100	92	22.62	36.19	151.47	83.37	1480.28	814.80	9.773
54	100	93	22.62	36.19	160.77	85.62	1490.23	793.62	9.269
55	100	94	22.62	36.19	170.45	87.89	1500.49	773.70	8.803
56	100	95	22.62	36.19	180.50	90.18	1511.06	754.93	8.371
57	100	96	22.62	36.19	190.95	92.50	1521.90	737.22	7.970
58	100	97	22.62	36.19	201.79	94.84	1532.99	720.49	7.597
59	100	98	22.62	36.19	213.04	97.20	1544.33	704.65	7.249
60	100	99	22.62	36.19	224.69	99.59	1555.88	689.64	6.924
61	100	100	22.62	36.19	236.77	102.01	1567.64	675.40	6.621
62	100	101	22.62	36.19	249.27	104.45	1579.60	661.88	6.337
63	100	102	22.62	36.19	262.20	106.91	1591.73	649.02	6.071
64	100	103	22.62	36.19	275.57	109.40	1604.04	636.77	5.821
65	100	104	22.62	36.19	289.39	111.91	1616.50	625.10	5.586
66	100	105	22.62	36.19	303.66	114.44	1628.60	613.77	5.363
67	100	106	22.62	36.19	318.40	117.00	1640.19	602.71	5.151
68	100	107	22.62	36.19	333.61	119.58	1651.92	592.14	4.952
69	100	108	22.62	36.19	349.29	122.19	1663.76	582.02	4.763
70	100	109	22.62	36.19	365.46	124.82	1675.70	572.34	4.585
71	100	110	22.62	36.19	382.12	127.48	1687.76	563.05	4.417
72	100	111	22.62	36.19	399.28	130.16	1699.91	554.14	4.257
73	100	112	22.62	36.19	416.95	132.86	1712.15	545.59	4.106
74	100	113	22.62	36.19	435.13	135.59	1724.48	537.37	3.963
75	100	114	22.62	36.19	453.83	138.34	1736.89	529.47	3.827
76	100	115	22.62	36.19	473.06	141.12	1749.38	521.87	3.698
77	100	116	22.62	36.19	492.83	143.92	1761.94	514.55	3.575

Fondazione

n°	B	H	Afi	Afs	M	N	Mu	Nu	FS
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kNm]	[kN]	
1	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
2	100	110	22.62	22.62	1.19	0.00	894.12	0.00	754.290
3	100	110	22.62	22.62	4.72	0.00	894.12	0.00	189.351
4	100	110	22.62	22.62	10.58	0.00	894.12	0.00	84.505
5	100	110	22.62	22.62	18.73	0.00	894.12	0.00	47.732
6	100	110	22.62	22.62	29.15	0.00	894.12	0.00	30.676
7	100	110	22.62	31.67	-1183.97	0.00	-1244.96	0.00	1.052
8	100	110	22.62	31.67	-1147.02	0.00	-1244.96	0.00	1.085
9	100	110	22.62	31.67	-1110.17	0.00	-1244.96	0.00	1.121
10	100	110	22.62	31.67	-1073.43	0.00	-1244.96	0.00	1.160
11	100	110	22.62	31.67	-1036.84	0.00	-1244.96	0.00	1.201
12	100	110	22.62	31.67	-1000.42	0.00	-1244.96	0.00	1.244
13	100	110	22.62	31.67	-964.20	0.00	-1244.96	0.00	1.291
14	100	110	22.62	31.67	-928.22	0.00	-1244.96	0.00	1.341
15	100	110	22.62	31.67	-892.49	0.00	-1244.96	0.00	1.395
16	100	110	22.62	22.62	-857.05	0.00	-894.12	0.00	1.043
17	100	110	22.62	22.62	-821.92	0.00	-894.12	0.00	1.088
18	100	110	22.62	22.62	-787.13	0.00	-894.12	0.00	1.136
19	100	110	22.62	22.62	-752.72	0.00	-894.12	0.00	1.188
20	100	110	22.62	22.62	-718.71	0.00	-894.12	0.00	1.244
21	100	110	22.62	22.62	-685.13	0.00	-894.12	0.00	1.305
22	100	110	22.62	22.62	-652.00	0.00	-894.12	0.00	1.371
23	100	110	22.62	22.62	-619.36	0.00	-894.12	0.00	1.444
24	100	110	22.62	22.62	-587.23	0.00	-894.12	0.00	1.523
25	100	110	22.62	22.62	-555.64	0.00	-894.12	0.00	1.609
26	100	110	22.62	22.62	-524.63	0.00	-894.12	0.00	1.704
27	100	110	22.62	22.62	-494.21	0.00	-894.12	0.00	1.809
28	100	110	22.62	22.62	-464.42	0.00	-894.12	0.00	1.925
29	100	110	22.62	22.62	-435.29	0.00	-894.12	0.00	2.054
30	100	110	22.62	22.62	-406.84	0.00	-894.12	0.00	2.198
31	100	110	22.62	22.62	-379.10	0.00	-894.12	0.00	2.359
32	100	110	22.62	22.62	-352.10	0.00	-894.12	0.00	2.539
33	100	110	22.62	22.62	-325.87	0.00	-894.12	0.00	2.744
34	100	110	22.62	22.62	-300.44	0.00	-894.12	0.00	2.976
35	100	110	22.62	22.62	-275.83	0.00	-894.12	0.00	3.242
36	100	110	22.62	22.62	-252.08	0.00	-894.12	0.00	3.547
37	100	110	22.62	22.62	-229.20	0.00	-894.12	0.00	3.901
38	100	110	22.62	22.62	-207.24	0.00	-894.12	0.00	4.314
39	100	110	22.62	22.62	-186.22	0.00	-894.12	0.00	4.801
40	100	110	22.62	22.62	-166.17	0.00	-894.12	0.00	5.381
41	100	110	22.62	22.62	-147.11	0.00	-894.12	0.00	6.078
42	100	110	22.62	22.62	-129.08	0.00	-894.12	0.00	6.927
43	100	110	22.62	22.62	-112.09	0.00	-894.12	0.00	7.977
44	100	110	22.62	22.62	-96.19	0.00	-894.12	0.00	9.295
45	100	110	22.62	22.62	-81.40	0.00	-894.12	0.00	10.984
46	100	110	22.62	22.62	-67.75	0.00	-894.12	0.00	13.198
47	100	110	22.62	22.62	-55.26	0.00	-894.12	0.00	16.181
48	100	110	22.62	22.62	-43.96	0.00	-894.12	0.00	20.338
49	100	110	22.62	22.62	-33.89	0.00	-894.12	0.00	26.383
50	100	110	22.62	22.62	-25.07	0.00	-894.12	0.00	35.666
51	100	110	22.62	22.62	-17.53	0.00	-894.12	0.00	51.013
52	100	110	22.62	22.62	-11.29	0.00	-894.12	0.00	79.175
53	100	110	22.62	22.62	-6.39	0.00	-894.12	0.00	139.818
54	100	110	22.62	22.62	-2.86	0.00	-894.12	0.00	312.513
55	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000
56	100	110	22.62	22.62	0.00	0.00	0.00	0.00	1000.000

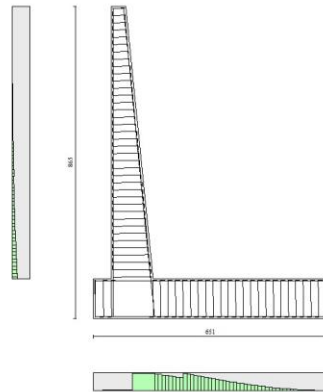


Fig. 17 - Paramento (Inviluppo)

Verifiche a taglio

Simbologia adottata

I_s	indice sezione
Y	ordinata sezione espressa in [m]
B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
A_{sw}	area ferri a taglio espresso in [cm ²]
$\cotg\theta$	inclinazione delle bielle compresse, θ inclinazione dei puntoni di calcestruzzo
V_{Rcd}	resistenza di progetto a 'taglio compressione' espressa in [kN]
V_{Rsd}	resistenza di progetto a 'taglio trazione' espressa in [kN]
V_{Rd}	resistenza di progetto a taglio espresso in [kN]. Per elementi con armature trasversali resistenti al taglio ($A_{sw}>0.0$) $V_{Rd}=\min(V_{Rcd}, V_{Rsd})$.
T	taglio agente espressa in [kN]
FS	fattore di sicurezza (rapporto tra sollecitazione resistente e sollecitazione agente)

Paramento

n°	B [cm]	H [cm]	A _{sw} [cmq]	cotθ	V _{Rcd} [kN]	V _{Rsd} [kN]	V _{Rd} [kN]	T [kN]	FS
1	100	40	0.00	--	0.00	0.00	260.06	0.00	100.000
2	100	41	0.00	--	0.00	0.00	263.50	0.03	9410.501
3	100	42	0.00	--	0.00	0.00	266.91	0.06	4708.379
4	100	43	0.00	--	0.00	0.00	270.29	0.09	3140.584
5	100	44	0.00	--	0.00	0.00	273.64	0.14	1897.892
6	100	45	0.00	--	0.00	0.00	276.96	0.26	1059.600
7	100	46	0.00	--	0.00	0.00	280.25	0.44	641.203
8	100	47	0.00	--	0.00	0.00	283.51	0.67	422.829
9	100	48	0.00	--	0.00	0.00	286.75	0.96	298.075
10	100	49	0.00	--	0.00	0.00	289.96	1.31	221.021
11	100	50	0.00	--	0.00	0.00	293.15	1.78	164.419
12	100	51	0.00	--	0.00	0.00	296.31	2.33	127.214
13	100	52	0.00	--	0.00	0.00	299.45	2.95	101.559
14	100	53	0.00	--	0.00	0.00	302.57	3.64	83.103
15	100	54	0.00	--	0.00	0.00	305.67	4.41	69.371
16	100	55	0.00	--	0.00	0.00	308.76	5.24	58.869
17	100	56	0.00	--	0.00	0.00	311.82	6.16	50.650
18	100	57	0.00	--	0.00	0.00	314.86	7.14	44.093
19	100	58	0.00	--	0.00	0.00	317.88	8.20	38.774
20	100	59	0.00	--	0.00	0.00	320.89	9.33	34.397
21	100	60	0.00	--	0.00	0.00	323.88	10.53	30.751
22	100	61	0.00	--	0.00	0.00	326.86	11.81	27.678
23	100	62	0.00	--	0.00	0.00	329.81	13.16	25.064
24	100	63	0.00	--	0.00	0.00	332.76	14.58	22.820
25	100	64	0.00	--	0.00	0.00	335.69	16.08	20.879
26	100	65	0.00	--	0.00	0.00	338.60	17.65	19.188
27	100	66	0.00	--	0.00	0.00	341.50	19.29	17.705
28	100	67	0.00	--	0.00	0.00	344.39	21.00	16.397
29	100	68	0.00	--	0.00	0.00	347.26	22.79	15.237
30	100	69	0.00	--	0.00	0.00	350.12	24.65	14.203
31	100	70	0.00	--	0.00	0.00	352.97	26.59	13.277
32	100	71	0.00	--	0.00	0.00	355.81	28.59	12.444
33	100	72	0.00	--	0.00	0.00	358.63	30.67	11.692
34	100	73	0.00	--	0.00	0.00	361.44	32.83	11.011
35	100	74	0.00	--	0.00	0.00	375.79	35.05	10.721
36	100	75	0.00	--	0.00	0.00	378.66	37.35	10.138
37	100	76	0.00	--	0.00	0.00	381.53	39.72	9.605
38	100	77	0.00	--	0.00	0.00	384.38	42.17	9.115
39	100	78	0.00	--	0.00	0.00	387.22	44.69	8.665
40	100	79	0.00	--	0.00	0.00	390.05	47.28	8.250
41	100	80	0.00	--	0.00	0.00	392.87	49.94	7.867
42	100	81	0.00	--	0.00	0.00	395.69	52.68	7.511
43	100	82	0.00	--	0.00	0.00	398.49	55.49	7.181
44	100	83	0.00	--	0.00	0.00	401.28	58.37	6.874
45	100	84	0.00	--	0.00	0.00	404.07	61.33	6.588
46	100	85	0.00	--	0.00	0.00	406.85	64.36	6.321
47	100	86	0.00	--	0.00	0.00	409.61	67.46	6.072
48	100	87	0.00	--	0.00	0.00	412.38	70.64	5.838
49	100	88	0.00	--	0.00	0.00	438.30	73.89	5.932
50	100	89	0.00	--	0.00	0.00	441.18	77.21	5.714
51	100	90	0.00	--	0.00	0.00	444.06	80.60	5.509
52	100	91	0.00	--	0.00	0.00	446.92	84.07	5.316
53	100	92	0.00	--	0.00	0.00	449.78	87.61	5.134
54	100	93	0.00	--	0.00	0.00	452.64	91.22	4.962
55	100	94	0.00	--	0.00	0.00	455.48	94.91	4.799
56	100	95	0.00	--	0.00	0.00	458.32	98.67	4.645
57	100	96	0.00	--	0.00	0.00	461.15	102.50	4.499
58	100	97	0.00	--	0.00	0.00	463.98	106.41	4.360
59	100	98	0.00	--	0.00	0.00	466.79	110.39	4.229
60	100	99	0.00	--	0.00	0.00	469.60	114.44	4.103
61	100	100	0.00	--	0.00	0.00	472.41	118.57	3.984

n°	B	H	A _{sw}	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[cm]	[cm]	[cmq]		[kN]	[kN]	[kN]	[kN]	
62	100	101	0.00	--	0.00	0.00	475.21	122.76	3.871
63	100	102	0.00	--	0.00	0.00	478.00	127.03	3.763
64	100	103	0.00	--	0.00	0.00	480.79	131.38	3.660
65	100	104	0.00	--	0.00	0.00	483.57	135.80	3.561
66	100	105	0.00	--	0.00	0.00	486.34	140.29	3.467
67	100	106	0.00	--	0.00	0.00	489.11	144.85	3.377
68	100	107	0.00	--	0.00	0.00	491.88	149.49	3.290
69	100	108	0.00	--	0.00	0.00	494.63	154.20	3.208
70	100	109	0.00	--	0.00	0.00	497.39	158.98	3.129
71	100	110	0.00	--	0.00	0.00	500.14	163.83	3.053
72	100	111	0.00	--	0.00	0.00	502.88	168.76	2.980
73	100	112	0.00	--	0.00	0.00	505.62	173.76	2.910
74	100	113	0.00	--	0.00	0.00	508.35	178.84	2.843
75	100	114	0.00	--	0.00	0.00	511.08	183.98	2.778
76	100	115	0.00	--	0.00	0.00	513.81	189.21	2.716
77	100	116	0.00	--	0.00	0.00	516.53	194.50	2.656

Fondazione

n°	B	H	A _{sw}	cotθ	V _{Rcd}	V _{Rsd}	V _{Rd}	T	FS
	[cm]	[cm]	[cmq]		[kN]	[kN]	[kN]	[kN]	
1	100	110	0.00	--	0.00	0.00	402.06	0.00	100.000
2	100	110	0.00	--	0.00	0.00	402.06	-23.66	16.994
3	100	110	0.00	--	0.00	0.00	402.06	-47.03	8.550
4	100	110	0.00	--	0.00	0.00	402.06	-70.10	5.736
5	100	110	0.00	--	0.00	0.00	402.06	-92.88	4.329
6	100	110	0.00	--	0.00	0.00	402.06	-115.37	3.485
7	100	110	0.00	--	0.00	0.00	427.25	-373.58	1.144
8	100	110	0.00	--	0.00	0.00	427.25	-372.83	1.146
9	100	110	0.00	--	0.00	0.00	427.25	-371.79	1.149
10	100	110	0.00	--	0.00	0.00	427.25	-370.47	1.153
11	100	110	0.00	--	0.00	0.00	427.25	-368.87	1.158
12	100	110	0.00	--	0.00	0.00	427.25	-366.97	1.164
13	100	110	0.00	--	0.00	0.00	427.25	-364.79	1.171
14	100	110	0.00	--	0.00	0.00	427.25	-362.33	1.179
15	100	110	0.00	--	0.00	0.00	427.25	-359.57	1.188
16	100	110	0.00	--	0.00	0.00	402.06	-356.53	1.128
17	100	110	0.00	--	0.00	0.00	402.06	-353.21	1.138
18	100	110	0.00	--	0.00	0.00	402.06	-349.60	1.150
19	100	110	0.00	--	0.00	0.00	402.06	-345.70	1.163
20	100	110	0.00	--	0.00	0.00	402.06	-341.51	1.177
21	100	110	0.00	--	0.00	0.00	402.06	-337.04	1.193
22	100	110	0.00	--	0.00	0.00	402.06	-332.28	1.210
23	100	110	0.00	--	0.00	0.00	402.06	-327.23	1.229
24	100	110	0.00	--	0.00	0.00	402.06	-321.90	1.249
25	100	110	0.00	--	0.00	0.00	402.06	-316.28	1.271
26	100	110	0.00	--	0.00	0.00	402.06	-310.38	1.295
27	100	110	0.00	--	0.00	0.00	402.06	-304.19	1.322
28	100	110	0.00	--	0.00	0.00	402.06	-297.71	1.351
29	100	110	0.00	--	0.00	0.00	402.06	-290.95	1.382
30	100	110	0.00	--	0.00	0.00	402.06	-283.89	1.416
31	100	110	0.00	--	0.00	0.00	402.06	-276.56	1.454
32	100	110	0.00	--	0.00	0.00	402.06	-268.93	1.495
33	100	110	0.00	--	0.00	0.00	402.06	-261.02	1.540
34	100	110	0.00	--	0.00	0.00	402.06	-252.83	1.590
35	100	110	0.00	--	0.00	0.00	402.06	-244.34	1.645
36	100	110	0.00	--	0.00	0.00	402.06	-235.57	1.707
37	100	110	0.00	--	0.00	0.00	402.06	-226.52	1.775

n°	B [cm]	H [cm]	A _{sw} [cmq]	cotθ	V _{Rcd} [kN]	V _{Rsd} [kN]	V _{Rd} [kN]	T [kN]	FS
38	100	110	0.00	--	0.00	0.00	402.06	-217.17	1.851
39	100	110	0.00	--	0.00	0.00	402.06	-207.54	1.937
40	100	110	0.00	--	0.00	0.00	402.06	-197.63	2.034
41	100	110	0.00	--	0.00	0.00	402.06	-187.42	2.145
42	100	110	0.00	--	0.00	0.00	402.06	-176.93	2.272
43	100	110	0.00	--	0.00	0.00	402.06	-166.16	2.420
44	100	110	0.00	--	0.00	0.00	402.06	-155.10	2.592
45	100	110	0.00	--	0.00	0.00	402.06	-143.75	2.797
46	100	110	0.00	--	0.00	0.00	402.06	-132.11	3.043
47	100	110	0.00	--	0.00	0.00	402.06	-120.19	3.345
48	100	110	0.00	--	0.00	0.00	402.06	-107.98	3.723
49	100	110	0.00	--	0.00	0.00	402.06	-95.49	4.211
50	100	110	0.00	--	0.00	0.00	402.06	-82.71	4.861
51	100	110	0.00	--	0.00	0.00	402.06	-69.64	5.774
52	100	110	0.00	--	0.00	0.00	402.06	-56.28	7.143
53	100	110	0.00	--	0.00	0.00	402.06	-42.64	9.429
54	100	110	0.00	--	0.00	0.00	402.06	-28.71	14.002
55	100	110	0.00	--	0.00	0.00	402.06	-14.50	27.727
56	100	110	0.00	--	0.00	0.00	402.06	0.00	100.000

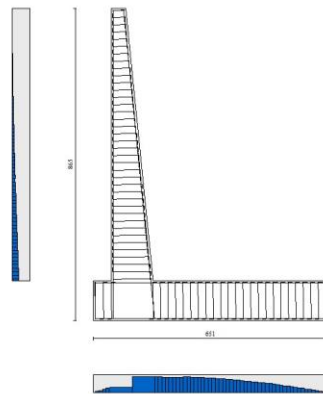


Fig. 18 - Paramento (Inviluppo)

Verifica delle tensioni

Simbologia adottata

n°	indice sezione
Y	ordinata sezione, espressa in [m]
B	larghezza sezione, espresso in [cm]
H	altezza sezione, espressa in [cm]
Afi	area ferri inferiori, espresso in [cmq]
Afs	area ferri superiori, espressa in [cmq]
M	momento agente, espressa in [kNm]
N	sforzo normale agente, espressa in [kN]
σ_c	tensione di compressione nel cls, espressa in [kPa]
σ_{fi}	tensione nei ferri inferiori, espressa in [kPa]
σ_{fs}	tensione nei ferri superiori, espressa in [kPa]

Combinazioni SLER

Paramento

Tensione massima di compressione nel calcestruzzo	19920	[kPa]
Tensione massima di trazione dell'acciaio	360000	[kPa]

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	40	22.62	22.62	0.00	0.00	0 (13)	0 (13)	0 (13)
2	100	41	22.62	22.62	0.00	0.99	2 (13)	30 (13)	32 (13)
3	100	42	22.62	22.62	0.01	2.00	4 (13)	58 (13)	64 (13)
4	100	43	22.62	22.62	0.02	3.03	7 (13)	85 (13)	98 (13)
5	100	44	22.62	22.62	0.04	4.09	9 (13)	109 (13)	132 (13)
6	100	45	22.62	22.62	0.07	5.17	12 (13)	131 (13)	169 (13)
7	100	46	22.62	22.62	0.12	6.28	14 (13)	148 (13)	209 (13)
8	100	47	22.62	22.62	0.18	7.41	18 (13)	161 (13)	253 (13)
9	100	48	22.62	22.62	0.28	8.57	21 (13)	167 (13)	302 (13)
10	100	49	22.62	22.62	0.40	9.75	25 (13)	167 (13)	358 (13)
11	100	50	22.62	22.62	0.57	10.95	30 (13)	160 (13)	420 (13)
12	100	51	22.62	22.62	0.78	12.18	35 (13)	145 (13)	489 (13)
13	100	52	22.62	22.62	1.03	13.43	41 (13)	121 (13)	565 (13)
14	100	53	22.62	22.62	1.35	14.71	48 (13)	90 (13)	649 (13)
15	100	54	22.62	22.62	1.72	16.01	55 (13)	48 (13)	743 (13)
16	100	55	22.62	22.62	2.15	17.34	63 (13)	16 (13)	849 (13)
17	100	56	22.62	22.62	2.66	18.68	73 (13)	111 (13)	970 (13)
18	100	57	22.62	22.62	3.25	20.06	83 (13)	245 (13)	1108 (13)
19	100	58	22.62	22.62	3.92	21.46	96 (13)	426 (13)	1262 (13)
20	100	59	22.62	22.62	4.67	22.88	110 (13)	661 (13)	1434 (13)
21	100	60	22.62	22.62	5.52	24.32	125 (13)	956 (13)	1623 (13)
22	100	61	22.62	22.62	6.46	25.79	142 (13)	1314 (13)	1828 (13)
23	100	62	22.62	22.62	7.51	27.29	161 (13)	1738 (13)	2048 (13)

n°	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
24	100	63	22.62	22.62	8.67	28.81	181 (13)	2227 (13)	2283 (13)
25	100	64	22.62	22.62	9.95	30.35	202 (13)	2783 (13)	2532 (13)
26	100	65	22.62	22.62	11.34	31.92	224 (13)	3406 (13)	2796 (13)
27	100	66	22.62	22.62	12.86	33.51	248 (13)	4096 (13)	3073 (13)
28	100	67	22.62	22.62	14.52	35.12	272 (13)	4853 (13)	3363 (13)
29	100	68	22.62	22.62	16.31	36.76	298 (13)	5678 (13)	3667 (13)
30	100	69	22.62	22.62	18.24	38.43	325 (13)	6569 (13)	3985 (13)
31	100	70	22.62	22.62	20.32	40.12	354 (13)	7528 (13)	4316 (13)
32	100	71	22.62	22.62	22.55	41.83	383 (13)	8556 (13)	4660 (13)
33	100	72	22.62	22.62	24.94	43.56	414 (13)	9651 (13)	5017 (13)
34	100	73	22.62	22.62	27.50	45.32	445 (13)	10815 (13)	5388 (13)
35	100	74	22.62	27.14	30.23	47.11	455 (13)	10276 (13)	5578 (13)
36	100	75	22.62	27.14	33.13	48.92	486 (13)	11374 (13)	5958 (13)
37	100	76	22.62	27.14	36.21	50.75	519 (13)	12530 (13)	6351 (13)
38	100	77	22.62	27.14	39.48	52.61	553 (13)	13744 (13)	6756 (13)
39	100	78	22.62	27.14	42.94	54.49	587 (13)	15017 (13)	7174 (13)
40	100	79	22.62	27.14	46.60	56.40	623 (13)	16350 (13)	7605 (13)
41	100	80	22.62	27.14	50.46	58.33	660 (13)	17742 (13)	8047 (13)
42	100	81	22.62	27.14	54.53	60.28	697 (13)	19193 (13)	8502 (13)
43	100	82	22.62	27.14	58.82	62.26	736 (13)	20704 (13)	8970 (13)
44	100	83	22.62	27.14	63.32	64.26	775 (13)	22276 (13)	9449 (13)
45	100	84	22.62	27.14	68.05	66.29	816 (13)	23908 (13)	9941 (13)
46	100	85	22.62	27.14	73.01	68.34	857 (13)	25600 (13)	10444 (13)
47	100	86	22.62	27.14	78.20	70.42	899 (13)	27353 (13)	10960 (13)
48	100	87	22.62	27.14	83.64	72.51	943 (13)	29167 (13)	11488 (13)
49	100	88	22.62	36.19	89.32	74.64	904 (13)	23859 (13)	11297 (13)
50	100	89	22.62	36.19	95.25	76.79	945 (13)	25334 (13)	11809 (13)
51	100	90	22.62	36.19	101.45	78.96	986 (13)	26856 (13)	12331 (13)
52	100	91	22.62	36.19	107.90	81.15	1028 (13)	28424 (13)	12865 (13)
53	100	92	22.62	36.19	114.63	83.37	1071 (13)	30040 (13)	13408 (13)
54	100	93	22.62	36.19	121.63	85.62	1115 (13)	31702 (13)	13963 (13)
55	100	94	22.62	36.19	128.90	87.89	1160 (13)	33412 (13)	14527 (13)
56	100	95	22.62	36.19	136.47	90.18	1205 (13)	35168 (13)	15102 (13)
57	100	96	22.62	36.19	144.32	92.50	1251 (13)	36972 (13)	15687 (13)
58	100	97	22.62	36.19	152.48	94.84	1298 (13)	38823 (13)	16283 (13)
59	100	98	22.62	36.19	160.93	97.20	1345 (13)	40721 (13)	16889 (13)
60	100	99	22.62	36.19	169.69	99.59	1393 (13)	42667 (13)	17504 (13)
61	100	100	22.62	36.19	178.76	102.01	1442 (13)	44661 (13)	18130 (13)
62	100	101	22.62	36.19	188.15	104.45	1492 (13)	46702 (13)	18765 (13)
63	100	102	22.62	36.19	197.87	106.91	1542 (13)	48791 (13)	19411 (13)
64	100	103	22.62	36.19	207.91	109.40	1593 (13)	50927 (13)	20066 (13)
65	100	104	22.62	36.19	218.29	111.91	1645 (13)	53112 (13)	20731 (13)
66	100	105	22.62	36.19	229.01	114.44	1698 (13)	55344 (13)	21405 (13)
67	100	106	22.62	36.19	240.08	117.00	1751 (13)	57625 (13)	22090 (13)
68	100	107	22.62	36.19	251.50	119.58	1804 (13)	59953 (13)	22783 (13)
69	100	108	22.62	36.19	263.27	122.19	1859 (13)	62329 (13)	23486 (13)
70	100	109	22.62	36.19	275.41	124.82	1914 (13)	64754 (13)	24199 (13)
71	100	110	22.62	36.19	287.91	127.48	1970 (13)	67227 (13)	24921 (13)
72	100	111	22.62	36.19	300.79	130.16	2026 (13)	69748 (13)	25652 (13)
73	100	112	22.62	36.19	314.04	132.86	2084 (13)	72317 (13)	26392 (13)
74	100	113	22.62	36.19	327.68	135.59	2141 (13)	74935 (13)	27141 (13)
75	100	114	22.62	36.19	341.71	138.34	2200 (13)	77601 (13)	27900 (13)
76	100	115	22.62	36.19	356.13	141.12	2259 (13)	80315 (13)	28667 (13)
77	100	116	22.62	36.19	370.96	143.92	2318 (13)	83078 (13)	29444 (13)

Tensione massima di compressione nel calcestruzzo 14940 [kPa]

Tensione massima di trazione dell'acciaio 360000 [kPa]

n°	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	110	22.62	22.62	0.00	0.00	0 (13)	0 (13)	0 (13)
2	100	110	22.62	22.62	1.02	0.00	8 (13)	459 (13)	90 (13)
3	100	110	22.62	22.62	4.07	0.00	31 (13)	1829 (13)	358 (13)
4	100	110	22.62	22.62	9.12	0.00	70 (13)	4102 (13)	803 (13)
5	100	110	22.62	22.62	16.16	0.00	124 (13)	7268 (13)	1422 (13)
6	100	110	22.62	22.62	25.17	0.00	193 (13)	11321 (13)	2215 (13)
7	100	110	22.62	31.67	-411.15	0.00	2779 (13)	33350 (13)	133487 (13)
8	100	110	22.62	31.67	-401.74	0.00	2716 (13)	32586 (13)	130432 (13)
9	100	110	22.62	31.67	-392.08	0.00	2651 (13)	31803 (13)	127295 (13)
10	100	110	22.62	31.67	-382.19	0.00	2584 (13)	31000 (13)	124083 (13)
11	100	110	22.62	31.67	-372.08	0.00	2515 (13)	30181 (13)	120802 (13)
12	100	110	22.62	31.67	-361.78	0.00	2446 (13)	29345 (13)	117457 (13)
13	100	110	22.62	31.67	-351.30	0.00	2375 (13)	28495 (13)	114055 (13)
14	100	110	22.62	31.67	-340.67	0.00	2303 (13)	27632 (13)	110602 (13)
15	100	110	22.62	31.67	-329.89	0.00	2230 (13)	26758 (13)	107104 (13)
16	100	110	22.62	22.62	-319.00	0.00	2443 (13)	28075 (13)	143476 (13)
17	100	110	22.62	22.62	-308.00	0.00	2359 (13)	27107 (13)	138530 (13)
18	100	110	22.62	22.62	-296.92	0.00	2274 (13)	26132 (13)	133547 (13)
19	100	110	22.62	22.62	-285.78	0.00	2189 (13)	25151 (13)	128535 (13)
20	100	110	22.62	22.62	-274.59	0.00	2103 (13)	24167 (13)	123503 (13)
21	100	110	22.62	22.62	-263.38	0.00	2017 (13)	23180 (13)	118459 (13)
22	100	110	22.62	22.62	-252.15	0.00	1931 (13)	22192 (13)	113412 (13)
23	100	110	22.62	22.62	-240.94	0.00	1846 (13)	21205 (13)	108370 (13)
24	100	110	22.62	22.62	-229.76	0.00	1760 (13)	20221 (13)	103341 (13)
25	100	110	22.62	22.62	-218.63	0.00	1675 (13)	19242 (13)	98334 (13)
26	100	110	22.62	22.62	-207.57	0.00	1590 (13)	18268 (13)	93357 (13)
27	100	110	22.62	22.62	-196.59	0.00	1506 (13)	17302 (13)	88420 (13)
28	100	110	22.62	22.62	-185.71	0.00	1423 (13)	16345 (13)	83529 (13)
29	100	110	22.62	22.62	-174.96	0.00	1340 (13)	15399 (13)	78694 (13)
30	100	110	22.62	22.62	-164.36	0.00	1259 (13)	14465 (13)	73923 (13)
31	100	110	22.62	22.62	-153.91	0.00	1179 (13)	13546 (13)	69225 (13)
32	100	110	22.62	22.62	-143.64	0.00	1100 (13)	12642 (13)	64607 (13)
33	100	110	22.62	22.62	-133.58	0.00	1023 (13)	11756 (13)	60079 (13)
34	100	110	22.62	22.62	-123.73	0.00	948 (13)	10889 (13)	55649 (13)
35	100	110	22.62	22.62	-114.11	0.00	874 (13)	10043 (13)	51325 (13)
36	100	110	22.62	22.62	-104.75	0.00	802 (13)	9219 (13)	47115 (13)
37	100	110	22.62	22.62	-95.67	0.00	733 (13)	8420 (13)	43029 (13)
38	100	110	22.62	22.62	-86.88	0.00	665 (13)	7646 (13)	39074 (13)
39	100	110	22.62	22.62	-78.39	0.00	600 (13)	6900 (13)	35260 (13)
40	100	110	22.62	22.62	-70.24	0.00	538 (13)	6182 (13)	31593 (13)
41	100	110	22.62	22.62	-62.44	0.00	478 (13)	5495 (13)	28084 (13)
42	100	110	22.62	22.62	-55.01	0.00	421 (13)	4841 (13)	24740 (13)
43	100	110	22.62	22.62	-47.96	0.00	367 (13)	4221 (13)	21569 (13)
44	100	110	22.62	22.62	-41.31	0.00	316 (13)	3636 (13)	18581 (13)
45	100	110	22.62	22.62	-35.09	0.00	269 (13)	3088 (13)	15783 (13)
46	100	110	22.62	22.62	-29.31	0.00	225 (13)	2580 (13)	13185 (13)
47	100	110	22.62	22.62	-24.00	0.00	184 (13)	2112 (13)	10793 (13)
48	100	110	22.62	22.62	-19.16	0.00	147 (13)	1686 (13)	8618 (13)
49	100	110	22.62	22.62	-14.82	0.00	114 (13)	1305 (13)	6667 (13)
50	100	110	22.62	22.62	-11.00	0.00	84 (13)	968 (13)	4949 (13)
51	100	110	22.62	22.62	-7.72	0.00	59 (13)	679 (13)	3472 (13)
52	100	110	22.62	22.62	-4.99	0.00	38 (13)	439 (13)	2245 (13)
53	100	110	22.62	22.62	-2.84	0.00	22 (13)	250 (13)	1275 (13)
54	100	110	22.62	22.62	-1.27	0.00	10 (13)	112 (13)	572 (13)
55	100	110	22.62	22.62	-0.32	0.00	2 (13)	28 (13)	144 (13)

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
56	100	110	22.62	22.62	0.00	0.00	0 (13)	0 (13)	0 (13)

Combinazioni SLEF

Paramento

Tensione massima di compressione nel calcestruzzo 33200 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	40	22.62	22.62	0.00	0.00	0 (14)	0 (14)	0 (14)
2	100	41	22.62	22.62	0.00	0.99	2 (14)	30 (14)	32 (14)
3	100	42	22.62	22.62	0.01	2.00	4 (14)	58 (14)	64 (14)
4	100	43	22.62	22.62	0.02	3.03	7 (14)	85 (14)	98 (14)
5	100	44	22.62	22.62	0.04	4.09	9 (14)	109 (14)	132 (14)
6	100	45	22.62	22.62	0.07	5.17	12 (14)	131 (14)	169 (14)
7	100	46	22.62	22.62	0.12	6.28	14 (14)	148 (14)	209 (14)
8	100	47	22.62	22.62	0.18	7.41	18 (14)	161 (14)	253 (14)
9	100	48	22.62	22.62	0.28	8.57	21 (14)	167 (14)	302 (14)
10	100	49	22.62	22.62	0.40	9.75	25 (14)	167 (14)	358 (14)
11	100	50	22.62	22.62	0.57	10.95	30 (14)	160 (14)	420 (14)
12	100	51	22.62	22.62	0.78	12.18	35 (14)	145 (14)	489 (14)
13	100	52	22.62	22.62	1.03	13.43	41 (14)	121 (14)	565 (14)
14	100	53	22.62	22.62	1.35	14.71	48 (14)	90 (14)	649 (14)
15	100	54	22.62	22.62	1.72	16.01	55 (14)	48 (14)	743 (14)
16	100	55	22.62	22.62	2.15	17.34	63 (14)	16 (14)	849 (14)
17	100	56	22.62	22.62	2.66	18.68	73 (14)	111 (14)	970 (14)
18	100	57	22.62	22.62	3.25	20.06	83 (14)	245 (14)	1108 (14)
19	100	58	22.62	22.62	3.92	21.46	96 (14)	426 (14)	1262 (14)
20	100	59	22.62	22.62	4.67	22.88	110 (14)	661 (14)	1434 (14)
21	100	60	22.62	22.62	5.52	24.32	125 (14)	956 (14)	1623 (14)
22	100	61	22.62	22.62	6.46	25.79	142 (14)	1314 (14)	1828 (14)
23	100	62	22.62	22.62	7.51	27.29	161 (14)	1738 (14)	2048 (14)
24	100	63	22.62	22.62	8.67	28.81	181 (14)	2227 (14)	2283 (14)
25	100	64	22.62	22.62	9.95	30.35	202 (14)	2783 (14)	2532 (14)
26	100	65	22.62	22.62	11.34	31.92	224 (14)	3406 (14)	2796 (14)
27	100	66	22.62	22.62	12.86	33.51	248 (14)	4096 (14)	3073 (14)
28	100	67	22.62	22.62	14.52	35.12	272 (14)	4853 (14)	3363 (14)
29	100	68	22.62	22.62	16.31	36.76	298 (14)	5678 (14)	3667 (14)
30	100	69	22.62	22.62	18.24	38.43	325 (14)	6569 (14)	3985 (14)
31	100	70	22.62	22.62	20.32	40.12	354 (14)	7528 (14)	4316 (14)
32	100	71	22.62	22.62	22.55	41.83	383 (14)	8556 (14)	4660 (14)
33	100	72	22.62	22.62	24.94	43.56	414 (14)	9651 (14)	5017 (14)
34	100	73	22.62	22.62	27.50	45.32	445 (14)	10815 (14)	5388 (14)
35	100	74	22.62	27.14	30.23	47.11	455 (14)	10276 (14)	5578 (14)
36	100	75	22.62	27.14	33.13	48.92	486 (14)	11374 (14)	5958 (14)
37	100	76	22.62	27.14	36.21	50.75	519 (14)	12530 (14)	6351 (14)
38	100	77	22.62	27.14	39.48	52.61	553 (14)	13744 (14)	6756 (14)

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
39	100	78	22.62	27.14	42.94	54.49	587 (14)	15017 (14)	7174 (14)
40	100	79	22.62	27.14	46.60	56.40	623 (14)	16350 (14)	7605 (14)
41	100	80	22.62	27.14	50.46	58.33	660 (14)	17742 (14)	8047 (14)
42	100	81	22.62	27.14	54.53	60.28	697 (14)	19193 (14)	8502 (14)
43	100	82	22.62	27.14	58.82	62.26	736 (14)	20704 (14)	8970 (14)
44	100	83	22.62	27.14	63.32	64.26	775 (14)	22276 (14)	9449 (14)
45	100	84	22.62	27.14	68.05	66.29	816 (14)	23908 (14)	9941 (14)
46	100	85	22.62	27.14	73.01	68.34	857 (14)	25600 (14)	10444 (14)
47	100	86	22.62	27.14	78.20	70.42	899 (14)	27353 (14)	10960 (14)
48	100	87	22.62	27.14	83.64	72.51	943 (14)	29167 (14)	11488 (14)
49	100	88	22.62	36.19	89.32	74.64	904 (14)	23859 (14)	11297 (14)
50	100	89	22.62	36.19	95.25	76.79	945 (14)	25334 (14)	11809 (14)
51	100	90	22.62	36.19	101.45	78.96	986 (14)	26856 (14)	12331 (14)
52	100	91	22.62	36.19	107.90	81.15	1028 (14)	28424 (14)	12865 (14)
53	100	92	22.62	36.19	114.63	83.37	1071 (14)	30040 (14)	13408 (14)
54	100	93	22.62	36.19	121.63	85.62	1115 (14)	31702 (14)	13963 (14)
55	100	94	22.62	36.19	128.90	87.89	1160 (14)	33412 (14)	14527 (14)
56	100	95	22.62	36.19	136.47	90.18	1205 (14)	35168 (14)	15102 (14)
57	100	96	22.62	36.19	144.32	92.50	1251 (14)	36972 (14)	15687 (14)
58	100	97	22.62	36.19	152.48	94.84	1298 (14)	38823 (14)	16283 (14)
59	100	98	22.62	36.19	160.93	97.20	1345 (14)	40721 (14)	16889 (14)
60	100	99	22.62	36.19	169.69	99.59	1393 (14)	42667 (14)	17504 (14)
61	100	100	22.62	36.19	178.76	102.01	1442 (14)	44661 (14)	18130 (14)
62	100	101	22.62	36.19	188.15	104.45	1492 (14)	46702 (14)	18765 (14)
63	100	102	22.62	36.19	197.87	106.91	1542 (14)	48791 (14)	19411 (14)
64	100	103	22.62	36.19	207.91	109.40	1593 (14)	50927 (14)	20066 (14)
65	100	104	22.62	36.19	218.29	111.91	1645 (14)	53112 (14)	20731 (14)
66	100	105	22.62	36.19	229.01	114.44	1698 (14)	55344 (14)	21405 (14)
67	100	106	22.62	36.19	240.08	117.00	1751 (14)	57625 (14)	22090 (14)
68	100	107	22.62	36.19	251.50	119.58	1804 (14)	59953 (14)	22783 (14)
69	100	108	22.62	36.19	263.27	122.19	1859 (14)	62329 (14)	23486 (14)
70	100	109	22.62	36.19	275.41	124.82	1914 (14)	64754 (14)	24199 (14)
71	100	110	22.62	36.19	287.91	127.48	1970 (14)	67227 (14)	24921 (14)
72	100	111	22.62	36.19	300.79	130.16	2026 (14)	69748 (14)	25652 (14)
73	100	112	22.62	36.19	314.04	132.86	2084 (14)	72317 (14)	26392 (14)
74	100	113	22.62	36.19	327.68	135.59	2141 (14)	74935 (14)	27141 (14)
75	100	114	22.62	36.19	341.71	138.34	2200 (14)	77601 (14)	27900 (14)
76	100	115	22.62	36.19	356.13	141.12	2259 (14)	80315 (14)	28667 (14)
77	100	116	22.62	36.19	370.96	143.92	2318 (14)	83078 (14)	29444 (14)

Fondazione

Tensione massima di compressione nel calcestruzzo 24900 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	110	22.62	22.62	0.00	0.00	0 (14)	0 (14)	0 (14)
2	100	110	22.62	22.62	0.95	0.00	7 (14)	427 (14)	84 (14)
3	100	110	22.62	22.62	3.79	0.00	29 (14)	1705 (14)	334 (14)
4	100	110	22.62	22.62	8.51	0.00	65 (14)	3827 (14)	749 (14)
5	100	110	22.62	22.62	15.09	0.00	116 (14)	6785 (14)	1328 (14)
6	100	110	22.62	22.62	23.51	0.00	180 (14)	10574 (14)	2069 (14)

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
7	100	110	22.62	31.67	-334.79	0.00	2263 (14)	27156 (14)	108695 (14)
8	100	110	22.62	31.67	-326.91	0.00	2210 (14)	26516 (14)	106135 (14)
9	100	110	22.62	31.67	-318.84	0.00	2155 (14)	25862 (14)	103515 (14)
10	100	110	22.62	31.67	-310.59	0.00	2100 (14)	25193 (14)	100839 (14)
11	100	110	22.62	31.67	-302.20	0.00	2043 (14)	24512 (14)	98112 (14)
12	100	110	22.62	31.67	-293.65	0.00	1985 (14)	23819 (14)	95339 (14)
13	100	110	22.62	31.67	-284.99	0.00	1927 (14)	23116 (14)	92525 (14)
14	100	110	22.62	31.67	-276.20	0.00	1867 (14)	22404 (14)	89674 (14)
15	100	110	22.62	31.67	-267.32	0.00	1807 (14)	21683 (14)	86791 (14)
16	100	110	22.62	22.62	-258.36	0.00	1979 (14)	22738 (14)	116204 (14)
17	100	110	22.62	22.62	-249.33	0.00	1910 (14)	21943 (14)	112141 (14)
18	100	110	22.62	22.62	-240.24	0.00	1840 (14)	21144 (14)	108055 (14)
19	100	110	22.62	22.62	-231.12	0.00	1770 (14)	20341 (14)	103950 (14)
20	100	110	22.62	22.62	-221.97	0.00	1700 (14)	19535 (14)	99834 (14)
21	100	110	22.62	22.62	-212.81	0.00	1630 (14)	18729 (14)	95714 (14)
22	100	110	22.62	22.62	-203.65	0.00	1560 (14)	17923 (14)	91596 (14)
23	100	110	22.62	22.62	-194.51	0.00	1490 (14)	17119 (14)	87487 (14)
24	100	110	22.62	22.62	-185.41	0.00	1420 (14)	16318 (14)	83393 (14)
25	100	110	22.62	22.62	-176.36	0.00	1351 (14)	15521 (14)	79320 (14)
26	100	110	22.62	22.62	-167.37	0.00	1282 (14)	14730 (14)	75277 (14)
27	100	110	22.62	22.62	-158.45	0.00	1214 (14)	13946 (14)	71268 (14)
28	100	110	22.62	22.62	-149.63	0.00	1146 (14)	13169 (14)	67301 (14)
29	100	110	22.62	22.62	-140.92	0.00	1079 (14)	12403 (14)	63383 (14)
30	100	110	22.62	22.62	-132.33	0.00	1014 (14)	11647 (14)	59519 (14)
31	100	110	22.62	22.62	-123.88	0.00	949 (14)	10903 (14)	55717 (14)
32	100	110	22.62	22.62	-115.58	0.00	885 (14)	10172 (14)	51983 (14)
33	100	110	22.62	22.62	-107.44	0.00	823 (14)	9456 (14)	48324 (14)
34	100	110	22.62	22.62	-99.49	0.00	762 (14)	8756 (14)	44746 (14)
35	100	110	22.62	22.62	-91.73	0.00	703 (14)	8073 (14)	41257 (14)
36	100	110	22.62	22.62	-84.18	0.00	645 (14)	7409 (14)	37862 (14)
37	100	110	22.62	22.62	-76.86	0.00	589 (14)	6764 (14)	34568 (14)
38	100	110	22.62	22.62	-69.77	0.00	534 (14)	6141 (14)	31382 (14)
39	100	110	22.62	22.62	-62.94	0.00	482 (14)	5540 (14)	28310 (14)
40	100	110	22.62	22.62	-56.38	0.00	432 (14)	4962 (14)	25359 (14)
41	100	110	22.62	22.62	-50.11	0.00	384 (14)	4410 (14)	22536 (14)
42	100	110	22.62	22.62	-44.13	0.00	338 (14)	3884 (14)	19847 (14)
43	100	110	22.62	22.62	-38.46	0.00	295 (14)	3385 (14)	17299 (14)
44	100	110	22.62	22.62	-33.13	0.00	254 (14)	2915 (14)	14899 (14)
45	100	110	22.62	22.62	-28.13	0.00	215 (14)	2476 (14)	12652 (14)
46	100	110	22.62	22.62	-23.49	0.00	180 (14)	2068 (14)	10567 (14)
47	100	110	22.62	22.62	-19.23	0.00	147 (14)	1692 (14)	8648 (14)
48	100	110	22.62	22.62	-15.35	0.00	118 (14)	1351 (14)	6904 (14)
49	100	110	22.62	22.62	-11.87	0.00	91 (14)	1045 (14)	5340 (14)
50	100	110	22.62	22.62	-8.81	0.00	67 (14)	775 (14)	3963 (14)
51	100	110	22.62	22.62	-6.18	0.00	47 (14)	544 (14)	2779 (14)
52	100	110	22.62	22.62	-3.99	0.00	31 (14)	352 (14)	1796 (14)
53	100	110	22.62	22.62	-2.27	0.00	17 (14)	200 (14)	1020 (14)
54	100	110	22.62	22.62	-1.02	0.00	8 (14)	90 (14)	458 (14)
55	100	110	22.62	22.62	-0.26	0.00	2 (14)	23 (14)	116 (14)
56	100	110	22.62	22.62	0.00	0.00	0 (14)	0 (14)	0 (14)

Combinazioni SLEQ

Paramento

Tensione massima di compressione nel calcestruzzo 14940 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	B	H	Afi	Afs	M	N	σc	σfi	σfs
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	40	22.62	22.62	0.00	0.00	0 (15)	0 (15)	0 (15)
2	100	41	22.62	22.62	0.00	0.99	2 (15)	30 (15)	32 (15)
3	100	42	22.62	22.62	0.01	2.00	4 (15)	58 (15)	64 (15)
4	100	43	22.62	22.62	0.02	3.03	7 (15)	85 (15)	98 (15)
5	100	44	22.62	22.62	0.04	4.09	9 (15)	109 (15)	132 (15)
6	100	45	22.62	22.62	0.07	5.17	12 (15)	131 (15)	169 (15)
7	100	46	22.62	22.62	0.12	6.28	14 (15)	148 (15)	209 (15)
8	100	47	22.62	22.62	0.18	7.41	18 (15)	161 (15)	253 (15)
9	100	48	22.62	22.62	0.28	8.57	21 (15)	167 (15)	302 (15)
10	100	49	22.62	22.62	0.40	9.75	25 (15)	167 (15)	358 (15)
11	100	50	22.62	22.62	0.57	10.95	30 (15)	160 (15)	420 (15)
12	100	51	22.62	22.62	0.78	12.18	35 (15)	145 (15)	489 (15)
13	100	52	22.62	22.62	1.03	13.43	41 (15)	121 (15)	565 (15)
14	100	53	22.62	22.62	1.35	14.71	48 (15)	90 (15)	649 (15)
15	100	54	22.62	22.62	1.72	16.01	55 (15)	48 (15)	743 (15)
16	100	55	22.62	22.62	2.15	17.34	63 (15)	16 (15)	849 (15)
17	100	56	22.62	22.62	2.66	18.68	73 (15)	111 (15)	970 (15)
18	100	57	22.62	22.62	3.25	20.06	83 (15)	245 (15)	1108 (15)
19	100	58	22.62	22.62	3.92	21.46	96 (15)	426 (15)	1262 (15)
20	100	59	22.62	22.62	4.67	22.88	110 (15)	661 (15)	1434 (15)
21	100	60	22.62	22.62	5.52	24.32	125 (15)	956 (15)	1623 (15)
22	100	61	22.62	22.62	6.46	25.79	142 (15)	1314 (15)	1828 (15)
23	100	62	22.62	22.62	7.51	27.29	161 (15)	1738 (15)	2048 (15)
24	100	63	22.62	22.62	8.67	28.81	181 (15)	2227 (15)	2283 (15)
25	100	64	22.62	22.62	9.95	30.35	202 (15)	2783 (15)	2532 (15)
26	100	65	22.62	22.62	11.34	31.92	224 (15)	3406 (15)	2796 (15)
27	100	66	22.62	22.62	12.86	33.51	248 (15)	4096 (15)	3073 (15)
28	100	67	22.62	22.62	14.52	35.12	272 (15)	4853 (15)	3363 (15)
29	100	68	22.62	22.62	16.31	36.76	298 (15)	5678 (15)	3667 (15)
30	100	69	22.62	22.62	18.24	38.43	325 (15)	6569 (15)	3985 (15)
31	100	70	22.62	22.62	20.32	40.12	354 (15)	7528 (15)	4316 (15)
32	100	71	22.62	22.62	22.55	41.83	383 (15)	8556 (15)	4660 (15)
33	100	72	22.62	22.62	24.94	43.56	414 (15)	9651 (15)	5017 (15)
34	100	73	22.62	22.62	27.50	45.32	445 (15)	10815 (15)	5388 (15)
35	100	74	22.62	27.14	30.23	47.11	455 (15)	10276 (15)	5578 (15)
36	100	75	22.62	27.14	33.13	48.92	486 (15)	11374 (15)	5958 (15)
37	100	76	22.62	27.14	36.21	50.75	519 (15)	12530 (15)	6351 (15)
38	100	77	22.62	27.14	39.48	52.61	553 (15)	13744 (15)	6756 (15)
39	100	78	22.62	27.14	42.94	54.49	587 (15)	15017 (15)	7174 (15)
40	100	79	22.62	27.14	46.60	56.40	623 (15)	16350 (15)	7605 (15)
41	100	80	22.62	27.14	50.46	58.33	660 (15)	17742 (15)	8047 (15)
42	100	81	22.62	27.14	54.53	60.28	697 (15)	19193 (15)	8502 (15)
43	100	82	22.62	27.14	58.82	62.26	736 (15)	20704 (15)	8970 (15)
44	100	83	22.62	27.14	63.32	64.26	775 (15)	22276 (15)	9449 (15)
45	100	84	22.62	27.14	68.05	66.29	816 (15)	23908 (15)	9941 (15)
46	100	85	22.62	27.14	73.01	68.34	857 (15)	25600 (15)	10444 (15)
47	100	86	22.62	27.14	78.20	70.42	899 (15)	27353 (15)	10960 (15)
48	100	87	22.62	27.14	83.64	72.51	943 (15)	29167 (15)	11488 (15)
49	100	88	22.62	36.19	89.32	74.64	904 (15)	23859 (15)	11297 (15)
50	100	89	22.62	36.19	95.25	76.79	945 (15)	25334 (15)	11809 (15)
51	100	90	22.62	36.19	101.45	78.96	986 (15)	26856 (15)	12331 (15)
52	100	91	22.62	36.19	107.90	81.15	1028 (15)	28424 (15)	12865 (15)
53	100	92	22.62	36.19	114.63	83.37	1071 (15)	30040 (15)	13408 (15)
54	100	93	22.62	36.19	121.63	85.62	1115 (15)	31702 (15)	13963 (15)
55	100	94	22.62	36.19	128.90	87.89	1160 (15)	33412 (15)	14527 (15)

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
56	100	95	22.62	36.19	136.47	90.18	1205 (15)	35168 (15)	15102 (15)
57	100	96	22.62	36.19	144.32	92.50	1251 (15)	36972 (15)	15687 (15)
58	100	97	22.62	36.19	152.48	94.84	1298 (15)	38823 (15)	16283 (15)
59	100	98	22.62	36.19	160.93	97.20	1345 (15)	40721 (15)	16889 (15)
60	100	99	22.62	36.19	169.69	99.59	1393 (15)	42667 (15)	17504 (15)
61	100	100	22.62	36.19	178.76	102.01	1442 (15)	44661 (15)	18130 (15)
62	100	101	22.62	36.19	188.15	104.45	1492 (15)	46702 (15)	18765 (15)
63	100	102	22.62	36.19	197.87	106.91	1542 (15)	48791 (15)	19411 (15)
64	100	103	22.62	36.19	207.91	109.40	1593 (15)	50927 (15)	20066 (15)
65	100	104	22.62	36.19	218.29	111.91	1645 (15)	53112 (15)	20731 (15)
66	100	105	22.62	36.19	229.01	114.44	1698 (15)	55344 (15)	21405 (15)
67	100	106	22.62	36.19	240.08	117.00	1751 (15)	57625 (15)	22090 (15)
68	100	107	22.62	36.19	251.50	119.58	1804 (15)	59953 (15)	22783 (15)
69	100	108	22.62	36.19	263.27	122.19	1859 (15)	62329 (15)	23486 (15)
70	100	109	22.62	36.19	275.41	124.82	1914 (15)	64754 (15)	24199 (15)
71	100	110	22.62	36.19	287.91	127.48	1970 (15)	67227 (15)	24921 (15)
72	100	111	22.62	36.19	300.79	130.16	2026 (15)	69748 (15)	25652 (15)
73	100	112	22.62	36.19	314.04	132.86	2084 (15)	72317 (15)	26392 (15)
74	100	113	22.62	36.19	327.68	135.59	2141 (15)	74935 (15)	27141 (15)
75	100	114	22.62	36.19	341.71	138.34	2200 (15)	77601 (15)	27900 (15)
76	100	115	22.62	36.19	356.13	141.12	2259 (15)	80315 (15)	28667 (15)
77	100	116	22.62	36.19	370.96	143.92	2318 (15)	83078 (15)	29444 (15)

Fondazione

Tensione massima di compressione nel calcestruzzo 11205 [kPa]

Tensione massima di trazione dell'acciaio 450000 [kPa]

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
1	100	110	22.62	22.62	0.00	0.00	0 (15)	0 (15)	0 (15)
2	100	110	22.62	22.62	0.89	0.00	7 (15)	399 (15)	78 (15)
3	100	110	22.62	22.62	3.54	0.00	27 (15)	1593 (15)	312 (15)
4	100	110	22.62	22.62	7.95	0.00	61 (15)	3577 (15)	700 (15)
5	100	110	22.62	22.62	14.11	0.00	108 (15)	6345 (15)	1242 (15)
6	100	110	22.62	22.62	21.99	0.00	168 (15)	9892 (15)	1936 (15)
7	100	110	22.62	31.67	-266.22	0.00	1800 (15)	21594 (15)	86433 (15)
8	100	110	22.62	31.67	-259.69	0.00	1756 (15)	21064 (15)	84313 (15)
9	100	110	22.62	31.67	-253.04	0.00	1711 (15)	20524 (15)	82152 (15)
10	100	110	22.62	31.67	-246.26	0.00	1665 (15)	19975 (15)	79953 (15)
11	100	110	22.62	31.67	-239.39	0.00	1618 (15)	19417 (15)	77721 (15)
12	100	110	22.62	31.67	-232.42	0.00	1571 (15)	18852 (15)	75458 (15)
13	100	110	22.62	31.67	-225.36	0.00	1523 (15)	18280 (15)	73168 (15)
14	100	110	22.62	31.67	-218.24	0.00	1475 (15)	17702 (15)	70855 (15)
15	100	110	22.62	31.67	-211.05	0.00	1427 (15)	17119 (15)	68522 (15)
16	100	110	22.62	22.62	-203.82	0.00	1561 (15)	17938 (15)	91673 (15)
17	100	110	22.62	22.62	-196.55	0.00	1506 (15)	17298 (15)	88401 (15)
18	100	110	22.62	22.62	-189.24	0.00	1450 (15)	16655 (15)	85117 (15)
19	100	110	22.62	22.62	-181.93	0.00	1394 (15)	16011 (15)	81826 (15)
20	100	110	22.62	22.62	-174.60	0.00	1337 (15)	15367 (15)	78531 (15)
21	100	110	22.62	22.62	-167.28	0.00	1281 (15)	14723 (15)	75240 (15)
22	100	110	22.62	22.62	-159.98	0.00	1225 (15)	14080 (15)	71955 (15)
23	100	110	22.62	22.62	-152.71	0.00	1170 (15)	13440 (15)	68683 (15)

n°	B	H	Afi	Afs	M	N	σ_c	σ_{fi}	σ_{fs}
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kN]	[kPa]	[kPa]	[kPa]
24	100	110	22.62	22.62	-145.47	0.00	1114 (15)	12803 (15)	65429 (15)
25	100	110	22.62	22.62	-138.28	0.00	1059 (15)	12170 (15)	62196 (15)
26	100	110	22.62	22.62	-131.16	0.00	1005 (15)	11543 (15)	58991 (15)
27	100	110	22.62	22.62	-124.10	0.00	951 (15)	10922 (15)	55817 (15)
28	100	110	22.62	22.62	-117.13	0.00	897 (15)	10308 (15)	52681 (15)
29	100	110	22.62	22.62	-110.25	0.00	844 (15)	9703 (15)	49587 (15)
30	100	110	22.62	22.62	-103.47	0.00	793 (15)	9107 (15)	46539 (15)
31	100	110	22.62	22.62	-96.81	0.00	742 (15)	8521 (15)	43544 (15)
32	100	110	22.62	22.62	-90.28	0.00	692 (15)	7945 (15)	40605 (15)
33	100	110	22.62	22.62	-83.88	0.00	643 (15)	7383 (15)	37728 (15)
34	100	110	22.62	22.62	-77.64	0.00	595 (15)	6833 (15)	34918 (15)
35	100	110	22.62	22.62	-71.55	0.00	548 (15)	6297 (15)	32180 (15)
36	100	110	22.62	22.62	-65.63	0.00	503 (15)	5776 (15)	29518 (15)
37	100	110	22.62	22.62	-59.89	0.00	459 (15)	5271 (15)	26938 (15)
38	100	110	22.62	22.62	-54.35	0.00	416 (15)	4783 (15)	24444 (15)
39	100	110	22.62	22.62	-49.01	0.00	375 (15)	4313 (15)	22042 (15)
40	100	110	22.62	22.62	-43.88	0.00	336 (15)	3862 (15)	19736 (15)
41	100	110	22.62	22.62	-38.98	0.00	299 (15)	3431 (15)	17532 (15)
42	100	110	22.62	22.62	-34.32	0.00	263 (15)	3020 (15)	15434 (15)
43	100	110	22.62	22.62	-29.90	0.00	229 (15)	2631 (15)	13447 (15)
44	100	110	22.62	22.62	-25.74	0.00	197 (15)	2265 (15)	11577 (15)
45	100	110	22.62	22.62	-21.85	0.00	167 (15)	1923 (15)	9828 (15)
46	100	110	22.62	22.62	-18.24	0.00	140 (15)	1605 (15)	8204 (15)
47	100	110	22.62	22.62	-14.92	0.00	114 (15)	1313 (15)	6712 (15)
48	100	110	22.62	22.62	-11.91	0.00	91 (15)	1048 (15)	5356 (15)
49	100	110	22.62	22.62	-9.21	0.00	71 (15)	810 (15)	4141 (15)
50	100	110	22.62	22.62	-6.83	0.00	52 (15)	601 (15)	3072 (15)
51	100	110	22.62	22.62	-4.79	0.00	37 (15)	422 (15)	2154 (15)
52	100	110	22.62	22.62	-3.09	0.00	24 (15)	272 (15)	1392 (15)
53	100	110	22.62	22.62	-1.76	0.00	13 (15)	155 (15)	790 (15)
54	100	110	22.62	22.62	-0.79	0.00	6 (15)	69 (15)	355 (15)
55	100	110	22.62	22.62	-0.20	0.00	2 (15)	18 (15)	89 (15)
56	100	110	22.62	22.62	0.00	0.00	0 (15)	0 (15)	0 (15)

Verifica a fessurazione

Simbologia adottata

n°	indice sezione
Y	ordinata sezione espressa in [m]
B	larghezza sezione espresso in [cm]
H	altezza sezione espressa in [cm]
Af	area ferri zona tesa espresso in [cmq]
Aeff	area efficace espressa in [cmq]
M	momento agente espressa in [kNm]
Mpf	momento di prima fessurazione espressa in [kNm]
ϵ	deformazione espresso in %
Sm	spaziatura tra le fessure espressa in [mm]
w	apertura delle fessure espressa in [mm]

Combinazioni SLER

Paramento

Apertura limite fessure $w_{lim}=0.20$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (13)
2	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000 (13)
3	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000 (13)
4	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000 (13)
5	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000 (13)
6	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000 (13)
7	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000 (13)
8	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000 (13)
9	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000 (13)
10	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000 (13)
11	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000 (13)
12	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000 (13)
13	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000 (13)
14	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000 (13)
15	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000 (13)
16	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000 (13)
17	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000 (13)
18	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000 (13)
19	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000 (13)
20	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000 (13)
21	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000 (13)
22	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000 (13)
23	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000 (13)
24	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000 (13)
25	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000 (13)
26	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000 (13)
27	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000 (13)
28	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000 (13)
29	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000 (13)
30	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000 (13)
31	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000 (13)
32	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000 (13)
33	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000 (13)
34	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000 (13)
35	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000 (13)
36	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000 (13)
37	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000 (13)
38	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000 (13)
39	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000 (13)
40	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000 (13)
41	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000 (13)
42	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000 (13)
43	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000 (13)
44	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000 (13)
45	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000 (13)
46	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000 (13)
47	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000 (13)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
48	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000 (13)
49	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000 (13)
50	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000 (13)
51	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000 (13)
52	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000 (13)
53	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000 (13)
54	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000 (13)
55	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000 (13)
56	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000 (13)
57	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000 (13)
58	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000 (13)
59	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000 (13)
60	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000 (13)
61	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000 (13)
62	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000 (13)
63	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000 (13)
64	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000 (13)
65	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000 (13)
66	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000 (13)
67	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000 (13)
68	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000 (13)
69	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000 (13)
70	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000 (13)
71	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000 (13)
72	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000 (13)
73	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000 (13)
74	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000 (13)
75	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000 (13)
76	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000 (13)
77	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000 (13)

Fondazione

Apertura limite fessure $w_{lim}=0.20$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (13)
2	100	110	22.62	1250.00	1.02	600.43	0.0000	0.00	0.000 (13)
3	100	110	22.62	1250.00	4.07	600.43	0.0000	0.00	0.000 (13)
4	100	110	22.62	1250.00	9.12	600.43	0.0000	0.00	0.000 (13)
5	100	110	22.62	1250.00	16.16	600.43	0.0000	0.00	0.000 (13)
6	100	110	22.62	1250.00	25.17	600.43	0.0000	0.00	0.000 (13)
7	100	110	31.67	1250.00	-411.15	-622.68	0.0000	0.00	0.000 (13)
8	100	110	31.67	1250.00	-401.74	-622.68	0.0000	0.00	0.000 (13)
9	100	110	31.67	1250.00	-392.08	-622.68	0.0000	0.00	0.000 (13)
10	100	110	31.67	1250.00	-382.19	-622.68	0.0000	0.00	0.000 (13)
11	100	110	31.67	1250.00	-372.08	-622.68	0.0000	0.00	0.000 (13)
12	100	110	31.67	1250.00	-361.78	-622.68	0.0000	0.00	0.000 (13)
13	100	110	31.67	1250.00	-351.30	-622.68	0.0000	0.00	0.000 (13)
14	100	110	31.67	1250.00	-340.67	-622.68	0.0000	0.00	0.000 (13)
15	100	110	31.67	1250.00	-329.89	-622.68	0.0000	0.00	0.000 (13)
16	100	110	22.62	1250.00	-319.00	-600.43	0.0000	0.00	0.000 (13)
17	100	110	22.62	1250.00	-308.00	-600.43	0.0000	0.00	0.000 (13)
18	100	110	22.62	1250.00	-296.92	-600.43	0.0000	0.00	0.000 (13)
19	100	110	22.62	1250.00	-285.78	-600.43	0.0000	0.00	0.000 (13)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
20	100	110	22.62	1250.00	-274.59	-600.43	0.0000	0.00	0.000 (13)
21	100	110	22.62	1250.00	-263.38	-600.43	0.0000	0.00	0.000 (13)
22	100	110	22.62	1250.00	-252.15	-600.43	0.0000	0.00	0.000 (13)
23	100	110	22.62	1250.00	-240.94	-600.43	0.0000	0.00	0.000 (13)
24	100	110	22.62	1250.00	-229.76	-600.43	0.0000	0.00	0.000 (13)
25	100	110	22.62	1250.00	-218.63	-600.43	0.0000	0.00	0.000 (13)
26	100	110	22.62	1250.00	-207.57	-600.43	0.0000	0.00	0.000 (13)
27	100	110	22.62	1250.00	-196.59	-600.43	0.0000	0.00	0.000 (13)
28	100	110	22.62	1250.00	-185.71	-600.43	0.0000	0.00	0.000 (13)
29	100	110	22.62	1250.00	-174.96	-600.43	0.0000	0.00	0.000 (13)
30	100	110	22.62	1250.00	-164.36	-600.43	0.0000	0.00	0.000 (13)
31	100	110	22.62	1250.00	-153.91	-600.43	0.0000	0.00	0.000 (13)
32	100	110	22.62	1250.00	-143.64	-600.43	0.0000	0.00	0.000 (13)
33	100	110	22.62	1250.00	-133.58	-600.43	0.0000	0.00	0.000 (13)
34	100	110	22.62	1250.00	-123.73	-600.43	0.0000	0.00	0.000 (13)
35	100	110	22.62	1250.00	-114.11	-600.43	0.0000	0.00	0.000 (13)
36	100	110	22.62	1250.00	-104.75	-600.43	0.0000	0.00	0.000 (13)
37	100	110	22.62	1250.00	-95.67	-600.43	0.0000	0.00	0.000 (13)
38	100	110	22.62	1250.00	-86.88	-600.43	0.0000	0.00	0.000 (13)
39	100	110	22.62	1250.00	-78.39	-600.43	0.0000	0.00	0.000 (13)
40	100	110	22.62	1250.00	-70.24	-600.43	0.0000	0.00	0.000 (13)
41	100	110	22.62	1250.00	-62.44	-600.43	0.0000	0.00	0.000 (13)
42	100	110	22.62	1250.00	-55.01	-600.43	0.0000	0.00	0.000 (13)
43	100	110	22.62	1250.00	-47.96	-600.43	0.0000	0.00	0.000 (13)
44	100	110	22.62	1250.00	-41.31	-600.43	0.0000	0.00	0.000 (13)
45	100	110	22.62	1250.00	-35.09	-600.43	0.0000	0.00	0.000 (13)
46	100	110	22.62	1250.00	-29.31	-600.43	0.0000	0.00	0.000 (13)
47	100	110	22.62	1250.00	-24.00	-600.43	0.0000	0.00	0.000 (13)
48	100	110	22.62	1250.00	-19.16	-600.43	0.0000	0.00	0.000 (13)
49	100	110	22.62	1250.00	-14.82	-600.43	0.0000	0.00	0.000 (13)
50	100	110	22.62	1250.00	-11.00	-600.43	0.0000	0.00	0.000 (13)
51	100	110	22.62	1250.00	-7.72	-600.43	0.0000	0.00	0.000 (13)
52	100	110	22.62	1250.00	-4.99	-600.43	0.0000	0.00	0.000 (13)
53	100	110	22.62	1250.00	-2.84	-600.43	0.0000	0.00	0.000 (13)
54	100	110	22.62	1250.00	-1.27	-600.43	0.0000	0.00	0.000 (13)
55	100	110	22.62	1250.00	-0.32	-600.43	0.0000	0.00	0.000 (13)
56	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (13)

Combinazioni SLEF

Paramento

Apertura limite fessure $w_{lim}=0.30$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (14)
2	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000 (14)
3	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000 (14)
4	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000 (14)
5	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000 (14)
6	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000 (14)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
7	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000 (14)
8	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000 (14)
9	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000 (14)
10	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000 (14)
11	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000 (14)
12	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000 (14)
13	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000 (14)
14	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000 (14)
15	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000 (14)
16	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000 (14)
17	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000 (14)
18	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000 (14)
19	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000 (14)
20	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000 (14)
21	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000 (14)
22	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000 (14)
23	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000 (14)
24	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000 (14)
25	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000 (14)
26	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000 (14)
27	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000 (14)
28	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000 (14)
29	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000 (14)
30	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000 (14)
31	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000 (14)
32	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000 (14)
33	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000 (14)
34	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000 (14)
35	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000 (14)
36	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000 (14)
37	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000 (14)
38	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000 (14)
39	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000 (14)
40	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000 (14)
41	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000 (14)
42	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000 (14)
43	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000 (14)
44	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000 (14)
45	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000 (14)
46	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000 (14)
47	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000 (14)
48	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000 (14)
49	100	88	36.19	1250.00	89.32	582.21	0.0000	0.00	0.000 (14)
50	100	89	36.19	1250.00	95.25	592.20	0.0000	0.00	0.000 (14)
51	100	90	36.19	1250.00	101.45	602.34	0.0000	0.00	0.000 (14)
52	100	91	36.19	1250.00	107.90	612.65	0.0000	0.00	0.000 (14)
53	100	92	36.19	1250.00	114.63	623.11	0.0000	0.00	0.000 (14)
54	100	93	36.19	1250.00	121.63	633.72	0.0000	0.00	0.000 (14)
55	100	94	36.19	1250.00	128.90	644.48	0.0000	0.00	0.000 (14)
56	100	95	36.19	1250.00	136.47	655.38	0.0000	0.00	0.000 (14)
57	100	96	36.19	1250.00	144.32	666.42	0.0000	0.00	0.000 (14)
58	100	97	36.19	1250.00	152.48	677.61	0.0000	0.00	0.000 (14)
59	100	98	36.19	1250.00	160.93	688.93	0.0000	0.00	0.000 (14)
60	100	99	36.19	1250.00	169.69	700.38	0.0000	0.00	0.000 (14)
61	100	100	36.19	1250.00	178.76	711.96	0.0000	0.00	0.000 (14)
62	100	101	36.19	1250.00	188.15	723.68	0.0000	0.00	0.000 (14)
63	100	102	36.19	1250.00	197.87	735.53	0.0000	0.00	0.000 (14)
64	100	103	36.19	1250.00	207.91	747.50	0.0000	0.00	0.000 (14)
65	100	104	36.19	1250.00	218.29	759.60	0.0000	0.00	0.000 (14)
66	100	105	36.19	1250.00	229.01	771.82	0.0000	0.00	0.000 (14)
67	100	106	36.19	1250.00	240.08	784.17	0.0000	0.00	0.000 (14)
68	100	107	36.19	1250.00	251.50	796.64	0.0000	0.00	0.000 (14)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
69	100	108	36.19	1250.00	263.27	809.23	0.0000	0.00	0.000 (14)
70	100	109	36.19	1250.00	275.41	821.95	0.0000	0.00	0.000 (14)
71	100	110	36.19	1250.00	287.91	834.78	0.0000	0.00	0.000 (14)
72	100	111	36.19	1250.00	300.79	847.73	0.0000	0.00	0.000 (14)
73	100	112	36.19	1250.00	314.04	860.80	0.0000	0.00	0.000 (14)
74	100	113	36.19	1250.00	327.68	873.99	0.0000	0.00	0.000 (14)
75	100	114	36.19	1250.00	341.71	887.30	0.0000	0.00	0.000 (14)
76	100	115	36.19	1250.00	356.13	900.72	0.0000	0.00	0.000 (14)
77	100	116	36.19	1250.00	370.96	914.26	0.0000	0.00	0.000 (14)

Fondazione

Apertura limite fessure $w_{lim}=0.30$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (14)
2	100	110	22.62	1250.00	0.95	600.43	0.0000	0.00	0.000 (14)
3	100	110	22.62	1250.00	3.79	600.43	0.0000	0.00	0.000 (14)
4	100	110	22.62	1250.00	8.51	600.43	0.0000	0.00	0.000 (14)
5	100	110	22.62	1250.00	15.09	600.43	0.0000	0.00	0.000 (14)
6	100	110	22.62	1250.00	23.51	600.43	0.0000	0.00	0.000 (14)
7	100	110	31.67	1250.00	-334.79	-622.68	0.0000	0.00	0.000 (14)
8	100	110	31.67	1250.00	-326.91	-622.68	0.0000	0.00	0.000 (14)
9	100	110	31.67	1250.00	-318.84	-622.68	0.0000	0.00	0.000 (14)
10	100	110	31.67	1250.00	-310.59	-622.68	0.0000	0.00	0.000 (14)
11	100	110	31.67	1250.00	-302.20	-622.68	0.0000	0.00	0.000 (14)
12	100	110	31.67	1250.00	-293.65	-622.68	0.0000	0.00	0.000 (14)
13	100	110	31.67	1250.00	-284.99	-622.68	0.0000	0.00	0.000 (14)
14	100	110	31.67	1250.00	-276.20	-622.68	0.0000	0.00	0.000 (14)
15	100	110	31.67	1250.00	-267.32	-622.68	0.0000	0.00	0.000 (14)
16	100	110	22.62	1250.00	-258.36	-600.43	0.0000	0.00	0.000 (14)
17	100	110	22.62	1250.00	-249.33	-600.43	0.0000	0.00	0.000 (14)
18	100	110	22.62	1250.00	-240.24	-600.43	0.0000	0.00	0.000 (14)
19	100	110	22.62	1250.00	-231.12	-600.43	0.0000	0.00	0.000 (14)
20	100	110	22.62	1250.00	-221.97	-600.43	0.0000	0.00	0.000 (14)
21	100	110	22.62	1250.00	-212.81	-600.43	0.0000	0.00	0.000 (14)
22	100	110	22.62	1250.00	-203.65	-600.43	0.0000	0.00	0.000 (14)
23	100	110	22.62	1250.00	-194.51	-600.43	0.0000	0.00	0.000 (14)
24	100	110	22.62	1250.00	-185.41	-600.43	0.0000	0.00	0.000 (14)
25	100	110	22.62	1250.00	-176.36	-600.43	0.0000	0.00	0.000 (14)
26	100	110	22.62	1250.00	-167.37	-600.43	0.0000	0.00	0.000 (14)
27	100	110	22.62	1250.00	-158.45	-600.43	0.0000	0.00	0.000 (14)
28	100	110	22.62	1250.00	-149.63	-600.43	0.0000	0.00	0.000 (14)
29	100	110	22.62	1250.00	-140.92	-600.43	0.0000	0.00	0.000 (14)
30	100	110	22.62	1250.00	-132.33	-600.43	0.0000	0.00	0.000 (14)
31	100	110	22.62	1250.00	-123.88	-600.43	0.0000	0.00	0.000 (14)
32	100	110	22.62	1250.00	-115.58	-600.43	0.0000	0.00	0.000 (14)
33	100	110	22.62	1250.00	-107.44	-600.43	0.0000	0.00	0.000 (14)
34	100	110	22.62	1250.00	-99.49	-600.43	0.0000	0.00	0.000 (14)
35	100	110	22.62	1250.00	-91.73	-600.43	0.0000	0.00	0.000 (14)
36	100	110	22.62	1250.00	-84.18	-600.43	0.0000	0.00	0.000 (14)
37	100	110	22.62	1250.00	-76.86	-600.43	0.0000	0.00	0.000 (14)
38	100	110	22.62	1250.00	-69.77	-600.43	0.0000	0.00	0.000 (14)
39	100	110	22.62	1250.00	-62.94	-600.43	0.0000	0.00	0.000 (14)
40	100	110	22.62	1250.00	-56.38	-600.43	0.0000	0.00	0.000 (14)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
41	100	110	22.62	1250.00	-50.11	-600.43	0.0000	0.00	0.000 (14)
42	100	110	22.62	1250.00	-44.13	-600.43	0.0000	0.00	0.000 (14)
43	100	110	22.62	1250.00	-38.46	-600.43	0.0000	0.00	0.000 (14)
44	100	110	22.62	1250.00	-33.13	-600.43	0.0000	0.00	0.000 (14)
45	100	110	22.62	1250.00	-28.13	-600.43	0.0000	0.00	0.000 (14)
46	100	110	22.62	1250.00	-23.49	-600.43	0.0000	0.00	0.000 (14)
47	100	110	22.62	1250.00	-19.23	-600.43	0.0000	0.00	0.000 (14)
48	100	110	22.62	1250.00	-15.35	-600.43	0.0000	0.00	0.000 (14)
49	100	110	22.62	1250.00	-11.87	-600.43	0.0000	0.00	0.000 (14)
50	100	110	22.62	1250.00	-8.81	-600.43	0.0000	0.00	0.000 (14)
51	100	110	22.62	1250.00	-6.18	-600.43	0.0000	0.00	0.000 (14)
52	100	110	22.62	1250.00	-3.99	-600.43	0.0000	0.00	0.000 (14)
53	100	110	22.62	1250.00	-2.27	-600.43	0.0000	0.00	0.000 (14)
54	100	110	22.62	1250.00	-1.02	-600.43	0.0000	0.00	0.000 (14)
55	100	110	22.62	1250.00	-0.26	-600.43	0.0000	0.00	0.000 (14)
56	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (14)

Combinazioni SLEQ

Paramento

Apertura limite fessure $w_{lim}=0.20$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	40	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (15)
2	100	41	0.00	0.00	0.00	3.82	0.0000	0.00	0.000 (15)
3	100	42	0.00	0.00	0.01	8.03	0.0000	0.00	0.000 (15)
4	100	43	0.00	0.00	0.02	12.64	0.0000	0.00	0.000 (15)
5	100	44	0.00	0.00	0.04	18.09	0.0000	0.00	0.000 (15)
6	100	45	0.00	0.00	0.07	26.19	0.0000	0.00	0.000 (15)
7	100	46	0.00	0.00	0.12	38.70	0.0000	0.00	0.000 (15)
8	100	47	0.00	0.00	0.18	57.77	0.0000	0.00	0.000 (15)
9	100	48	0.00	0.00	0.28	86.93	0.0000	0.00	0.000 (15)
10	100	49	0.00	0.00	0.40	132.83	0.0000	0.00	0.000 (15)
11	100	50	0.00	0.00	0.57	209.82	0.0000	0.00	0.000 (15)
12	100	51	0.00	0.00	0.78	355.46	0.0000	0.00	0.000 (15)
13	100	52	0.00	0.00	1.03	709.19	0.0000	0.00	0.000 (15)
14	100	53	0.00	0.00	1.35	2583.64	0.0000	0.00	0.000 (15)
15	100	54	0.00	0.00	1.72	2719.35	0.0000	0.00	0.000 (15)
16	100	55	22.62	1250.00	2.15	1075.54	0.0000	0.00	0.000 (15)
17	100	56	22.62	1250.00	2.66	740.25	0.0000	0.00	0.000 (15)
18	100	57	22.62	1250.00	3.25	599.72	0.0000	0.00	0.000 (15)
19	100	58	22.62	1250.00	3.92	524.84	0.0000	0.00	0.000 (15)
20	100	59	22.62	1250.00	4.67	480.00	0.0000	0.00	0.000 (15)
21	100	60	22.62	1250.00	5.52	451.41	0.0000	0.00	0.000 (15)
22	100	61	22.62	1250.00	6.46	432.63	0.0000	0.00	0.000 (15)
23	100	62	22.62	1250.00	7.51	420.22	0.0000	0.00	0.000 (15)
24	100	63	22.62	1250.00	8.67	412.22	0.0000	0.00	0.000 (15)
25	100	64	22.62	1250.00	9.95	407.38	0.0000	0.00	0.000 (15)
26	100	65	22.62	1250.00	11.34	404.90	0.0000	0.00	0.000 (15)
27	100	66	22.62	1250.00	12.86	404.25	0.0000	0.00	0.000 (15)

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
28	100	67	22.62	1250.00	14.52	405.03	0.0000	0.00	0.000 (15)
29	100	68	22.62	1250.00	16.31	406.97	0.0000	0.00	0.000 (15)
30	100	69	22.62	1250.00	18.24	409.86	0.0000	0.00	0.000 (15)
31	100	70	22.62	1250.00	20.32	413.56	0.0000	0.00	0.000 (15)
32	100	71	22.62	1250.00	22.55	417.93	0.0000	0.00	0.000 (15)
33	100	72	22.62	1250.00	24.94	422.88	0.0000	0.00	0.000 (15)
34	100	73	22.62	1250.00	27.50	428.34	0.0000	0.00	0.000 (15)
35	100	74	27.14	1250.00	30.23	444.38	0.0000	0.00	0.000 (15)
36	100	75	27.14	1250.00	33.13	450.78	0.0000	0.00	0.000 (15)
37	100	76	27.14	1250.00	36.21	457.55	0.0000	0.00	0.000 (15)
38	100	77	27.14	1250.00	39.48	464.65	0.0000	0.00	0.000 (15)
39	100	78	27.14	1250.00	42.94	472.06	0.0000	0.00	0.000 (15)
40	100	79	27.14	1250.00	46.60	479.75	0.0000	0.00	0.000 (15)
41	100	80	27.14	1250.00	50.46	487.69	0.0000	0.00	0.000 (15)
42	100	81	27.14	1250.00	54.53	495.88	0.0000	0.00	0.000 (15)
43	100	82	27.14	1250.00	58.82	504.29	0.0000	0.00	0.000 (15)
44	100	83	27.14	1250.00	63.32	512.92	0.0000	0.00	0.000 (15)
45	100	84	27.14	1250.00	68.05	521.76	0.0000	0.00	0.000 (15)
46	100	85	27.14	1250.00	73.01	530.79	0.0000	0.00	0.000 (15)
47	100	86	27.14	1250.00	78.20	540.00	0.0000	0.00	0.000 (15)
48	100	87	27.14	1250.00	83.64	549.40	0.0000	0.00	0.000 (15)
49	100	88	36.19	1250.00	89.32	558.21	0.0000	0.00	0.000 (15)
50	100	89	36.19	1250.00	95.25	567.20	0.0000	0.00	0.000 (15)
51	100	90	36.19	1250.00	101.45	576.34	0.0000	0.00	0.000 (15)
52	100	91	36.19	1250.00	107.90	585.65	0.0000	0.00	0.000 (15)
53	100	92	36.19	1250.00	114.63	595.11	0.0000	0.00	0.000 (15)
54	100	93	36.19	1250.00	121.63	604.72	0.0000	0.00	0.000 (15)
55	100	94	36.19	1250.00	128.90	614.48	0.0000	0.00	0.000 (15)
56	100	95	36.19	1250.00	136.47	624.38	0.0000	0.00	0.000 (15)
57	100	96	36.19	1250.00	144.32	634.42	0.0000	0.00	0.000 (15)
58	100	97	36.19	1250.00	152.48	644.61	0.0000	0.00	0.000 (15)
59	100	98	36.19	1250.00	160.93	654.93	0.0000	0.00	0.000 (15)
60	100	99	36.19	1250.00	169.69	665.38	0.0000	0.00	0.000 (15)
61	100	100	36.19	1250.00	178.76	675.96	0.0000	0.00	0.000 (15)
62	100	101	36.19	1250.00	188.15	686.67	0.0000	0.00	0.000 (15)
63	100	102	36.19	1250.00	197.87	697.51	0.0000	0.00	0.000 (15)
64	100	103	36.19	1250.00	207.91	708.48	0.0000	0.00	0.000 (15)
65	100	104	36.19	1250.00	218.29	719.58	0.0000	0.00	0.000 (15)
66	100	105	36.19	1250.00	229.01	730.82	0.0000	0.00	0.000 (15)
67	100	106	36.19	1250.00	240.08	742.20	0.0000	0.00	0.000 (15)
68	100	107	36.19	1250.00	251.50	753.72	0.0000	0.00	0.000 (15)
69	100	108	36.19	1250.00	263.27	765.38	0.0000	0.00	0.000 (15)
70	100	109	36.19	1250.00	275.41	777.18	0.0000	0.00	0.000 (15)
71	100	110	36.19	1250.00	287.91	789.12	0.0000	0.00	0.000 (15)
72	100	111	36.19	1250.00	300.79	801.20	0.0000	0.00	0.000 (15)
73	100	112	36.19	1250.00	314.04	813.42	0.0000	0.00	0.000 (15)
74	100	113	36.19	1250.00	327.68	825.78	0.0000	0.00	0.000 (15)
75	100	114	36.19	1250.00	341.71	838.28	0.0000	0.00	0.000 (15)
76	100	115	36.19	1250.00	356.13	850.92	0.0000	0.00	0.000 (15)
77	100	116	36.19	1250.00	370.96	863.70	0.0000	0.00	0.000 (15)

Fondazione

Apertura limite fessure $w_{lim}=0.20$

n°	B	H	Af	Aeff	M	Mpf	ε	Sm	w
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	[cm]	[cm]	[cmq]	[cmq]	[kNm]	[kNm]	[%]	[mm]	[mm]
1	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (15)
2	100	110	22.62	1250.00	0.89	600.43	0.0000	0.00	0.000 (15)
3	100	110	22.62	1250.00	3.54	600.43	0.0000	0.00	0.000 (15)
4	100	110	22.62	1250.00	7.95	600.43	0.0000	0.00	0.000 (15)
5	100	110	22.62	1250.00	14.11	600.43	0.0000	0.00	0.000 (15)
6	100	110	22.62	1250.00	21.99	600.43	0.0000	0.00	0.000 (15)
7	100	110	31.67	1250.00	-266.22	-622.68	0.0000	0.00	0.000 (15)
8	100	110	31.67	1250.00	-259.69	-622.68	0.0000	0.00	0.000 (15)
9	100	110	31.67	1250.00	-253.04	-622.68	0.0000	0.00	0.000 (15)
10	100	110	31.67	1250.00	-246.26	-622.68	0.0000	0.00	0.000 (15)
11	100	110	31.67	1250.00	-239.39	-622.68	0.0000	0.00	0.000 (15)
12	100	110	31.67	1250.00	-232.42	-622.68	0.0000	0.00	0.000 (15)
13	100	110	31.67	1250.00	-225.36	-622.68	0.0000	0.00	0.000 (15)
14	100	110	31.67	1250.00	-218.24	-622.68	0.0000	0.00	0.000 (15)
15	100	110	31.67	1250.00	-211.05	-622.68	0.0000	0.00	0.000 (15)
16	100	110	22.62	1250.00	-203.82	-600.43	0.0000	0.00	0.000 (15)
17	100	110	22.62	1250.00	-196.55	-600.43	0.0000	0.00	0.000 (15)
18	100	110	22.62	1250.00	-189.24	-600.43	0.0000	0.00	0.000 (15)
19	100	110	22.62	1250.00	-181.93	-600.43	0.0000	0.00	0.000 (15)
20	100	110	22.62	1250.00	-174.60	-600.43	0.0000	0.00	0.000 (15)
21	100	110	22.62	1250.00	-167.28	-600.43	0.0000	0.00	0.000 (15)
22	100	110	22.62	1250.00	-159.98	-600.43	0.0000	0.00	0.000 (15)
23	100	110	22.62	1250.00	-152.71	-600.43	0.0000	0.00	0.000 (15)
24	100	110	22.62	1250.00	-145.47	-600.43	0.0000	0.00	0.000 (15)
25	100	110	22.62	1250.00	-138.28	-600.43	0.0000	0.00	0.000 (15)
26	100	110	22.62	1250.00	-131.16	-600.43	0.0000	0.00	0.000 (15)
27	100	110	22.62	1250.00	-124.10	-600.43	0.0000	0.00	0.000 (15)
28	100	110	22.62	1250.00	-117.13	-600.43	0.0000	0.00	0.000 (15)
29	100	110	22.62	1250.00	-110.25	-600.43	0.0000	0.00	0.000 (15)
30	100	110	22.62	1250.00	-103.47	-600.43	0.0000	0.00	0.000 (15)
31	100	110	22.62	1250.00	-96.81	-600.43	0.0000	0.00	0.000 (15)
32	100	110	22.62	1250.00	-90.28	-600.43	0.0000	0.00	0.000 (15)
33	100	110	22.62	1250.00	-83.88	-600.43	0.0000	0.00	0.000 (15)
34	100	110	22.62	1250.00	-77.64	-600.43	0.0000	0.00	0.000 (15)
35	100	110	22.62	1250.00	-71.55	-600.43	0.0000	0.00	0.000 (15)
36	100	110	22.62	1250.00	-65.63	-600.43	0.0000	0.00	0.000 (15)
37	100	110	22.62	1250.00	-59.89	-600.43	0.0000	0.00	0.000 (15)
38	100	110	22.62	1250.00	-54.35	-600.43	0.0000	0.00	0.000 (15)
39	100	110	22.62	1250.00	-49.01	-600.43	0.0000	0.00	0.000 (15)
40	100	110	22.62	1250.00	-43.88	-600.43	0.0000	0.00	0.000 (15)
41	100	110	22.62	1250.00	-38.98	-600.43	0.0000	0.00	0.000 (15)
42	100	110	22.62	1250.00	-34.32	-600.43	0.0000	0.00	0.000 (15)
43	100	110	22.62	1250.00	-29.90	-600.43	0.0000	0.00	0.000 (15)
44	100	110	22.62	1250.00	-25.74	-600.43	0.0000	0.00	0.000 (15)
45	100	110	22.62	1250.00	-21.85	-600.43	0.0000	0.00	0.000 (15)
46	100	110	22.62	1250.00	-18.24	-600.43	0.0000	0.00	0.000 (15)
47	100	110	22.62	1250.00	-14.92	-600.43	0.0000	0.00	0.000 (15)
48	100	110	22.62	1250.00	-11.91	-600.43	0.0000	0.00	0.000 (15)
49	100	110	22.62	1250.00	-9.21	-600.43	0.0000	0.00	0.000 (15)
50	100	110	22.62	1250.00	-6.83	-600.43	0.0000	0.00	0.000 (15)
51	100	110	22.62	1250.00	-4.79	-600.43	0.0000	0.00	0.000 (15)
52	100	110	22.62	1250.00	-3.09	-600.43	0.0000	0.00	0.000 (15)
53	100	110	22.62	1250.00	-1.76	-600.43	0.0000	0.00	0.000 (15)
54	100	110	22.62	1250.00	-0.79	-600.43	0.0000	0.00	0.000 (15)
55	100	110	22.62	1250.00	-0.20	-600.43	0.0000	0.00	0.000 (15)
56	100	110	0.00	0.00	0.00	0.00	0.0000	0.00	0.000 (15)

Elenco ferri

Simbologia adottata

n°	Indice del ferro
nf	numero ferri
D	diametro ferro espresso in [mm]
L	Lunghezza ferro espresso in [m]
P _{ferro}	Peso ferro espresso in [kN]

Paramento

n°	Tipo	nf	D [mm]	L [m]	P _r [kN]	P _{gr} [kN]	V _{cls} [mc]
1	Diritto inferiore	5	24.00	2.96	0.1030	0.5151	
2	Diritto superiore	6	24.00	2.97	0.1034	0.6202	
3	Diritto superiore	2	24.00	4.80	0.1671	0.3342	
4	Diritto inferiore	5	24.00	8.45	0.2942	1.4711	
5	Diritto superiore	1	24.00	5.15	0.1793	0.1793	
6	Diritto superiore	5	24.00	8.48	0.2953	1.4767	
7	Ripartitore	38	12.00	1.00	0.0087	0.3309	
8	Gancio	30	12.00	1.16	0.0101	0.3035	
Totale al metro						5.2786	5.87
Totale						533.40	5.87

Fondazione

n°	Tipo	nf	D [mm]	L [m]	P _r [kN]	P _{gr} [kN]	V _{cls} [mc]
1	Diritto superiore	5	24.00	8.30	0.2891	1.4455	
2	Diritto superiore	2	24.00	2.71	0.0944	0.1889	
3	Diritto inferiore	5	24.00	8.30	0.2891	1.4455	
4	Ripartitore	27	12.00	1.00	0.0087	0.2351	
5	Gancio	22	12.00	1.52	0.0132	0.2915	
Totale al metro						3.5765	7.16
Totale						367.75	7.16

Computo metrico

	U.M.	Quantità	Prezzo unitario [Euro]	Importo [Euro]
Calcestruzzo in elevazione	[mc]	5.87	72.30	424.42
Calcestruzzo in fondazione	[mc]	7.16	61.97	443.43

	U.M.	Quantità	Prezzo unitario [Euro]	Importo [Euro]
Calcestruzzo magro	[mc]	1.38	46.48	64.19
Acciaio per armatura	[kN]	8.8551	0.90	812.66
Casseformi	[mq]	15.14	13.94	211.02
Scavo a sezione obbligata	[mc]	7.16	9.30	66.55
Totale muro				2022.27
Totale				2022.27

10.4 ARMATURA E INCIDENZE

Elemento	Armatura		
	Lato terra	Lato scavo	Spilli
ELEVAZIONE	10Ø24	5Ø24	9Ø12/mq
	Lato superiore	Lato inferiore	Spilli
FONDAZIONE	5Ø24	5Ø24	9Ø12/mq

Elemento	Area [mc]	Lato	Armatura Longitudinale [kg]	Armatura di Ripartizione [kg]	Spilli	Sommano [kg]	Incidenza di progetto [kg/m³]
ELEVAZIONE	11.78	Terra	440.68	35.52	53.28	772.91	95
		Scavo	207.91	35.52			
FONDAZIONE	6.50	Sup	147.37	19.54	49.95	383.76	80
		Inf	147.37	19.54			