

# S.G.C. E78 GROSSETO-FANO

Tratto Siena Bettolle (A1)

Adeguamento a 4 corsie del tratto Siena-Ruffolo (Lotto 0)

## PROGETTO DEFINITIVO

COD. FI-81

R.T.I. di PROGETTAZIONE: Mandataria Mandante



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PROTOCOLLO

DATA

## 06 - Opere d'arte

### 06.07 Opere d'arte minori - Ponticelli e Manufatti idraulici

06.07.02 - Ponte Torrente Rilugo strada accesso aree interne Sv. Ruffolo (PT.01)

Relazione tecnica e di calcolo

CODICE PROGETTO			NOME FILE	REVISIONE	SCALA
PROGETTO	LIV. PROG.	N. PROG.	T00OM02STRRE01A		
DPFI0081	D	20	CODICE ELAB. T00OM02STRRE01	A	-
D					
C					
B					
A	Emissione		04/11/2020	PISTONE	MARTIGNONI RINALDI
REV.	DESCRIZIONE		DATA	REDATTO	VERIFICATO APPROVATO



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# 1 PREMESSA

La presente relazione tratta gli aspetti tecnico-stradali legati all'intervento in oggetto che riguarda la progettazione definitiva dell'adeguamento, da due a quattro corsie, del tronco stradale della SS n. 223 "di Paganico" nel tratto compreso tra lo svincolo con la Tangenziale Ovest di Siena (km 63.561 del tratto Grosseto-Siena) e lo svincolo di Ruffolo (km 2.800 del tratto Siena-Bettolle), comprensivo degli svincoli di inizio e fine intervento, al fine di realizzare un'arteria assimilabile ad una strada di tipo extraurbano principale (tipo B, a carreggiate separate – v. D.M. 05/11/2001), garantendo la continuità dell'Itinerario Internazionale E78 – S.G.C. "Grosseto – Fano".

## 1.1 Descrizione dell'intervento

Le opere geotecniche accessorie al completamento dell'opera sono:

- Spalle, per spalla 1 – 2, fondata su 6 pali trivellati Ø1000 di lunghezza  $L=12.0m$ .

Per le spalle si prevede la realizzazione di un'elevazione di altezza  $H$  variabile da 3.34m (per la spalla 2) a 4.50m (per la spalla 1).

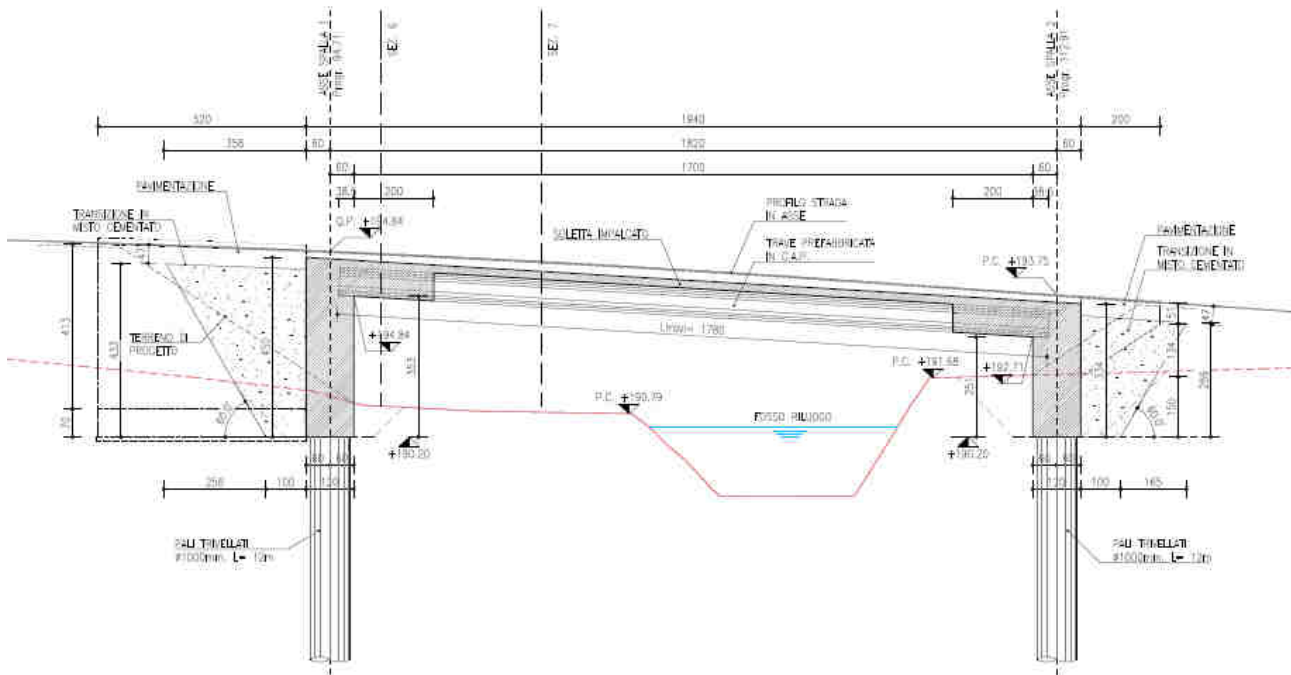


Figura 1: Sezione longitudinale in asse tracciato

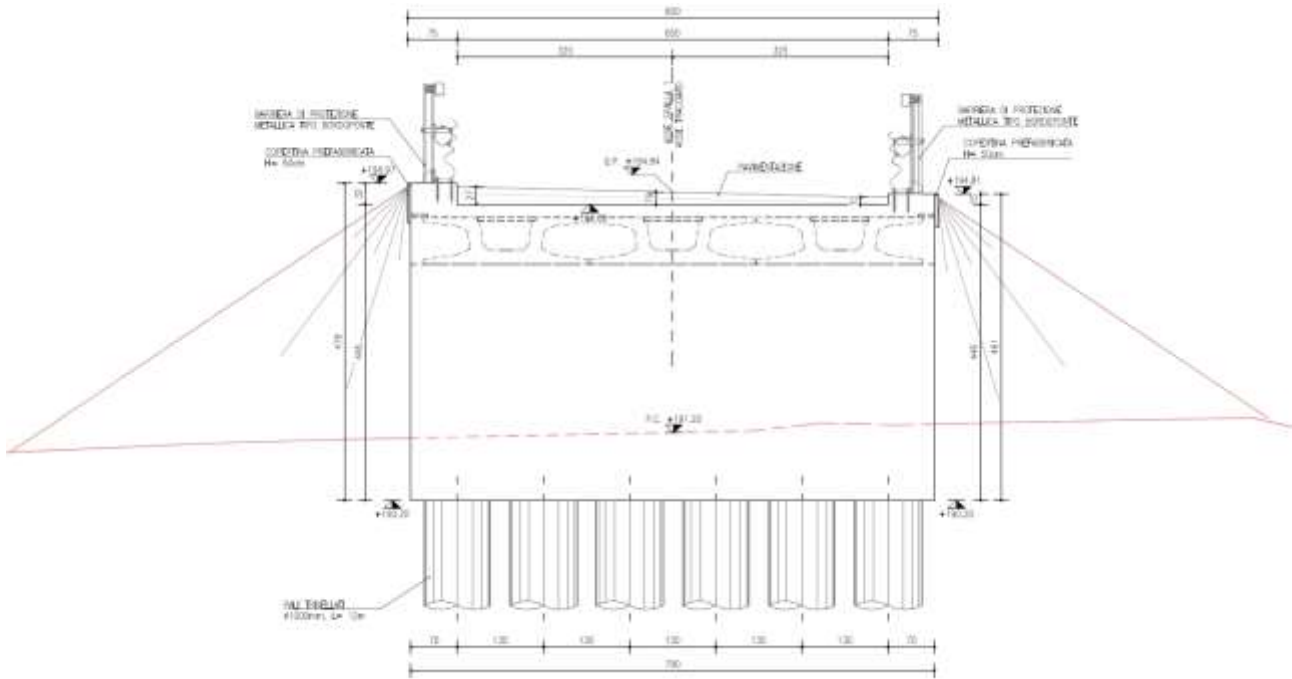


Figura 2: Spalla 1 – sezione trasversale

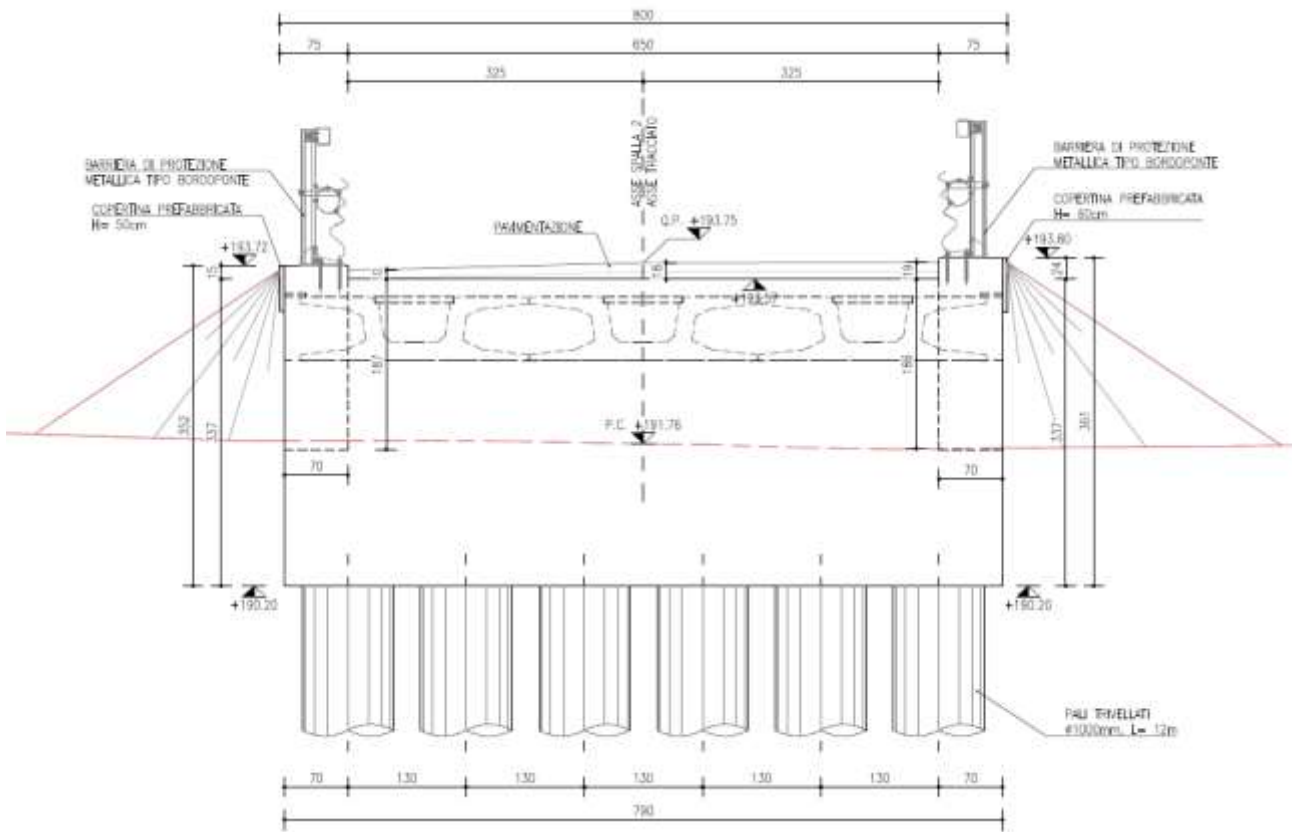


Figura 3: Spalla 2 – sezione trasversale

## 1.2 Inquadramento geografico

L'area di intervento è situata nel Comune di Siena.

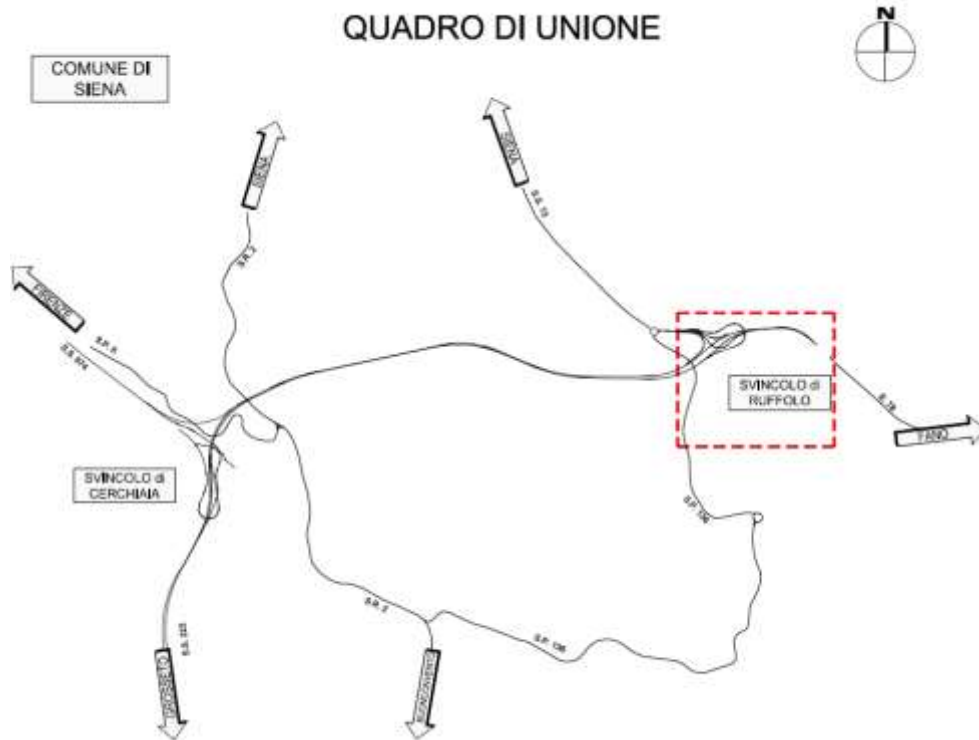


Figura 4: Area intervento – Quadro di unione

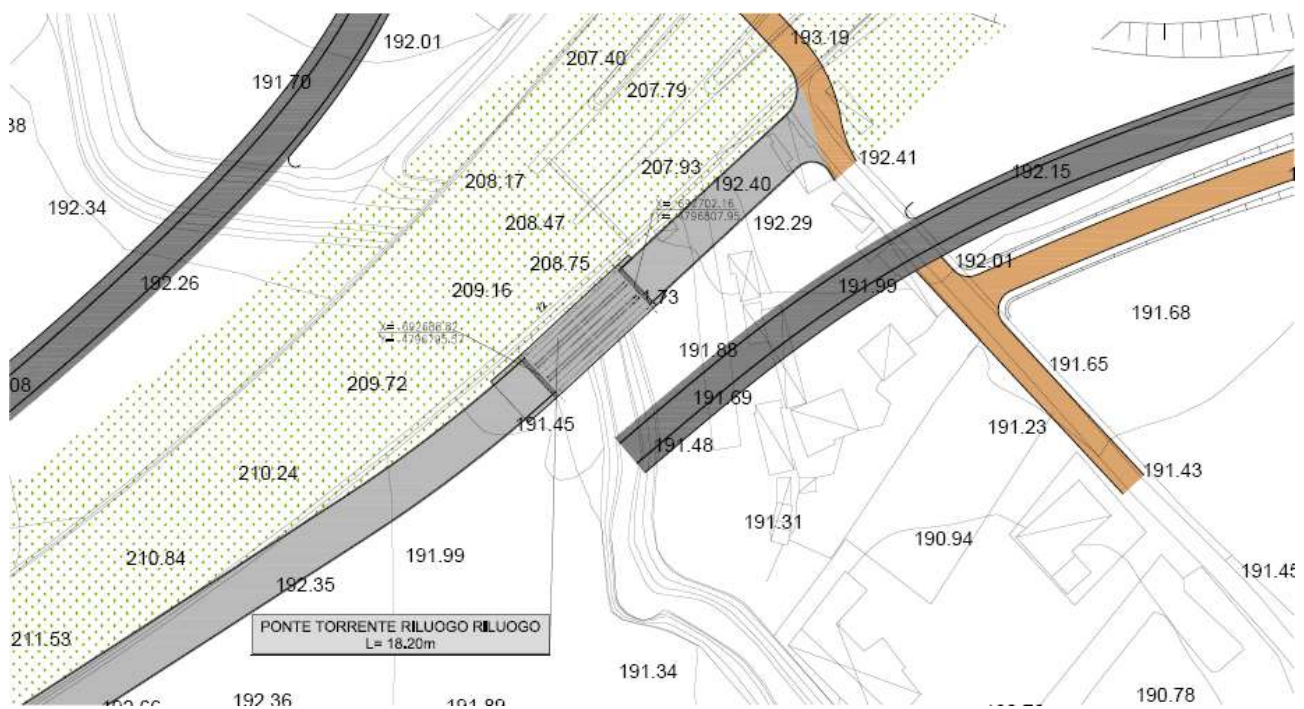


Figura 5: Area intervento – Stralcio planimetrico

### 1.3 Inquadramento geologico e geomorfologico

In merito a tali aspetti si rimanda al [1] indicato negli elaborati di riferimento riportati a seguire.

## 2 DOCUMENTAZIONE DI RIFERIMENTO

### 2.1 Elaborati a carattere generale

- [1] E78 Grosseto Fano – Tratto Siena – Bettolle (A1) – Adeguamento a 4 corsie del tratto Siena – Ruffolo (Lotto 0) – Progetto definitivo – Geologia e geotecnica – Geologia – Relazione geologica e idrogeologica – Elaborato: T00GE01GEORE01A
- [2] E78 Grosseto Fano – Tratto Siena – Bettolle (A1) – Adeguamento a 4 corsie del tratto Siena – Ruffolo (Lotto 0) – Progetto definitivo – Geologia e geotecnica – Geotecnica – Relazione geotecnica generale – Elaborato: T00GE04GETRE01A
- [3] E78 Grosseto Fano – Tratto Siena – Bettolle (A1) – Adeguamento a 4 corsie del tratto Siena – Ruffolo (Lotto 0) – Progetto definitivo – Geologia e geotecnica – Sismica – Relazione sismica – Elaborato: T00GE05GETRE02A

### 2.2 Elaborati specifici

- [4] E78 Grosseto Fano – Tratto Siena – Bettolle (A1) – Adeguamento a 4 corsie del tratto Siena – Ruffolo (Lotto 0) – Progetto definitivo – Opere d'arte – Generale – Tabella materiali – Elaborato: T00GE00STRDC01A
- [5] E78 Grosseto Fano – Tratto Siena – Bettolle (A1) – Adeguamento a 4 corsie del tratto Siena – Ruffolo (Lotto 0) – Progetto definitivo – Opere d'arte – Opere d'arte minori – Ponticelli e manufatti idraulici – Ponte Torrente Rilugo strada accesso aree interne Sv. Ruffolo (PT01) – Pianta, prospetto e sezioni – Elaborato: T00OM02STRDI01A



### 3 NORMATIVA DI RIFERIMENTO

#### 3.1 Normativa tecnica di riferimento

##### 3.1.1 Materiali

- [6] UNI EN 206-1 marzo 2006 – “Calcestruzzo - Parte 1: Specificazione, prestazione, produzione e conformità”;
- [7] UNI EN 197-1 marzo 2006 – “Cemento - Parte 1: Composizione, specificazioni e criteri di conformità per cementi comuni”;
- [8] UNI EN 197-2 marzo 2001 – “Cemento - Valutazione della conformità”;
- [9] UNI 11104 marzo 2004 – “Calcestruzzo: specificazione, prestazione, produzione e conformità”, Istruzioni complementari per l'applicazione delle EN 206-1”;
- [10] Consiglio Superiore dei Lavori Pubblici, 07/02/2003 – “Linee guida per il calcestruzzo strutturale, Linee guida per il calcestruzzo strutturale ad alta resistenza, Linee guida per il calcestruzzo preconfezionato”;
- [11] Consiglio Superiore dei Lavori Pubblici, 05/04/2013 – “Linee guida per la messa in opera del calcestruzzo strutturale e per la valutazione delle caratteristiche meccaniche del calcestruzzo indurito mediante prove non distruttive”;
- [12] D.M. 16/02/2007 – “Classificazione di resistenza al fuoco di prodotti ed elementi costruttivi di opere da costruzione”;
- [13] “Regolamento UE n°305/2011 del Parlamento Europeo e del Consiglio del 9 marzo 2011 che fissa condizioni armonizzate per la commercializzazione dei prodotti da costruzione e che abroga la direttiva 89/106/CEE del Consiglio”

##### 3.1.2 Costruzioni in c.a. e acciaio

###### 3.1.2.1 *Eurocodice 0 - “Criteri generali di progettazione strutturale”*

- [14] UNI EN 1990:2006;

###### 3.1.2.2 *Eurocodice 1 - “Azioni sulle strutture”*

- [15] UNI EN 1991-1-1:2004 – “Parte 1-1: Azioni in generale - Pesi per unità di volume, pesi propri e sovraccarichi per gli edifici”;
- [16] UNI EN 1991-1-2:2004 – “Parte 1-2: Azioni in generale - Azioni sulle strutture esposte al fuoco”;
- [17] UNI EN 1991-1-3:2004 – “Parte 1-3: Azioni in generale - Carichi da neve”;
- [18] UNI EN 1991-1-4:2005 – “Parte 1-4: Azioni in generale - Azioni del vento”;
- [19] UNI EN 1991-1-5:2004 – “Parte 1-5: Azioni in generale - Azioni termiche”;
- [20] UNI EN 1991-2:2005 – “Parte 2: Carichi da traffico sui ponti”;

###### 3.1.2.3 *Eurocodice 2 - “Progettazione delle strutture in calcestruzzo”*

- [21] UNI EN 1992-1-1:2005 – “Parte 1-1: Regole generali e regole per gli edifici”;
- [22] UNI EN 1992-1-2:2005 – “Parte 1-2: Regole generali - Progettazione strutturale contro l'incendio”;
- [23] UNI EN 1992-2:2006 – “Parte 2: Ponti di calcestruzzo - Progettazione e dettagli costruttivi”;

###### 3.1.2.4 *Eurocodice 3 - “Progettazione delle strutture in acciaio”*

- [24] UNI EN 1993-1-1:2005 – “Parte 1-1: Regole generali e regole per gli edifici”;
- [25] UNI EN 1993-1-2:2005 – “Parte 1-2: Regole generali - Progettazione strutturale contro l'incendio”;
- [26] UNI EN 1993-1-5:2007 – “Parte 1-5: Elementi strutturali a lastra”;
- [27] UNI EN 1993-1-8:2005 – “Parte 1-8: Progettazione dei collegamenti”;
- [28] UNI EN 1993-1-9:2005 – “Parte 1-9: Fatica”;
- [29] UNI EN 1993-1-10:2005 – “Parte 1-10: Resilienza del materiale e proprietà attraverso lo spessore”;
- [30] UNI EN 1993-2:2007 – “Parte 2: Ponti di acciaio”;

[31] UNI EN 1993-3-1:2007 – “Parte 3-1: Torri, pali e ciminiere - Torri e pali”;

[32] UNI EN 1993-5:2007 – “Parte 5: Pali e palancole”

### 3.1.2.5 Eurocodice 4 - “Progettazione delle strutture composte acciaio-calcestruzzo”

[33] UNI EN 1994-1-1:2005 – “Parte 1-1: Regole generali e regole per gli edifici”;

[34] UNI EN 1994-1-2:2005 – “Parte 1-2: Regole generali - Progettazione strutturale contro l'incendio”;

[35] UNI EN 1994-2:2006 – “Parte 2: Regole generali e regole per i ponti”;

### 3.1.3 **Geotecnica**

#### 3.1.3.1 Eurocodice 7 - “Progettazione geotecnica”

[36] UNI EN 1997-1:2005 – “Parte 1: Regole generali”;

### 3.1.4 **Sismica**

#### 3.1.4.1 Eurocodice 8 - “Progettazione delle strutture per la resistenza sismica”

[37] UNI EN 1998-1:2005 – “Parte 1: Regole generali, azioni sismiche e regole per gli edifici”;

[38] UNI EN 1998-2:2009 – “Parte 2: Ponti”;

[39] UNI EN 1998-5:2003 – “Parte 5: Fondazioni, opere di sostegno e geotecniche”

## 3.2 Normativa tecnica nazionale

[40] D.M. Min. Il. TT. 17/02/2018 – “Aggiornamento delle norme tecniche per le costruzioni”;

[41] Circolare LL.PP. n°7 21/01/2019 - “Istruzioni per l’applicazione dell’Aggiornamento delle norme tecniche per le costruzioni di cui al D.M. 17 febbraio 2018”;

[42] CNR DT 207/2008 - “Istruzioni per la valutazione delle azioni e degli effetti del vento sulle costruzioni”;

[43] D.M. 31/07/2012 – “Approvazione delle Appendici nazionali recanti i parametri tecnici per l’applicazione degli Eurocodici”;

[44] D.P.R. n°380 06/06/2001 – “Testo unico delle disposizioni legislative e regolamentari in materia di edilizia”;

## 3.3 Bibliografia e altri riferimenti

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[46] Migliacci – F. Mola – “Progetto agli stati limite delle strutture in c.a.” - Masson Italia Editori 1985

[47] C. Cestelli Guidi - “Geotecnica e tecnica delle fondazioni” - Ulrico Hoepli Editore 1987

[48] R. Lancellotta – “Geotecnica” - Edizioni Zanichelli 1987

[49] Bowles J.E.: “Foundations Analysis and Design” 4th edition - McGraw-Hill – New York, 1988

[50] Bustamante M., Gianceselli L. [1982] - "Pile bearing capacity prediction by means of static penetrometer CPT" -.Pr. of the 2th European symposium on penetration testing, Amsterdam.

[51] H.G. Poulos, E.H. Davis. “Analisi e progettazione di fondazioni su pali”;

[52] S. Rampello, L. Callisto L. Masini. “Spinta delle terre sulle strutture di sostegno”;

[53] L.C. Reese, W.R.Cox, F.D. Koop [1974] - "Analysis of laterally loaded piles in sand" – Paper N° OCT 2080, Proceedings, Fifth Annual Offshore Technology Conference, Houston, Texas, 1975;

[54] L.C. Reese, W.R.Cox, F.D. Koop [1975] - "Field testing and analysis of laterally loaded piles in stiff clay" – Paper N° OCT 2313, Proceedings, Seventh Offshore Technology Conference, Houston, Texas, 1975;

[55] L.C. Reese, R.C. Welch [1975] - "Lateral loading of deep foundations in stiff clay" – Journal of the geotechnical Division, ASCE, Vol. 101, No GT7, Proceedings Paper 11456, 1975, pp. 633 – 649.

[56] R.C. Welch, L.C. Reese [1972] - "Laterally loaded Behavior of drilled shafts" –

Research Report N° 3-5-65-89, conducted for Texas Highway Department and U.S. Department of Transportation, Federal Highway Administration, Bureau of Public Roads, by Center for Highway Research, The University of Austin.

## 4 MATERIALI

### 4.1 Calcestruzzo

#### 4.1.1 Calcestruzzo per magrone – C12/15

Classe minima	C12/15	
Classe di esposizione ambientale	X0	
Resistenza caratteristica a compressione cubica a 28 gg	$R_{ck}$	15.00 MPa
Resistenza caratteristica a compressione cilindrica	$f_{ck} = R_{ck} * 0.83 =$	12.45 MPa
Resistenza media a compressione cilindrica	$f_{cm} = f_{ck} + 8 =$	20.45 MPa
Modulo elastico	$E_c = 22000 * (f_{cm} / 10)^{0.3} =$	27267 MPa
Valore medio di resistenza a trazione semplice	$f_{ctm} = 0.3 * (f_{ck})^{2/3} =$	1.61 MPa
Resistenza di calcolo a trazione semplice	$f_{ctk} = 0.7 * f_{ctm} =$	1.13 MPa
<u>Stato limite ultimo</u>		
Coefficiente parziale di sicurezza	$\gamma_C =$	1.5
Coefficiente riduttivo per resistenze di lunga durata	$\alpha_{CC} =$	0.85
Resistenza di calcolo a compressione	$f_{cd} = \alpha_{CC} * f_{ck} / \gamma_C =$	7.06 MPa
Resistenza di calcolo a trazione semplice	$f_{ctd} = f_{ctk} / \gamma_C =$	0.75 MPa
Valore ultimo della deformazione a compressione	$\epsilon_{cu} =$	3.5 ‰
<u>Stato limite di esercizio</u>		
Tensione max di compressione – Comb. Rara	$\sigma_c = 0.60 * f_{ck} =$	7.47 MPa
Tensione max di compressione – Comb. Quasi Permanente	$\sigma_c = 0.45 * f_{ck} =$	5.60 MPa

#### 4.1.2 Calcestruzzo per pali di fondazione – C28/35

Classe minima	C28/35	
Classe di esposizione ambientale	XC2	
Resistenza caratteristica a compressione cubica a 28 gg	$R_{ck}$	35.00 MPa
Resistenza caratteristica a compressione cilindrica	$f_{ck} = R_{ck} * 0.83 =$	29.05 MPa
Resistenza media a compressione cilindrica	$f_{cm} = f_{ck} + 8 =$	37.05 MPa
Modulo elastico	$E_c = 22000 * (f_{cm} / 10)^{0.3} =$	32588 MPa
Valore medio di resistenza a trazione semplice	$f_{ctm} = 0.3 * (f_{ck})^{2/3} =$	2.83 MPa
Resistenza di calcolo a trazione semplice	$f_{ctk} = 0.7 * f_{ctm} =$	1.98 MPa
<u>Stato limite ultimo</u>		
Coefficiente parziale di sicurezza	$\gamma_C =$	1.5
Coefficiente riduttivo per resistenze di lunga durata	$\alpha_{CC} =$	0.85
Resistenza di calcolo a compressione	$f_{cd} = \alpha_{CC} * f_{ck} / \gamma_C =$	16.46 MPa
Resistenza di calcolo a trazione semplice	$f_{ctd} = f_{ctk} / \gamma_C =$	1.32 MPa
Valore ultimo della deformazione a compressione	$\epsilon_{cu} =$	3.5 ‰
<u>Stato limite di esercizio</u>		
Tensione max di compressione – Comb. Rara	$\sigma_c = 0.60 * f_{ck} =$	17.43 MPa
Tensione max di compressione – Comb. Quasi Permanente	$\sigma_c = 0.45 * f_{ck} =$	13.07 MPa

#### 4.1.3 Calcestruzzo per elevazioni pile e spalle – C32/40

Classe minima	C32/40	
Classe di esposizione ambientale	XC2 – XD1 – XF4	
Resistenza caratteristica a compressione cubica a 28 gg	$R_{ck}$	40.00 MPa
Resistenza caratteristica a compressione cilindrica	$f_{ck} = R_{ck} * 0.83 =$	33.20 MPa
Resistenza media a compressione cilindrica	$f_{cm} = f_{ck} + 8 =$	41.20 MPa
Modulo elastico	$E_c = 22000 * (f_{cm} / 10)^{0.3} =$	33643 MPa
Valore medio di resistenza a trazione semplice	$f_{ctm} = 0.3 * (f_{ck})^{2/3} =$	3.10 MPa
Resistenza di calcolo a trazione semplice	$f_{ctk} = 0.7 * f_{ctm} =$	2.17 MPa
<u>Stato limite ultimo</u>		
Coefficiente parziale di sicurezza	$\gamma_C =$	1.5
Coefficiente riduttivo per resistenze di lunga durata	$\alpha_{CC} =$	0.85
Resistenza di calcolo a compressione	$f_{cd} = \alpha_{CC} * f_{ck} / \gamma_C =$	18.81 MPa
Resistenza di calcolo a trazione semplice	$f_{ctd} = f_{ctk} / \gamma_C =$	1.45 MPa
Valore ultimo della deformazione a compressione	$\epsilon_{cu} =$	3.5 ‰
<u>Stato limite di esercizio</u>		
Tensione max di compressione – Comb. Rara	$\sigma_c = 0.60 * f_{ck} =$	19.92 MPa
Tensione max di compressione – Comb. Quasi Permanente	$\sigma_c = 0.45 * f_{ck} =$	14.94 MPa

## 4.2 Acciaio

#### 4.2.1 Acciaio in barre per calcestruzzo armato – B450C

Classe	B450C	
Tensione caratteristica di rottura a trazione	$f_{tk}$	$\geq 540$ MPa
Tensione caratteristica di snervamento a trazione	$f_{yk}$	$\geq 450$ MPa
Modulo elastico	$E_s =$	210000 MPa
<u>Stato limite ultimo</u>		
Coefficiente parziale di sicurezza	$\gamma_s =$	1.15
Resistenza di calcolo	$f_{yd} = f_{yk} / \gamma_s =$	391.30 MPa
Valore ultimo della deformazione a trazione	$\epsilon_{cu} =$	10 ‰
<u>Stato limite di esercizio</u>		
Tensione max di trazione	$\sigma_s = 0.80 * f_{yk} =$	360.00 MPa

## 4.3 Durabilità dei materiali

#### 4.3.1 Conglomerati cementizi

Le classi di esposizione e le conseguenti limitazioni sulla composizione del calcestruzzo sono state ricavate ai sensi della normativa UNI EN 206-1 e UNI 11104, delle istruzioni contenute nella C.M. n°7 per l'applicazione delle [40].

A seconda dell'esposizione ambientale, per opere con  $V_N = 50$  anni la circolare al punto C4.1.6.1.3 impone il rispetto dei limiti di copriferro riportati nella tabella successiva e, per strutture con  $V_N = 100$  anni, una maggiorazione di copriferro pari a  $\Delta c_{min} = +10$  mm. Per classi di resistenza inferiori a  $C_{min}$  i valori sono da aumentare di  $\Delta c_{min} = +5$  mm. Per produzioni di elementi sottoposte a controllo di qualità che preveda anche la verifica dei copriferri, i valori della tabella possono essere ridotti di  $\Delta c_{min} = -5$  mm.

A tali valori di tabella vanno aggiunte le tolleranze di posa, pari a  $\Delta c_{dev} = +10$  mm o minore, secondo indicazioni di norme di comprovata validità.

**Tabella 1: Copriferri minimi in mm ( $V_N = 50$  anni)**

			barré da ca. elementi a piastra		barré da ca. altri elementi		cavi da cap. elementi a piastra		cavi da cap. altri elementi	
$C_{min}$	$C_0$	ambiente	$C < C_0$	$C_{min} < C < C_0$	$C < C_0$	$C_{min} < C < C_0$	$C < C_0$	$C_{min} < C < C_0$	$C < C_0$	$C_{min} < C < C_0$
C25/30	C35/45	ordinario	15	20	20	25	25	30	30	35
C30/37	C40/50	aggressivo	25	30	30	35	35	40	40	45
C35/45	C45/55	molto ag.	35	40	40	45	45	50	50	55

**Tabella 2: Condizioni ambientali e classi di esposizioni**

Condizioni ambientali	Classe di esposizione
Ordinarie	XC0, XC1, XC2, XC3, XF1
Aggressive	XC4, XD1, XS1, XA1, XA2, XF2, XF3
Molto aggressive	XD2, XD3, XS2, XS3, XA3, XF4

Elementi gettati in opera – Pali di fondazione

- Classe di esposizione

Corrosione indotta da carbonatazione XC2  
Parti di strutture di contenimento liquidi, fondazioni. Calcestruzzo armato ordinario o precompresso prevalentemente immerso in acqua o terreno non aggressivo.

- Condizioni ambientali Ordinarie

- Requisiti minimi calcestruzzi

Rapporto acqua/cemento < 0.55  
Classe di resistenza > C25/30  
Dosaggio cemento > 320 kg/m<sup>3</sup>

- Copriferro nominale netto:

$$C_{nom} = C_{min} + \Delta C_{min} + \Delta C_{dev} = 25 + 0 + 10 = 35 \text{ mm} \rightarrow c = 75 \text{ mm}$$

Elementi gettati in opera – Elevazioni pile e spalle

- Classe di esposizione

Corrosione indotta da carbonatazione XC4  
Superfici non a contatto con acqua non compresa nella classe XC2. Calcestruzzi a vista in ambienti urbani. Calcestruzzo armato ordinario in esterni con superfici soggette ad alternanze di asciutto ed umido.

Attacco dei cicli di gelo/disgelo con o senza disgelanti XF2  
Elementi come parti di ponti che in altro modo sarebbero classificati come XF1 ma che sono esposti direttamente o indirettamente agli agenti disgelanti

Corrosione indotta da cloruri XD1  
Calcestruzzo armato ordinario in superfici o parti di ponte e viadotti esposti a spruzzi d'acqua contenenti cloruri

- Condizioni ambientali Aggressive
- Requisiti minimi calcestruzzi
  - Rapporto acqua/cemento < 0.50
  - Classe di resistenza > C30/37
  - Dosaggio cemento > 340 kg/m<sup>3</sup>

- Copriferro nominale netto:

$$c_{nom} = c_{min} + \Delta c_{min} + \Delta c_{dev} = 30 + 0 + 10 = 40 \text{ mm} \rightarrow c = 40 \text{ mm}$$

## 5 CARATTERIZZAZIONE GEOTECNICA

### 5.1 Parametri geotecnici

I parametri geotecnici costitutivi dei terreni che interessano le opere in oggetto, utilizzati nelle analisi svolte, sono stati desunti dal [2]. La tabella seguente riporta i parametri di progetto utilizzati nei calcoli.

Unità geotecniche	Peso di volume naturale	Peso di volume saturo	Coesione efficace	Angolo di resistenza a taglio	Coesione non drenata	Modulo di elasticità
	$\gamma_N$ [kN/m <sup>3</sup> ]	$\gamma_{SAT}$ [kN/m <sup>3</sup> ]	$c'$ [kPa]	$\varphi$ [°]	$c_u$ [kPa]	$E$ [MPa]
Unità FAA	20.0	21.0	30	28.0	200	20
Unità FAAa	19.5	20.5	20	24.0	75	10
Unità b	19.5	20.5	15	30.0	75	10



## 6 CRITERI DI CALCOLO

### 6.1 Descrizione dei criteri di calcolo

Le opere oggetto della presente relazione sono state progettate e calcolate secondo i metodi della scienza delle costruzioni, adottando per le verifiche il criterio degli stati limite (S.L.).

I criteri generali di sicurezza, le azioni di calcolo e le caratteristiche dei materiali sono stati assunti in conformità con il D.M. 17.02.2018 – “Aggiornamento delle norme tecniche per le costruzioni” e relativa circolare esplicativa (Circolare 21.01.2019 n. 7/C.S.LL.PP.).

Con riferimento alle NTC, per le opere in oggetto si considerano i seguenti parametri di calcolo:

Vita nominale	$V_N = 50$ anni (§ 2.4.1 “Costruzioni con livelli di prestazioni ordinari”)
Classe d’uso	IV (§ 2.4.2, “Costruzioni con funzioni pubbliche o strategiche importanti, anche con riferimento alla gestione della protezione civile in caso di calamità. Industrie con attività particolarmente pericolose per l’ambiente. Reti viarie di tipo A o B, di cui al DM 5/11/2001, n. 6792, “Norme funzionali e geometriche per la costruzione delle strade”, e di tipo C quando appartenenti ad itinerari di collegamento tra capoluoghi di provincia non altresì serviti da strade di tipo A o B. Ponti e reti ferroviarie di importanza critica per il mantenimento delle vie di comunicazione, particolarmente dopo un evento sismico. Dighe connesse al funzionamento di acquedotti e a impianti di produzione di energia elettrica”)
Coefficiente d’uso	$C_U = 2.0$
Periodo di riferimento	$V_R = V_N \cdot C_U = 100$ anni

### 6.2 Software di calcolo

Sono stati utilizzati i programmi di calcolo elencati nel seguito.

La scrivente ha esaminato preliminarmente la documentazione a corredo dei software per valutarne l’affidabilità e soprattutto l’idoneità al caso specifico. Tale documentazione, contiene una esauriente descrizione delle basi teoriche e degli algoritmi impiegati, l’individuazione dei campi d’impiego, nonché casi prova interamente risolti e commentati.

Il sottoscritto, inoltre, ha verificato l’affidabilità dei codici di calcolo attraverso un numero significativo di casi prova in cui i risultati dell’analisi numerica sono stati confrontati con soluzioni teoriche.

#### 6.2.1 Calcolo paratie di sostegno

Titolo:

**PARATIE** plus™  
by CeAS

Version 18.1.3

[paratieplus.com](http://paratieplus.com)

Developed by

[Ce.A.S. s.r.l. \(ITALY\)](#)

with the scientific supervision of

Roberto Nova - professor of SOIL MECHANICS

at Politecnico di Milano (ITALY)

User Interface created in assistance with

[eFarm Group s.r.l.](#)

Caratteristiche: Programma nonlineare ad elementi finiti per l'analisi di strutture di sostegno flessibili  
 Autore: Ce.A.S. s.r.l. – Milano  
 Distribuzione: Harpaceas s.r.l. - Milano  
 Versione: 18.1.3

L'analisi strutturale delle paratie è stata svolta mediante il codice di calcolo PARATIE PLUS® 18.0 distribuito dalla Harpaceas.

PARATIE® è un codice agli elementi finiti che simula il problema di uno scavo sostenuto da diaframmi flessibili e permette di valutare il comportamento della parete di sostegno durante tutte le fasi intermedie e nella configurazione finale. Il problema è visto ad un problema piano in cui viene analizzata una "fetta" di parete di larghezza unitaria e quindi risulta idoneo a studiare problemi in cui vi siano importanti effetti tridimensionali.

La modellazione numerica dell'interazione terreno-struttura e del tipo "trave su suolo elastico", dove le pareti di sostegno vengono rappresentate con elementi finiti trave il cui comportamento è definito dalla rigidezza flessionale EJ, mentre il terreno viene simulato attraverso elementi elastoplastici monodimensionali (molle) connessi ai nodi delle paratie: ad ogni nodo convergono uno o al massimo due elementi terreno.

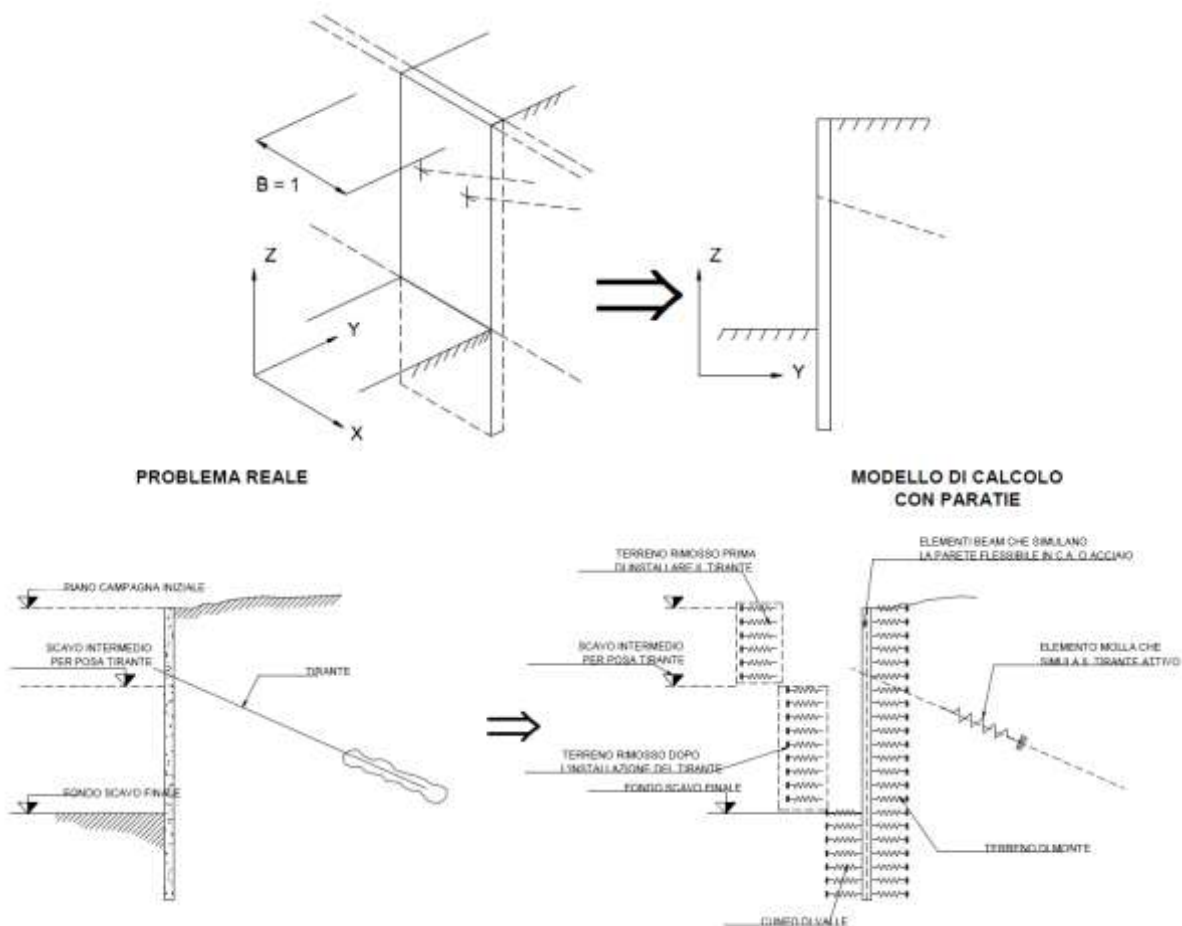


Figura 6: Schema teorico del modello di calcolo

Il limite di questo schema sta nell'ammettere che ogni porzione di terreno, schematizzata da una "molla", abbia comportamento del tutto indipendente dalle porzioni adiacenti; l'interazione fra le varie regioni di terreno è affidata alla rigidezza flessionale della parete.

La realizzazione dello scavo sostenuto da una o due paratie, eventualmente tirantate, viene seguita in tutte le varie fasi attraverso un'analisi statica incrementale. Poiché il comportamento degli elementi finiti e di tipo elasto-plastico, ogni configurazione dipende in generale dalle configurazioni

precedenti e lo sviluppo di deformazioni plastiche ad un certo passo condiziona la risposta della struttura nei passi successivi. La soluzione ad ogni nuova configurazione (step) viene raggiunta attraverso un calcolo iterativo alla Newton-Raphson (Bathe (1996)).

L'analisi ha lo scopo di indagare la risposta strutturale in termini di deformazioni laterali subite dalla parete durante le varie fasi di scavo e di conseguenza la variazione delle pressioni orizzontali nel terreno. Per far questo, in ogni nodo sono definiti due soli gradi di libertà, lo spostamento orizzontale e la rotazione attorno all'asse X ortogonale al piano della struttura (positiva se antioraria).

Con questa impostazione gli sforzi verticali nel terreno sono indipendenti, ovvero non sono influenzati dal comportamento deformativo orizzontale, ma solo basati sulle classiche ipotesi di distribuzione geostatica.

### 6.2.1.1 Ipotesi generali di calcolo

Le analisi vengono svolte considerando le seguenti ipotesi:

Stato piano nelle deformazioni (paratia di lunghezza infinita);

Terreno modellato come un letto di molle con legame costitutivo elastico-perfettamente plastico con criterio di rottura di Mohr-Coulomb;

Struttura discretizzata in elementi perfettamente elastici, nel caso di elementi discreti (pali), rigidità flessionale pari a quella di una sezione rettangolare a inerzia equivalente;

Falda introdotta definendo le quote piezometriche di valle e di monte (modificabili nell'analisi);

Deformabilità del terreno con molle di rigidezza secondo il seguente modello (Becci & Nova, 1987):

$$K = E \cdot \frac{\Delta}{L}$$

$E$

Modulo di rigidezza del terreno ( $E_{VC}$ ,  $E_{UR}$  a seconda della storia tensionale)

$\Delta$

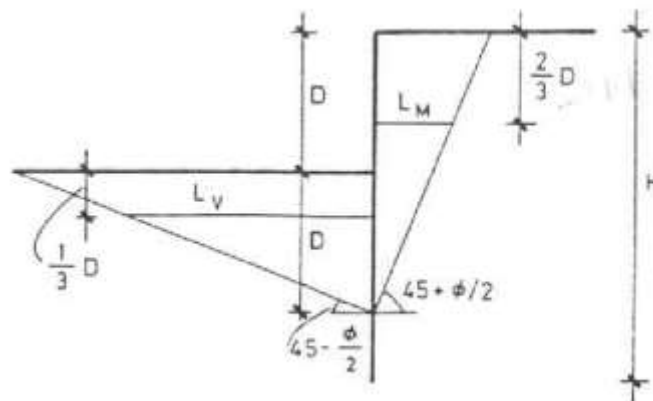
Passo di discretizzazione della struttura

$$L_M = \frac{2}{3} \cdot \min(H; 2 \cdot D) \cdot \tan\left(45 - \frac{\phi}{2}\right)$$

Grandezza geometrica caratteristica zona attiva di monte

$$L_V = \frac{2}{3} \cdot \min(H - D; D) \cdot \tan\left(45 + \frac{\phi}{2}\right)$$

Grandezza geometrica caratteristica zona attiva di valle



Sovraccarichi a monte ed a valle della paratia trasformati in spinte sul paramento in accordo a quanto previsto dalla teoria elastica (semispazio elastico omogeneo).

## 7 CRITERI DI VERIFICA

### 7.1 Combinazioni di carico

Le opere oggetto della presente relazione Come riportato al §2.5.3 delle [40], si sono considerate le seguenti combinazioni delle azioni:

$\gamma_{G1} \cdot G_1 + \gamma_{G2} \cdot G_2 + \gamma_P \cdot P + \gamma_{Q1} \cdot Q_{k1} + \sum_{j=2}^n \gamma_{Qj} \cdot \psi_{0j} \cdot Q_{kj}$	Combinazione fondamentale SLU
$G_1 + G_2 + P + Q_{k1} + \psi_{02} \cdot Q_{k2} + \sum_{j=3}^n \psi_{0j} \cdot Q_{kj}$	Combinazione caratteristica rara SLE
$G_1 + G_2 + P + \psi_{11} \cdot Q_{k1} + \sum_{j=2}^n \psi_{2j} \cdot Q_{kj}$	Combinazione frequente SLE
$G_1 + G_2 + P + \sum_{j=1}^n \psi_{2j} \cdot Q_{kj}$	Combinazione quasi permanente SLE
$E + G_1 + G_2 + P + \sum_{j=1}^n \psi_{2j} \cdot Q_{kj}$	Combinazione sismica SLE e SLU
$G_1 + G_2 + P + A_d + \sum_{j=1}^n \psi_{2j} \cdot Q_{kj}$	Combinazione eccezionale SLU
$G_1$	Masse dei pesi propri strutturali
$G_2$	Masse dei carichi permanenti non strutturali
$P$	Precompressione e pretensione
$Q_{ki}$	Masse dei carichi accidentali
$E$	Azione sismica
$A_d$	Azione eccezionale

A I coefficienti di contemporaneità delle azioni e i coefficienti parziali da adottare per gli SLU sono riportati nel seguito.

Tab. 2.6.I – Coefficienti parziali per le azioni o per l'effetto delle azioni nelle verifiche SLU

		Coefficiente	EQU	A1	A2
		$\gamma_f$			
Carichi permanenti $G_i$	Favorevoli	$\gamma_{Gi}$	0,9	1,0	1,0
	Sfavorevoli		1,1	1,3	1,0
Carichi permanenti non strutturali $G_s^{(1)}$	Favorevoli	$\gamma_{Gs}$	0,8	0,8	0,8
	Sfavorevoli		1,5	1,5	1,3
Azioni variabili Q	Favorevoli	$\gamma_{Qs}$	0,0	0,0	0,0
	Sfavorevoli		1,5	1,5	1,3

Tab. 2.5.I – Valori dei coefficienti di combinazione

Categoria/Azione variabile	$\psi_{0j}$	$\psi_{1j}$	$\psi_{2j}$
Categoria A - Ambienti ad uso residenziale	0,7	0,5	0,3
Categoria B - Uffici	0,7	0,5	0,3
Categoria C - Ambienti suscettibili di affollamento	0,7	0,7	0,6
Categoria D - Ambienti ad uso commerciale	0,7	0,7	0,6
Categoria E - Aree per immagazzinamento, uso commerciale e uso industriale Biblioteche, archivi, magazzini e ambienti ad uso industriale	1,0	0,9	0,8
Categoria F - Rimesse, parcheggi ed aree per il traffico di veicoli (per autoveicoli di peso $\leq 30$ kN)	0,7	0,7	0,6

Categoria G - Rimesse, parcheggi ed aree per il traffico di veicoli (per autoveicoli di peso > 30 kN)	0,7	0,5	0,3
Categoria H - Coperture accessibili per sola manutenzione	0,0	0,0	0,0
Categoria I - Coperture praticabili	da valutarsi caso per caso		
Categoria K - Coperture per usi speciali (impianti, eliporti, ...)			
Vento	0,6	0,2	0,0
Neve (a quota ≤ 1000 m s.l.m.)	0,5	0,2	0,0
Neve (a quota > 1000 m s.l.m.)	0,7	0,5	0,2
Variazioni termiche	0,6	0,5	0,0

## 7.2 Verifica di resistenza Stati Limite Ultimi strutturali (SLU STR)

### 7.2.1 Sezioni in cemento armato

Come riportato al §2.3 delle [40], per ogni stato limite ultimo deve essere rispettata la condizione:

$$E_d \leq R_d$$

$E_d = E(\gamma_F \cdot F_k; X_k/\gamma_M; a_d)$  Valore di progetto dell'azione o dell'effetto dell'azione

$R_d = R(\gamma_F \cdot F_k; X_k/\gamma_M; a_d)$  Valore di progetto della resistenza del sistema geotecnico

$\gamma_F \cdot F_k$  Azioni di progetto

$X_k/\gamma_M$  Proprietà del materiale di progetto

$a_d$  Geometria di progetto

$\gamma_M$  Coefficiente parziale di sicurezza del materiale

#### 7.2.1.1 Verifica a presso/tenso flessione

Come previsto al §4.1.2.1.2.4 delle [40] con riferimento alla generica sezione, la verifica di resistenza allo SLU si esegue controllando che:

$$M_{Rd} = M_{Rd}(N_{Ed}) \geq M_{Ed}$$

$M_{Rd}$  Valore di calcolo del momento resistente corrispondente a  $N_{Ed}$

$N_{Ed}$  Valore di calcolo della componente assiale (sforzo normale)

$M_{Ed}$  Valore di calcolo della componente flettente dell'azione

#### 7.2.1.2 Verifica a taglio

Secondo quanto previsto §4.1.2.1.3 delle [40], indicato con  $V_{Ed}$  il valore di calcolo dello sforzo di taglio agente allo SLU, si verifica in generale che risulti:

$$V_{Ed} < V_{Rd}$$

*Elementi senza armature resistenti a taglio*

$$V_{Rd,c} = \max \left\{ \left( 0.18 \cdot k \cdot \frac{\sqrt{100 \cdot \rho_l \cdot f_{ck}}}{\gamma_c} + 0.15 \cdot \sigma_{cp} \right) \cdot b_w \cdot d; (v_{min} + 0.15 \cdot \sigma_{cp}) \cdot b_w \cdot d \right\} \quad \text{Resistenza di calcolo a taglio}$$

$$k = 1 + \sqrt{\frac{200}{d}} \leq 2$$

$$v_{min} = 0.035 \cdot \sqrt{k^3} \cdot \sqrt{f_{ck}}$$

$$\rho_l = \frac{A_{sl}}{b_w \cdot d} \leq 0.02$$

Rapporto percentuale armatura in zona tesa  $A_{sl}$

$$\sigma_{cp} = \frac{N_{Ed}}{A_c} \leq 0.2 \cdot f_{cd}$$

Tensione media di compressione nella sezione

$d$

Altezza utile della sezione (mm)

$b_w$

Larghezza minima della sezione (mm)

### Elementi provvisti di armature resistenti a taglio

$$V_{Rd} = \min(V_{Rd,s}; V_{Rd,max})$$

Resistenza di calcolo a taglio

$$V_{Rd,s} = 0.9 \cdot d \cdot \frac{A_{sw}}{s} \cdot f_{yd} \cdot (\cot \alpha + \cot \theta) \cdot \sin \alpha$$

Resistenza a taglio-trazione

$$V_{Rd,max} = 0.9 \cdot d \cdot b_w \cdot \alpha_c \cdot f'_{cd} \cdot \frac{(\cot \alpha + \cot \theta)}{1 + \cot^2 \theta}$$

Resistenza a taglio-compressione

$\theta$

Inclinazione puntoni di calcestruzzo rispetto all'asse dell'elemento ( $1 \leq \cot \theta \leq 2.5$ )

$\alpha$

Inclinazione dell'armatura trasversale rispetto all'asse dell'elemento

$A_{sw}$

Area dell'armatura trasversale

$s$

Interasse tra due armature trasversali consecutive

$$f'_{cd} = 0.5 \cdot f_{cd}$$

Resistenza a compressione ridotta del calcestruzzo d'anima

$\alpha_c$

Coefficienti maggiorativi pari a:

1

per membrature non compresse

$1 + \sigma_{cp}/f_{cd}$

per  $0 \leq \sigma_{cp} < 0.25 \cdot f_{cd}$

$$1.25 \quad \text{per } 0.25 \cdot f_{cd} \leq \sigma_{cp} < 0.50 \cdot f_{cd}$$

$$2.5 \cdot (1 - \sigma_{cp}/f_{cd}) \quad \text{per } 0.50 \cdot f_{cd} \leq \sigma_{cp} < f_{cd}$$

### 7.2.2 Risultati verifiche PARATIE®

Le verifiche strutturali vengono eseguite automaticamente in PARATIE® e riportate negli allegati di calcolo, a cui si rimanda per ulteriori dettagli, espressi con i seguenti tassi di sfruttamento delle armature:

$$TSM = M_{Ed}/M_{c,Rd} < 1.00 \quad \text{Tasso di sfruttamento a momento}$$

$$TSV = V_{Ed}/V_{c,Rd} < 1.00 \quad \text{Tasso di sfruttamento a taglio}$$

### 7.3 Verifiche Stati Limite Ultimi geotecnici (SLU GEO)

Le verifiche devono essere effettuate con riferimento almeno ai seguenti stati limite, quando pertinenti:

- collasso per rotazione intorno a un punto dell'opera (atto di moto rigido)
- instabilità globale del complesso opera di sostegno-terreno
- collasso per carico limite dell'insieme fondazione-terreno di posa
- collasso per scorrimento sul piano di posa

Gli approcci previsti nelle [40] per le verifiche allo SLU, tenendo conto dei valori dei coefficienti parziali, sono i seguenti:

Stabilità globale	Approccio 1	(SLU, SLV, SLC)	Combinazione 2	A2+M2+R2
Altre verifiche	Approccio 2	(SLU, SLV, SLC)		A1+M1+R3

Tab. 6.8.I - Coefficienti parziali per le verifiche di sicurezza di opere di materiali sciolti e di fronti di scavo

COEFFICIENTE	R2
$\gamma_R$	1.1

Tab. 6.5.I - Coefficienti parziali  $\gamma_R$  per le verifiche agli stati limite ultimi di muri di sostegno

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	$\gamma_R = 1.4$

Figura 7: Coefficienti parziali di sicurezza per le verifiche geotecniche (NTC 2018)

Tab. 6.2.II - Coefficienti parziali per i parametri geotecnici del terreno

Parametro	Grandezza alla quale applicare il coefficiente parziale	Coefficiente parziale $\gamma_{M5}$	(M1)	(M2)
Tangente dell'angolo di resistenza al taglio	$\tan \varphi'_k$	$\gamma_\psi$	1.0	1.25
Coesione efficace	$c'_k$	$\gamma_c$	1.0	1.25
Resistenza non drenata	$c_{uk}$	$\gamma_{cu}$	1.0	1.4
Peso dell'unità di volume	$\gamma_r$	$\gamma_\gamma$	1.0	1.0

Figura 8: Coefficienti parziali di sicurezza per i parametri di resistenza del terreno (NTC 2018)

### **7.3.1 Verifica collasso per rotazione rigida**

#### **7.3.1.1 Risultati verifiche PARATIE®**

A La verifica al collasso per rotazione rigida al piede viene implicitamente svolta nella combinazione statica A2+M2+R2 e sismica SLU SLV nell'analisi di interazione terreno struttura implementata all'interno di PARATIE®.

Nella successione delle fasi di scavo infatti, si verificano le condizioni di equilibrio del sistema per le quali la resistenza passiva  $R_p$  al piede della paratia è tale per cui:

$$\frac{R_{p,mob,k}}{\gamma_R} < R_{p,disp,k}$$

$R_{p,mob,k}$  Resistenza passiva mobilitata caratteristica nella fase di scavo

$R_{p,disp,k}$  Resistenza passiva disponibile caratteristica nella fase di scavo

$\gamma_R$  Coefficiente sicurezza resistenza passiva (tab. 6.5.I [40])

Le verifiche vengono eseguite automaticamente in PARATIE® e riportate negli allegati di calcolo, a cui si rimanda per ulteriori dettagli, espresse con il seguente parametro di % mobilitazione della spinta passiva:

$$\frac{\text{Spinta reale efficace}}{\text{Spinta passiva}} = \frac{R_{p,mob,k}}{R_{p,disp,k}} < 1.00$$

### **7.3.2 Verifica di stabilità globale insieme terreno-opera (SLU GEO)**

#### **7.3.2.1 Risultati verifiche PARATIE®**

A Si fa ricorso ad un modello semplificato basato sulla nota teoria dell'equilibrio limite nell'ambito della quale i terreni sono stati caratterizzati mediante un legame costitutivo rigido-plastico con criterio di rottura di Mohr-Coulomb (analisi in termini di sforzi efficaci).

Tale approccio consente di definire un fattore di sicurezza di stabilità globale FS, convenzionalmente valutato come rapporto tra le forze di taglio  $\tau_f$  potenzialmente mobilitabili lungo la superficie di rottura analizzata e le forze di taglio  $\tau$  effettivamente mobilitate sotto l'azione delle forze agenti sull'ammasso (pesi propri, carichi esterni, ecc.):

$$FS = \frac{\tau_f}{\tau}$$

La resistenza al taglio agente lungo la superficie di scivolamento necessaria all'equilibrio è calcolata attraverso l'equazione della statica. Il coefficiente di sicurezza è inteso come il fattore per il quale possono essere divisi i parametri di resistenza meccanica del materiale per portare il pendio alle condizioni di equilibrio limite, implicitamente assunto costante lungo tutta la superficie di scivolamento.

Come prescritto dalla normativa la verifica viene effettuata secondo la Combinazione 2 (A2+M2+R2).

### **7.3.3 Verifica di capacità portante al carico limite dei pali (SLU GEO)**

I valori caratteristici delle resistenze  $R_k$  sono ottenuti applicando i fattori di correlazione  $\xi_3$  e  $\xi_4$  funzione del numero di verticali d'indagine rappresentative, riportati nella tabella seguente, alle resistenze di calcolo  $R_{cal}$ .



$$R_{c,k} = \min \left\{ \frac{(R_{c,cal})_{media}}{\xi_3}; \frac{(R_{c,cal})_{min}}{\xi_4} \right\} \quad \text{Valore caratteristico della resistenza a compressione}$$

$$R_{t,k} = \min \left\{ \frac{(R_{t,cal})_{media}}{\xi_3}; \frac{(R_{t,cal})_{min}}{\xi_4} \right\} \quad \text{Valore caratteristico della resistenza a trazione}$$

Tab. 6.4.IV - Fattori di correlazione  $\xi$  per la determinazione della resistenza caratteristica in funzione del numero di verticali indagate

Numero di verticali indagate	1	2	3	4	5	7	≥ 10
$\xi_3$	1,70	1,65	1,60	1,55	1,50	1,45	1,40
$\xi_4$	1,70	1,55	1,48	1,42	1,34	1,28	1,21

### 7.3.3.1 Calcolo della capacità portante di progetto

A La resistenza di progetto di un palo soggetto a carichi assiali può essere espressa dalle seguenti relazioni:

$$R_{d,c} = R_{c,d} + R_{b,d} = \frac{R_{c,cal}}{\xi \cdot \gamma_s} + \frac{R_{b,cal}}{\xi \cdot \gamma_b} - W' \quad \text{Resistenza di progetto a compressione}$$

$$R_{d,c} = R_{c,t} + W' = \frac{R_{t,cal}}{\xi \cdot \gamma_t} + W' \quad \text{Resistenza di progetto a trazione}$$

$R_{c,cal}$  Resistenza di calcolo laterale a compressione

$R_{t,cal}$  Resistenza di calcolo laterale a trazione

$R_{b,cal}$  Resistenza di calcolo di base

$W'$  Peso efficace del palo

### 7.3.3.2 Portata laterale

La portata laterale limite di calcolo  $R_{c,cal}$  viene valutata con la seguente relazione:

$$R_{c,cal} = R_{t,cal} = \pi \cdot D \cdot \sum_i \tau_{lim,i} \cdot h_i \quad \text{Resistenza di progetto a compressione}$$

$D$  Diametro del palo

$\tau_{lim,i}$  Tensione di adesione laterale limite nello strato i-esimo

$h_i$  Altezza dello strato i-esimo

### Resistenza da prove SPT

Per il calcolo della capacità portante dei pali, disponendo di prove penetrometriche statiche SPT, si può fare riferimento agli studi di Reese-Wright (1977) e quanto indicato nelle raccomandazioni AGI sui pali di fondazione.

Per i terreni coesivi secondo AGI (1984), operando in condizioni non drenate (NDR) e tensioni totali, si utilizza l'equazione:

$$\tau_{lim} = \alpha \cdot c_u \leq 100kPa$$

$c_u$  Resistenza al taglio non drenata (kPa)

$\alpha$  Coefficiente riduttivo, assunto per pali trivellati:

$$\alpha = 0.9 \quad \text{Per } c_u \leq 25kPa$$

$$\alpha = 0.8 \quad \text{Per } 25kPa < c_u \leq 50kPa$$

$$\alpha = 0.6 \quad \text{Per } 50kPa < c_u \leq 75kPa$$

$\alpha = 0.5$  Per  $c_u > 75 \text{ kPa}$

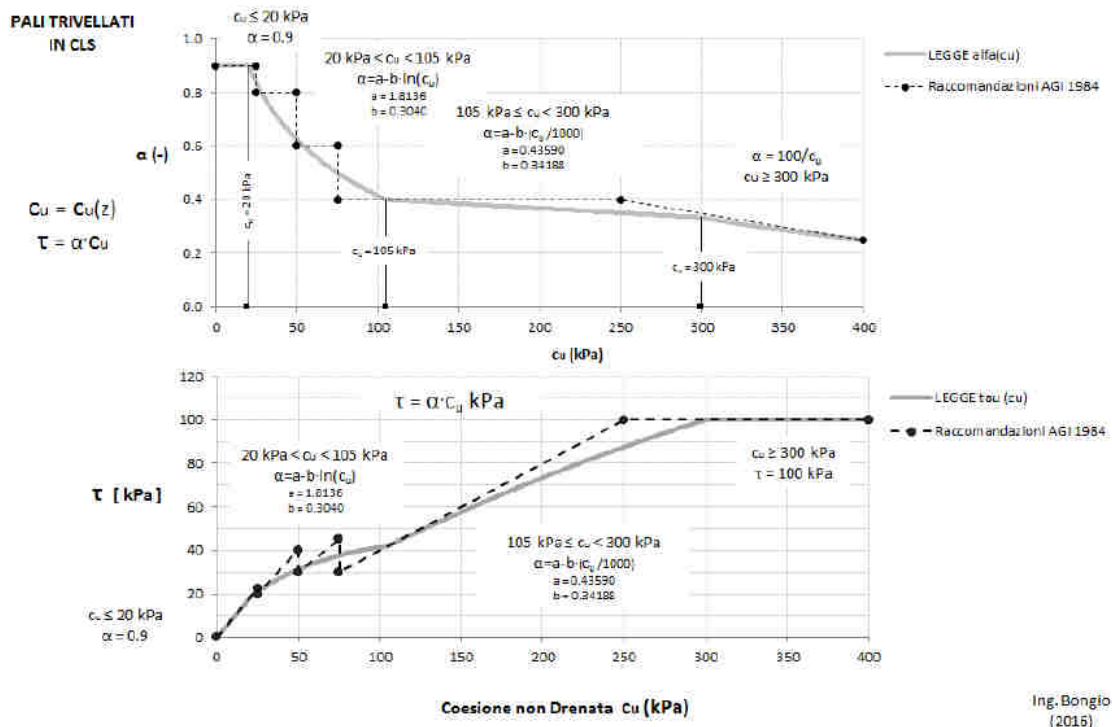


Figura 9: Curve di interpolazione dei coefficienti  $\alpha$  secondo AGI

Per i terreni granulari secondo AGI (1984), operando in condizioni drenate (DR) e tensioni efficaci, l'attrito laterale è valutato mediante l'espressione:

$$\tau_{lim} = c_a + K \cdot \sigma'_{v0} \cdot \tan(\varphi) < f(N_{SPT})$$

$c_a = \alpha \cdot c'$  Adesione efficace palo-terreno (aliquota della coesione efficace)

$K$  Rapporto tra pressione orizzontale e pressione verticale efficace in prossimità del palo

$\sigma'_{v0}$  Pressione geostatica verticale efficace

$\varphi$  Angolo di resistenza al taglio del terreno naturale

$N_{SPT}$  Numero di colpi/piede in prova SPT

$f(N_{SPT}) = 3 \cdot N_{SPT}$  Per  $N_{SPT} \leq 53$

$= 142 + 0.32 \cdot N_{SPT}$  Per  $N_{SPT} > 53$

Secondo le norme AGI si raccomanda comunque di limitare cautelativamente la  $\tau_{lim}$  a 150-200 kPa.

Tab. 5.1 - Valori indicativi di  $k$  e  $\mu$  dell'eq. [4] per terreni incoerenti

Tipo di palo		Valori di $k$	Valori di $\mu$
BATTUTO	Acciaio	0,5 ÷ 1	tg 20°
	Calcestruzzo prefabbricato	1 ÷ 2	tg (3/4 $\varphi'$ )
	Calcestruzzo gettato in opera	1 ÷ 3	tg $\varphi'$
TRIVELLATO		0,4 ÷ 0,7 (*)	tg $\varphi'$

(\*) Decrescente con la profondità.

Figura 10: Valori dei coefficienti  $k$  e  $\mu$  secondo AGI

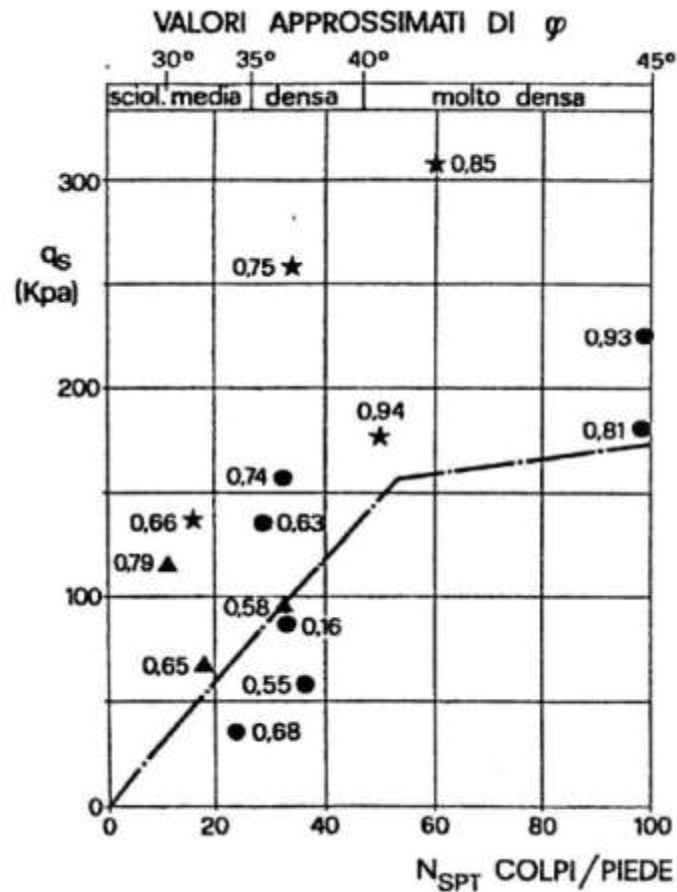


Figura 11: Valori limite di  $\tau_{LIM}$  con indagini SPT secondo AGI

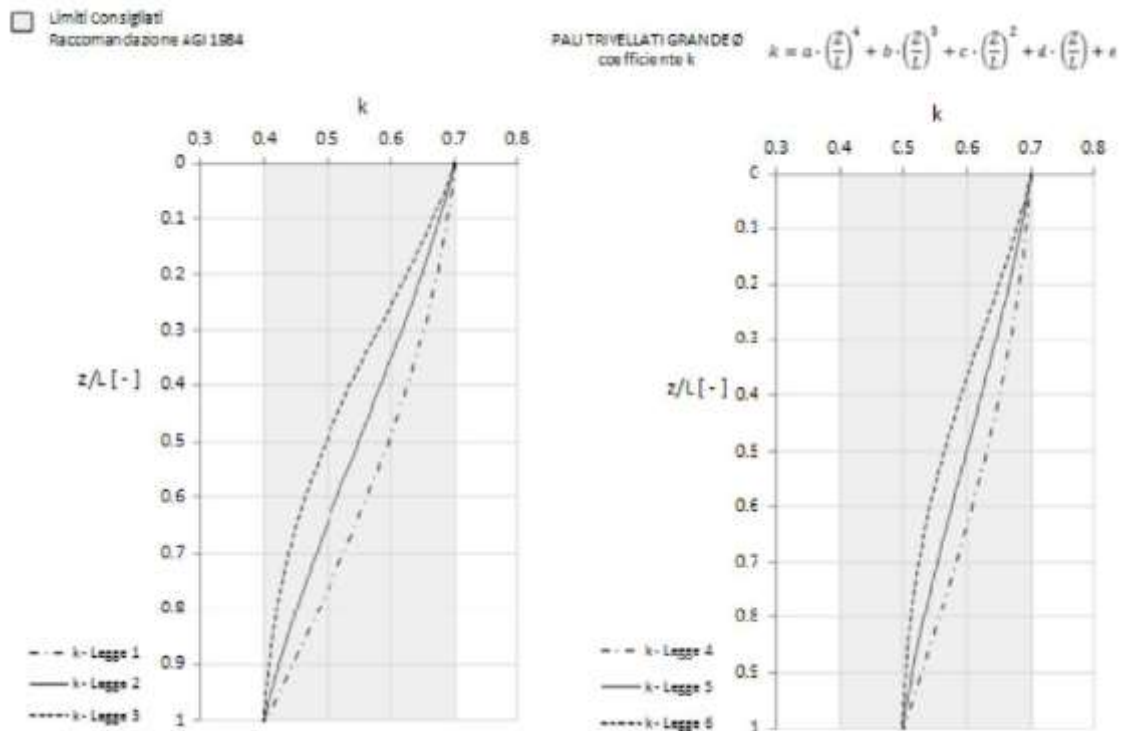


Figura 12: Curve di interpolazione dei coefficienti k secondo AGI

### 7.3.3.3 Portata di base

Per la valutazione della portata di base limite  $R_{b,cal}$  si impiegano le seguenti relazioni:

$$R_{b,cal} = A_b \cdot q_{b,lim}$$

$A_b$  Area della base del palo

$q_{b,lim}$  Resistenza limite specifica di base

#### Resistenza da prove SPT

Per i terreni coesivi, operando in condizioni non drenate (NDR) e tensioni totali, la valutazione della capacità limite di base viene calcolata in condizioni non drenate mediante l'equazione:

$$q_{b,lim} = \sigma_{v0} + 9 \cdot c_u$$

$\sigma_{v0}$  Pressione verticale di base

$c_u$  Resistenza la taglio non drenata (kPa)

I valori di  $q_b$  sono interamente mobilizzati ad una profondità critica  $z_c$  (Meyerhof, Sastry [1978]), secondo l'espressione  $z_c = m \cdot D$  con D pari al diametro del palo e m variabile tra 4 e 8.

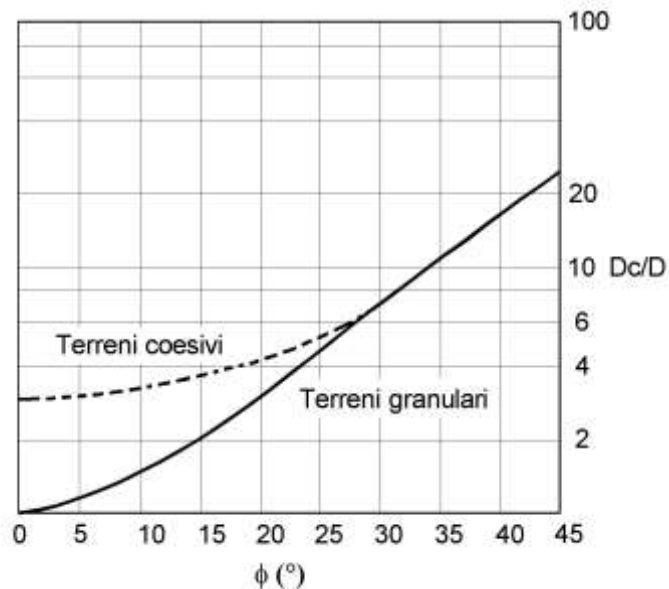


Figura 13: Profondità critica  $z_c/D = f(D_r)$  secondo Meyerhof (1976)

Per i terreni granulari, operando in condizioni drenate (DR) e tensioni efficaci, la valutazione della capacità limite di base viene calcolata facendo riferimento non più alle condizioni di rottura, bensì riferendosi ad una "portata critica" corrispondente ad una "condizione di servizio limite" basata su considerazioni di cedimenti ammissibili, ed in genere riferita all'insorgere di deformazioni plastiche nei terreni di fondazione.

Nel caso di pali di grande diametro soggetti ad azioni assiali, in accordo con la teoria di Berezantzev, le deformazioni plastiche alla punta (pari a circa 0.1 volte il diametro D del palo, stato limite ultimo di capacità portante) insorgono per pressioni di base pari a:

$$q_{b,lim} = N_q^* \cdot \sigma'_{v0} + N_c^* \cdot c'$$

$\sigma'_{v0}$  Pressione verticale efficace di base

$N_q^*$  Coefficiente pressione verticale di base (attrito)

$c'$  Coefficiente efficace di base

$N_c^* = \frac{(N_q^* - 1)}{\tan(\varphi)}$  Coefficiente pressione verticale di base (coesione)

Disponendo di prove SPT, per pali trivellati la portata critica di base massima secondo Reese-Wright et al. (1978) è data da:

$$q_{b,lim} = 66.7 \cdot N_{SPT} \leq 4000 \text{ kPa}$$

I valori di  $q_{cr}$  sono interamente mobilitati ad una "profondità critica"  $z_c$  con m variabile fra 4 e 21.

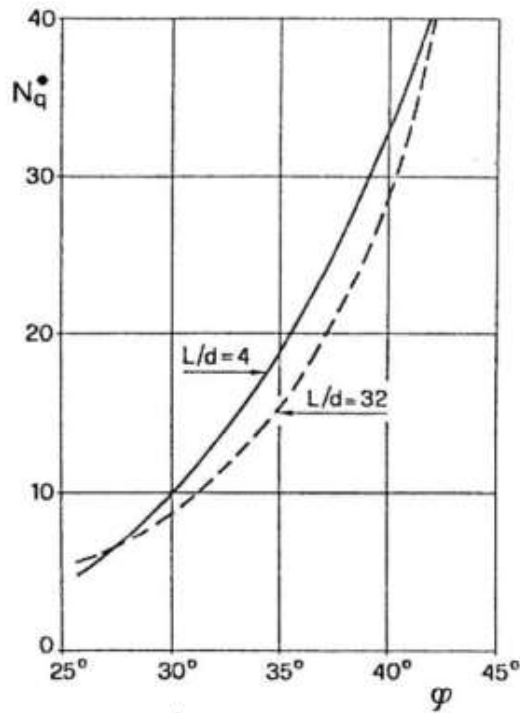


Figura 14: Valori limite di  $N_{q^*}$  secondo AGI

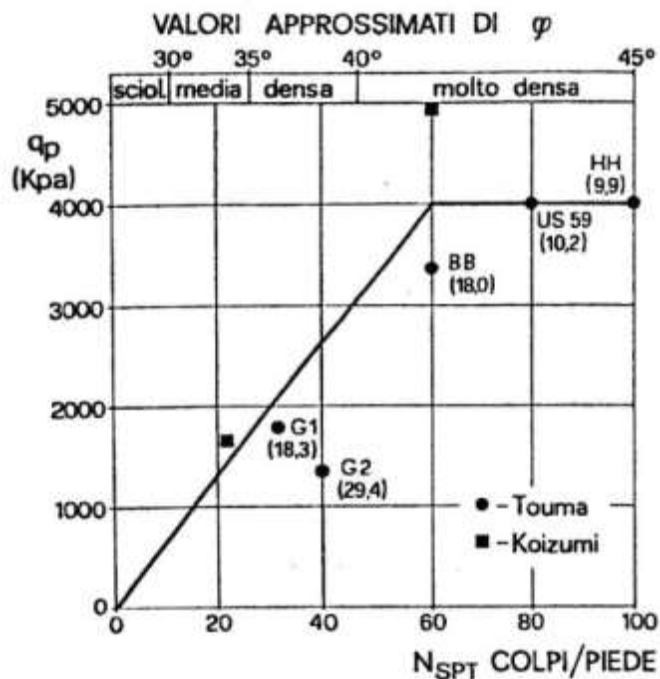


Figura 15: Valori limite di  $q_{b,lim}$  con indagini SPT secondo AGI

### 7.3.3.4 Calcolo curve di cedimento

Per valutare le deformazioni verticali  $\delta$  che il palo subisce per effetto dei carichi verticali, si considerano le curve di trasferimento carico/cedimento per la resistenza laterale  $R_c$  (a compressione, uguale a  $R_t$  per le azioni di trazione) e la resistenza di punta  $R_b$  dei pali trivellati di Reese & Wang, riportate nelle figure seguenti.

Nella curva di mobilitazione della resistenza laterale è diagrammato il rapporto tra resistenza laterale unitaria  $\tau$  e massima resistenza laterale unitaria mobilitabile  $\tau_{us}$  con il grado di spostamento definito

dal rapporto  $\delta/D$ . Nella curva di mobilitazione della resistenza di base è diagrammato il rapporto tra resistenza di base unitaria  $q$  e massima di base unitaria mobilitabile  $q_{us}$  con il grado di spostamento definito dal rapporto  $\delta/D$ .

Se si impone un cedimento, è possibile calcolare le resistenze unitarie mobilitate di base e laterale per un generico strato di terreno. Integrando su tutto il diametro  $D$  e su tutta la lunghezza  $L$  si ottengono delle curve di cedimento totale  $R_{ct} + R_b$  vs  $\delta$ .

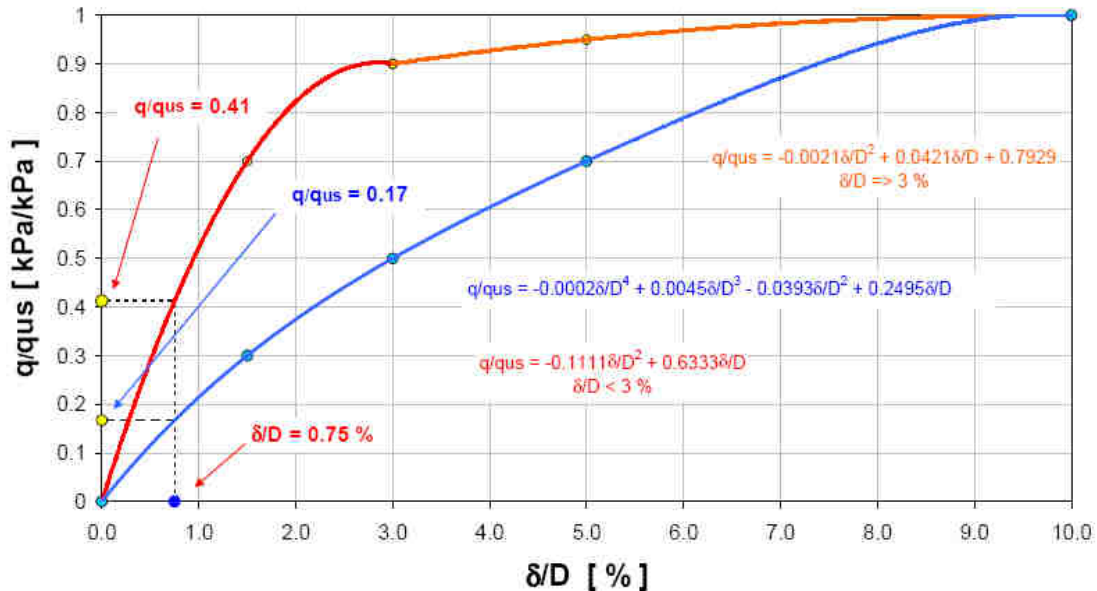


Figura 16: Curve di trasferimento della resistenza di base dei pali (Reese & Wang, 1990)

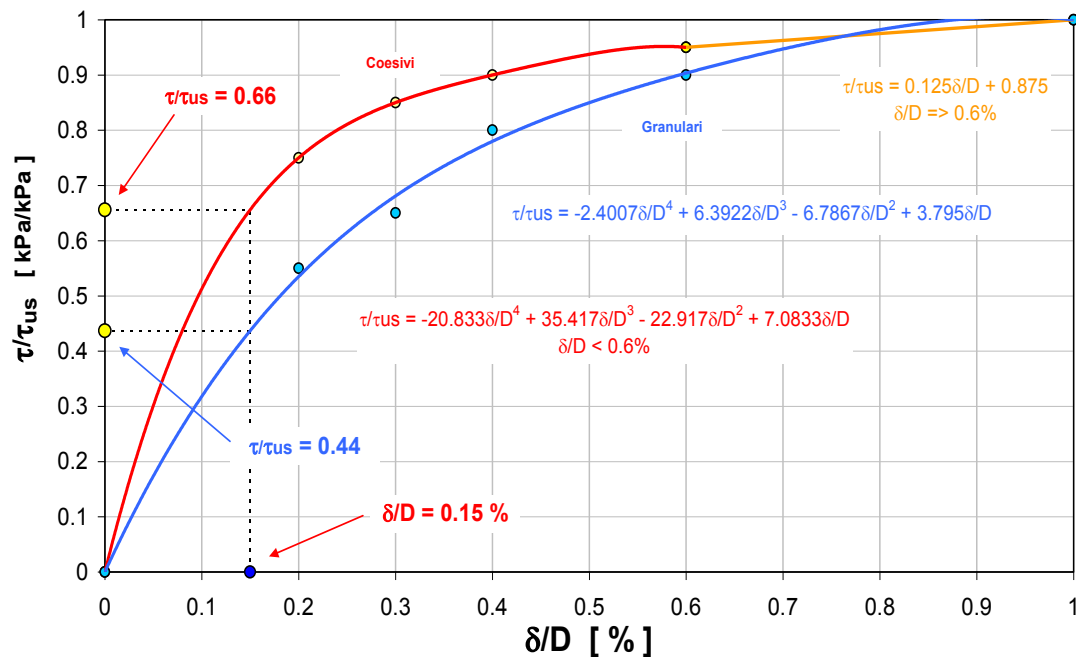


Figura 17: Curve di trasferimento della resistenza laterale dei pali (Reese & Wang, 1990)

Per la creazione delle curve di cedimento caratteristiche, riferite ai parametri geotecnici medi, vengono valutati diametri equivalenti differenziati per la capacità portante di base e la capacità portante laterale secondo le relazioni:

$$D'_s = S_{lat}/\pi$$

$$D'_h = \left( A_b \cdot \frac{4}{\pi} \right)^{0.5}$$

### 7.3.4 Stima spostamenti dell'opera e del terreno (SLE STR)

La stima degli spostamenti orizzontali delle strutture sono condotte per ogni fase di scavo. Per valutare la compatibilità degli spostamenti dell'opera di sostegno ed il terreno circostante si verifica che la deformabilità della paratia sia contenuta entro limiti accettabili dallo stato dei luoghi.

### 7.4 Verifiche agli Stati Limite di Esercizio

Come riportato al §6.2.4.3 e §5.1.4.2 del [40], la verifica della sicurezza nei riguardi degli stati limite di esercizio si esprime controllando aspetti di funzionalità e stato tensionale. Si dovrà verificare che sia:

$$E_d \leq C_d$$

$$E_d = E(\gamma_F \cdot F_k; X_k/\gamma_M; a_d) \quad \text{Valore di progetto dell'azione o dell'effetto dell'azione}$$

$$C_d = C(\gamma_F \cdot F_k; X_k/\gamma_M; a_d) \quad \text{Valore nominale o funzione di certe proprietà dei materiali legate agli effetti progettuali delle azioni considerate}$$

Le verifiche agli SLE si risolvono nel controllare che i valori di tensione nei materiali siano inferiori ai limiti di normativa.

Calcestruzzo compresso

Combinazione rara

$$\sigma_c < 0.60 \cdot f_{ck}$$

Combinazione quasi permanente

$$\sigma_c < 0.45 \cdot f_{ck}$$

Acciaio teso

Combinazione rara

$$\sigma_s < 0.80 \cdot f_{yk}$$

#### 7.4.1 Verifiche agli Stati Limite di Fessurazione

Viene eseguita la verifica allo stato limite di apertura delle fessure con riferimento al §4.1.2.2.4 del [40]. Prima di procedere alle verifiche a fessurazione è necessario definire delle apposite combinazioni di carico ed effettuare una valutazione relativa al grado di protezione delle armature metalliche contro la corrosione (in termini di condizioni ambientali e sensibilità delle armature stesse alla corrosione). Si distinguono i seguenti casi:

Combinazioni di azioni

Frequente (FR)

Quasi Permanente (QP)

Condizioni ambientali

Ordinarie

Aggressive

Molto aggressive

Sensibilità delle armature alla corrosione

Sensibili (acciai da precompresso)

Poco sensibili (acciai ordinari)

Apertura delle fessure

$$w_1 = 0.200mm$$

$$w_2 = 0.300mm$$

$$w_3 = 0.400mm$$



**Tabella 3: Stati limite di fessurazione**

Gruppi di Esigenze	Condizioni ambientali	Combinazione di azioni	Armatura			
			Sensibile		Poco sensibile	
			Stato limite	$w_k$	Stato limite	$w_k$
A	Ordinarie	frequente	apertura fessure	$\leq w_2$	apertura fessure	$\leq w_3$
		quasi permanente	apertura fessure	$\leq w_1$	apertura fessure	$\leq w_2$
B	Aggressive	frequente	apertura fessure	$\leq w_1$	apertura fessure	$\leq w_2$
		quasi permanente	decompressione	-	apertura fessure	$\leq w_1$
C	Molto aggressive	frequente	formazione fessure	-	apertura fessure	$\leq w_1$
		quasi permanente	decompressione	-	apertura fessure	$\leq w_1$

Il calcolo, condotto con riferimento alla procedura analitica prevista al §C4.1.2.2.4 del [41], prevede i seguenti passaggi:

- Valutazione della distanza media tra le fessure ( $\Delta_{sm}$ );
- Valutazione della deformazione media delle barre d'armatura ( $\varepsilon_{sm}$ );
- Valutazione dell'ampiezza delle fessure (valore medio  $w_m$  e valore di calcolo  $w_d$ ).

Elemento strutturale	Classi di esposizione	Condizioni ambientali	Combinazione di azioni	Stato limite	$w_d$
Pali	XC2	Ordinarie	Frequente	Apertura fessure	$\leq w_3 = 0.40$ mm
			Quasi permanente	Apertura fessure	$\leq w_2 = 0.30$ mm
Elevazione pile e spalle	XC4-XF4	Aggressive	Frequente	Apertura fessure	$\leq w_2 = 0.30$ mm
			Quasi permanente	Apertura fessure	$\leq w_1 = 0.20$ mm

## 8 ANALISI DEI CARICHI

### 8.1 Azioni permanenti strutturali (G<sub>1</sub>)

#### 8.1.1 Pesi propri

Si considerano i seguenti pesi specifici.

Elementi in c.a.  $\gamma_{cls} = 25.0 \text{ kN/m}^3$

Elementi in acciaio  $\gamma_s = 78.5 \text{ kN/m}^3$

### 8.2 Azioni permanenti non strutturali (G<sub>2</sub>)

#### 8.2.1 Pesi propri terreni

I pesi propri dei terreni sono riportati al §5.1.

#### 8.2.2 Pesi propri pavimentazione

Sugli impalcati si considera il peso della pavimentazione di spessore pari a 10cm con peso specifico pari a 30kN/m<sup>3</sup>.

### 8.3 Spinta del terreno – Paratie (G<sub>3</sub>)

I valori delle spinte vengono computate automaticamente dai software utilizzati secondo le metodologie seguenti, per ulteriori approfondimenti si rimanda direttamente al manuale degli stessi.

#### 8.3.1 Spinta a riposo

Per piano campagna orizzontale si fa riferimento alla seguente correlazione (Jaky, 1944 e Schmidt, 1966):

$$k_0 = 1 - \sin \varphi' \cdot OCR^\alpha$$

$$OCR = 1$$

$$\alpha = 0.5$$

Grado di sovraconsolidazione

Per pendio inclinato ( $\beta$ ) si può considerare che la spinta a riposo sia parallela al p.c. e che il coefficiente  $k_0$  valga:

$$k_0 = (1 - \sin \varphi' \cdot OCR^\alpha) \cdot (1 + \sin \beta)$$

$$\beta = 0$$

Angolo di inclinazione tra profilo e piano orizzontale

#### 8.3.2 Spinta attiva

Il coefficiente di spinta attiva ( $K_a$ ) viene valutato ricorrendo alla correlazione generale di Mueller-Breslau basata sulla teoria di Coulomb e riferita a superfici di rottura piane. In questo caso l'approssimazione (rispetto a quanto si sarebbe ottenuto considerando superfici di rottura di geometria complessa) risulta molto contenuta e a favore di sicurezza.

La spinta attiva statica totale sulla parete  $S_{ah}$  si calcola secondo le seguenti relazioni:

$$S_{ah} = \int_0^H \sigma_h(z) dz$$

Spinta attiva statica totale sulla paratia

$$K_a = \frac{\text{sen}^2(\Psi + \varphi)}{\text{sen}^2\Psi \cdot \text{sen}(\Psi - \delta) \cdot \left[ 1 + \sqrt{\frac{\text{sen}(\varphi + \delta) \cdot \text{sen}(\varphi - \beta)}{\text{sen}(\Psi - \delta) \cdot \text{sen}(\Psi + \beta)}} \right]^2}$$

Coefficiente di spinta attiva

$$\sigma_h(z) = \sigma_v(z) \cdot K_a - 2 \cdot c \cdot \sqrt{K_a}$$

Pressione orizzontale di spinta del terreno

$$\sigma_v(z)$$

Pressione verticale del terreno

$H$	Altezza della parete di spinta
$\varphi$	Angolo di resistenza al taglio del terreno
$\delta = 0.50 \cdot \varphi$	Attrito tra terreno e paratia
$\psi$	Angolo tra la parete di spinta e il piano orizzontale
$\beta$	Angolo di inclinazione tra profilo e piano orizzontale
$c$	Coesione del terreno

Nel caso in cui a monte della parete sia presente la falda il diagramma delle pressioni sulla parete risulta modificato a causa della sottospinta che l'acqua esercita sul terreno. Il peso di volume del terreno al di sopra della linea di falda non subisce variazioni, viceversa al di sotto del livello di falda va considerato il peso di volume di galleggiamento:

$\gamma' = \gamma_{sat} - \gamma_w$	Peso di volume alleggerito del terreno
$\gamma_{sat}$	Peso di volume saturo del terreno (dipendente dall'indice dei pori)
$\gamma_w$	Peso di volume dell'acqua
$S_{ah} = \int_0^H \sigma'_h(z) dz + E_{ws}$	Spinta attiva statica totale efficace del terreno
$\sigma'_h(z) = \sigma'_v(z) \cdot K_a - 2 \cdot c \cdot \sqrt{K_a}$	Pressione orizzontale di spinta efficace del terreno
$\sigma'_v(z)$	Pressione verticale efficace del terreno
$E_{ws}$	Spinta idrostatica

### 8.3.3 Spinta passiva

Per il calcolo del coefficiente di spinta passiva si fa riferimento a superfici di rottura di tipo complesso (spirale logaritmica) come suggerito da Caquot & Kerisel (1948), secondo le seguenti ipotesi:

$\varphi$	Angolo di resistenza al taglio del terreno
$\delta = 0.50 \cdot \varphi$	Attrito tra terreno e paratia
$\beta$	Angolo di inclinazione tra profilo e piano orizzontale

La spinta passiva a statica totale sulla parete  $S_{ph}$  si calcola secondo le seguenti relazioni:

$S_{ph} = \int_0^H \sigma_h(z) dz$	Spinta passiva statica totale sulla paratia
------------------------------------	---

$K_p = \frac{\text{sen}^2(\Psi - \varphi)}{\text{sen}^2\Psi \cdot \text{sen}(\Psi + \delta) \cdot \left[ 1 - \sqrt{\frac{\text{sen}(\varphi + \delta) \cdot \text{sen}(\varphi - \beta)}{\text{sen}(\Psi - \delta) \cdot \text{sen}(\Psi + \beta)}} \right]^2}$	Coefficiente di spinta passiva
$\sigma_h(z) = \sigma_v(z) \cdot K_p - 2 \cdot c \cdot \sqrt{K_p}$	Pressione orizzontale di spinta del terreno
$\sigma_v(z)$	Pressione verticale del terreno
$H$	Altezza della parete di spinta

La spinta passiva statica totale efficace sulla parete  $S_{ph}$  si calcola secondo le seguenti relazioni:

$S_{ph} = \int_0^H \sigma'_h(z) dz + E_{ws}$	Spinta passiva statica totale efficace del terreno
$\sigma'_h(z) = \sigma'_v(z) \cdot K_p - 2 \cdot c \cdot \sqrt{K_p}$	Pressione orizzontale di spinta efficace del terreno
$\sigma'_v(z)$	Pressione verticale efficace del terreno
$E_{ws}$	Spinta idrostatica

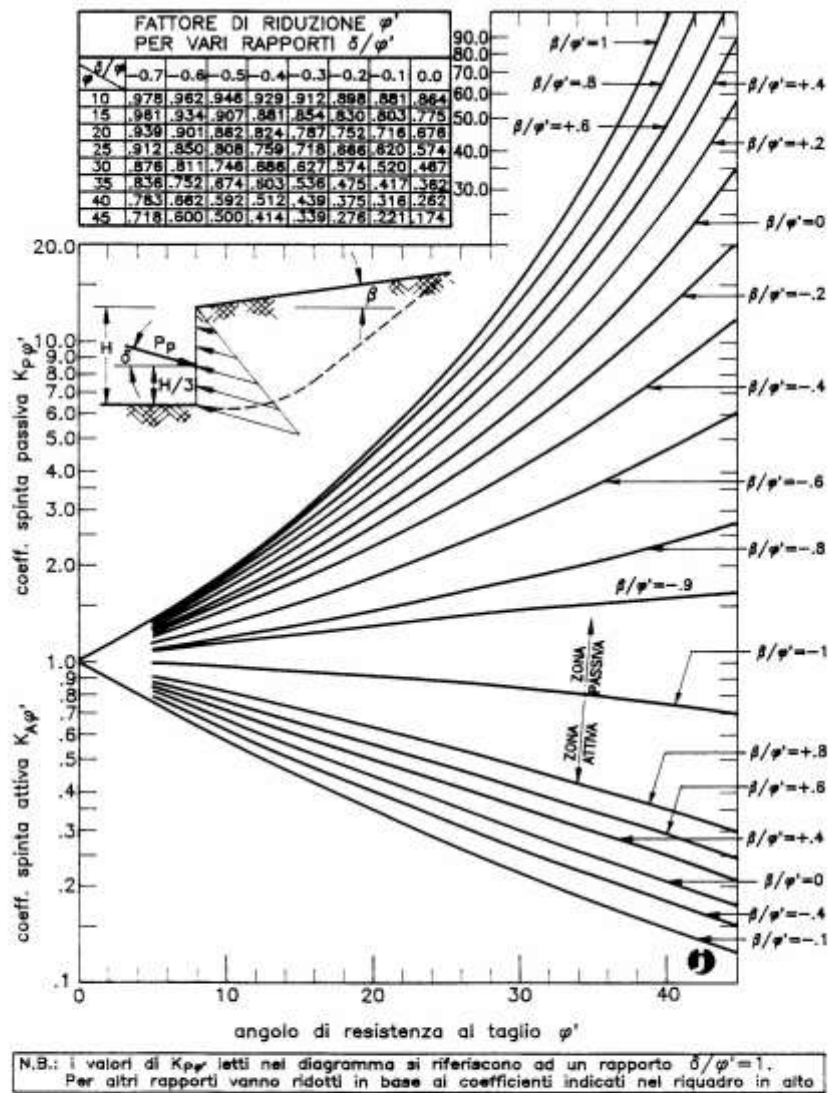
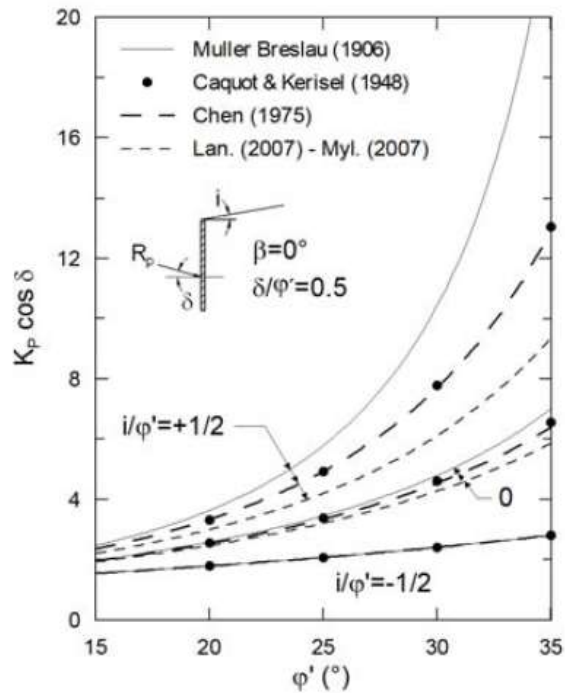


Figura 18: Coefficienti di spinta attiva e passiva (Caquot-Kerisel, 1948)

I coefficienti di spinta e le relative spinte vengono calcolati automaticamente dal programma di calcolo utilizzando la formulazione di Lancellotta (2007), i valori così determinati sono a favore di sicurezza, come si evince dal grafico di raffronto seguente.



Nel calcolo dei coefficienti di spinta si è deciso di tenere conto sia dell'inclinazione del terreno a valle e a monte (angolo  $\beta$ ), che della dipendenza della spinta dell'angolo di attrito terra-muro (angolo  $\delta$ ). L'angolo  $\beta$  utilizzato in queste valutazioni viene stimato dal programma in base alla geometria irregolare dello scavo, in rapporto alla posizione dello strato, rispetto al piano campagna (o fondo scavo) locale, valutando una superficie piana inclinata equivalente.

Densità mesh  Max Iterazioni

Controlla solo percorso degli sforzi totali (TSP)

Calcolo coefficienti di spinta **Opzioni avanzate Paraboliche** Parametri Stima Cedimenti

Usa  $K_a$  e  $K_p$  definiti nella finestra dei terreni:  No  Sì

$\delta/\sigma$

default  $\delta/\sigma$  muro sx (monte)  default  $\delta/\sigma$  muro dx (mon)

default  $\delta/\sigma$  muro sx (valle)  default  $\delta/\sigma$  muro dx (valle)

Stage	$\delta/\sigma$ sx (m)	$\delta/\sigma$ sx (v)	$\delta/\sigma$ dx (m)	$\delta/\sigma$ dx (v)
Stage 1	default	default	default	default
Stage 2	default	default	default	default
Stage 3	default	default	default	default
Stage 4	default	default	default	default
Stage 5	default	default	default	default

Opzioni coefficienti di spinta

Dipendenza da  $\beta$ :  $K_a$   Sempre  Mai  Solo se conservativo ( $\beta > 0$ )  $K_p$   Sempre  Mai  Solo se conservativo ( $\beta < 0$ )

Dipendenza da  $\delta$ :  $K_a$   Sempre  Mai  $K_p$   Sempre  Mai

Contributo della superficie inclinata lato monte:

Sovraccarichi di superficie: da superficie inclinata

Pendenza equivalente della superficie inclinata:

Figura 19: Parametri adottati per il calcolo dei coefficienti di spinta

### 8.3.4 Pressioni idrostatiche

Nel caso in cui a monte della parete sia presente la falda il diagramma delle pressioni sulla PT.01 – Relazione tecnica e di calcolo

parete risulta modificato a causa della sottospinta che l'acqua esercita sul terreno. Il peso di volume del terreno al di sopra della linea di falda non subisce variazioni. Viceversa al di sotto del livello di falda va considerato il peso di volume di galleggiamento

$\gamma_a = \gamma_{sat} - \gamma_w$	Peso di volume alleggerito del terreno
$\gamma_{sat}$	Peso di volume saturo del terreno (dipendente dall'indice dei pori)
$\gamma_w$	Peso di volume dell'acqua
$S_h = \int_0^H \sigma'_h(z) dz + E_{ws}$	Spinta attiva statica (attiva o a riposo) totale efficace del terreno
$\sigma'_h(z) = \sigma'_v(z) \cdot K - 2 \cdot c \cdot \sqrt{K}$	Pressione orizzontale di spinta efficace del terreno
$\sigma'_v(z)$	Pressione verticale efficace del terreno
$E_{ws}$	Spinta idrostatica

Al diagramma delle pressioni, avente al di sotto della linea di falda una pendenza minore, va quindi sommato il diagramma triangolare legato alla pressione idrostatica.

### 8.3.5 Pressioni idrodinamiche

Le distribuzioni di forze delle spinte idrodinamiche  $E_{wd}$  sulla parete sono descritte dalle seguenti relazioni:

$E_{wd}(z) = \frac{7}{12} \cdot k_h \cdot \gamma \cdot H^2$	Spinta idrodinamica
$q_{wd}(z) = \frac{7}{8} \cdot k_h \cdot \gamma \cdot \sqrt{H' \cdot z}$	Pressione idrodinamica
$k_h$	Coefficiente sismico orizzontale
$H'$	Altezza di muro soggetta a spinta dell'acqua

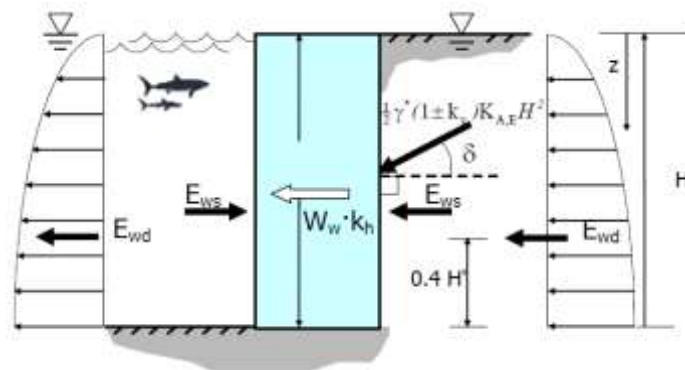


Figura 20: Schema di calcolo delle forze idrodinamiche sulla parete

## 8.4 Azioni variabili

### 8.4.1 Azioni accidentali da traffico veicolare (Q<sub>1</sub>)

Si assumono applicate all'impalcato le pressioni verticali derivanti dal transito veicolare. Coerentemente con quanto indicato al §5.1.3.3 delle Norme Tecniche, le azioni variabili del traffico, comprensive degli effetti dinamici, sono definite dai seguenti schemi di carico:

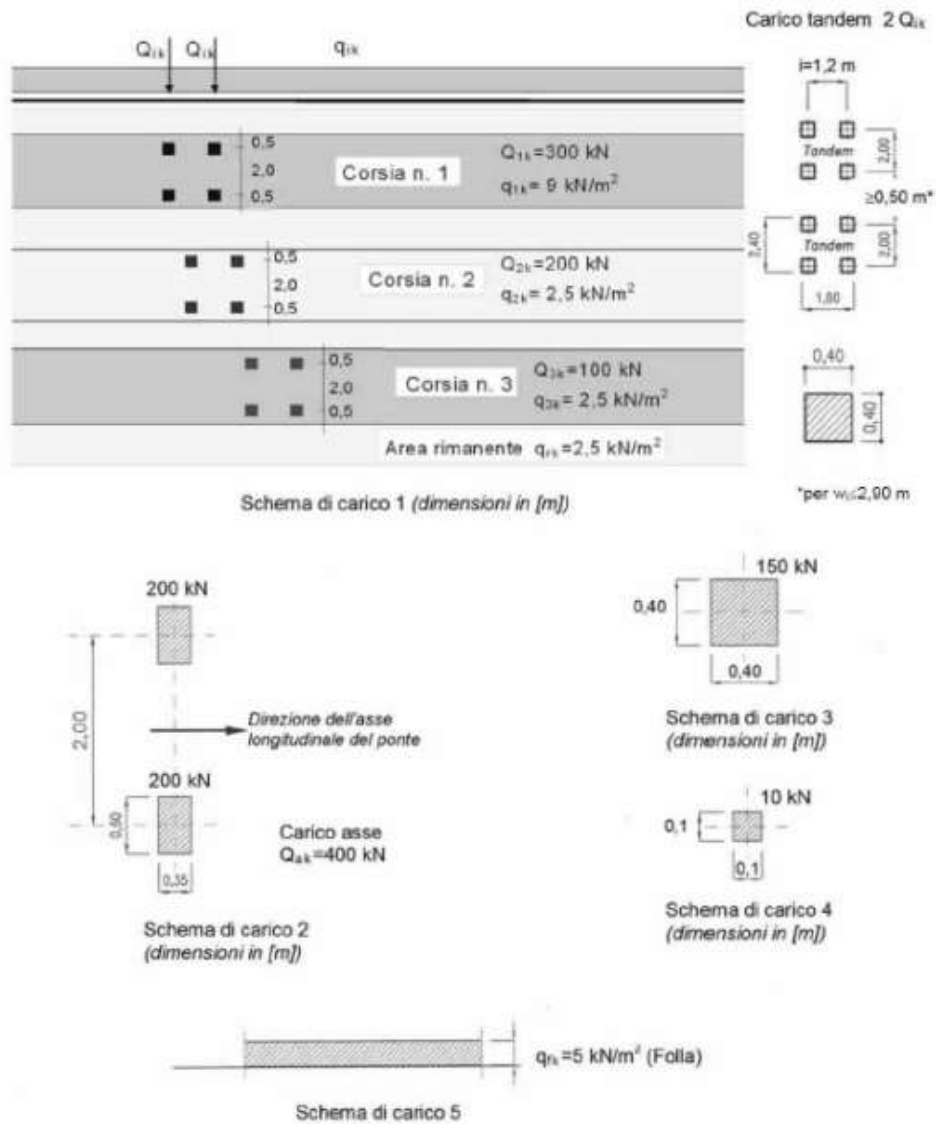


Figura 21: Schemi di carico (NTC2018)

I carichi tandem  $Q_{1k}$  sono posizionati longitudinalmente all'asse dell'impalcato, diffusi sia in direzione longitudinale che trasversale e trattati come pressioni uniformemente distribuite sulla soletta superiore. Assumendo una diffusione con inclinazione  $45^\circ$  nella soletta, si hanno le seguenti pressioni distribuite:

$$q_{tandem} = \frac{2 \cdot Q_{1k}}{L_L \cdot L_T} = \frac{2 \cdot 300 \text{ kN}}{3.30 \text{ m} \cdot 2.50 \text{ m}} = 72.73 \frac{\text{kN}}{\text{m}^2} \quad \text{Pressione carico tandem } Q_{1k}$$

$$s = 0.90 \text{ m} \quad \text{Spessore soletta}$$

$$D = \frac{s}{2} \cdot \tan 45 = 0.45 \text{ m} \quad \text{Diffusione laterale e longitudinale in asse soletta}$$

$$L_T = 1.60 + 2D = 2.50 \text{ m} \quad \text{Larghezza trasversale di diffusione}$$

$$L_L = 2.40 + 2D = 3.30 \text{ m} \quad \text{Lunghezza longitudinale di diffusione}$$

Nel modello strutturale si prevede uno schema di carico longitudinale di massimo taglio e uno di massimo momento in mezzzeria con pressioni totali  $q_{tandem} = 72.73 \text{ kPa}$  e  $q_{rip} = 9.00 \text{ kPa}$ . Nel software PARATIE® non è possibile inserire carichi concentrati sulla soletta per cui si è



dovuto ricorrere a degli schemi equivalenti.

Sono stati realizzati due schemi di trave incastrata-incastrata che massimizzano uno il momento in mezzzeria e uno il taglio all'incastro. Dal primo si è ricavato un carico distribuito equivalente tramite uguaglianza dei momenti. Dal secondo si è ricavata la reazione all'incastro da applicare nel calcolo della capacità portante. Tale reazione sarà decurtata della quota parte di taglio data dal primo schema.

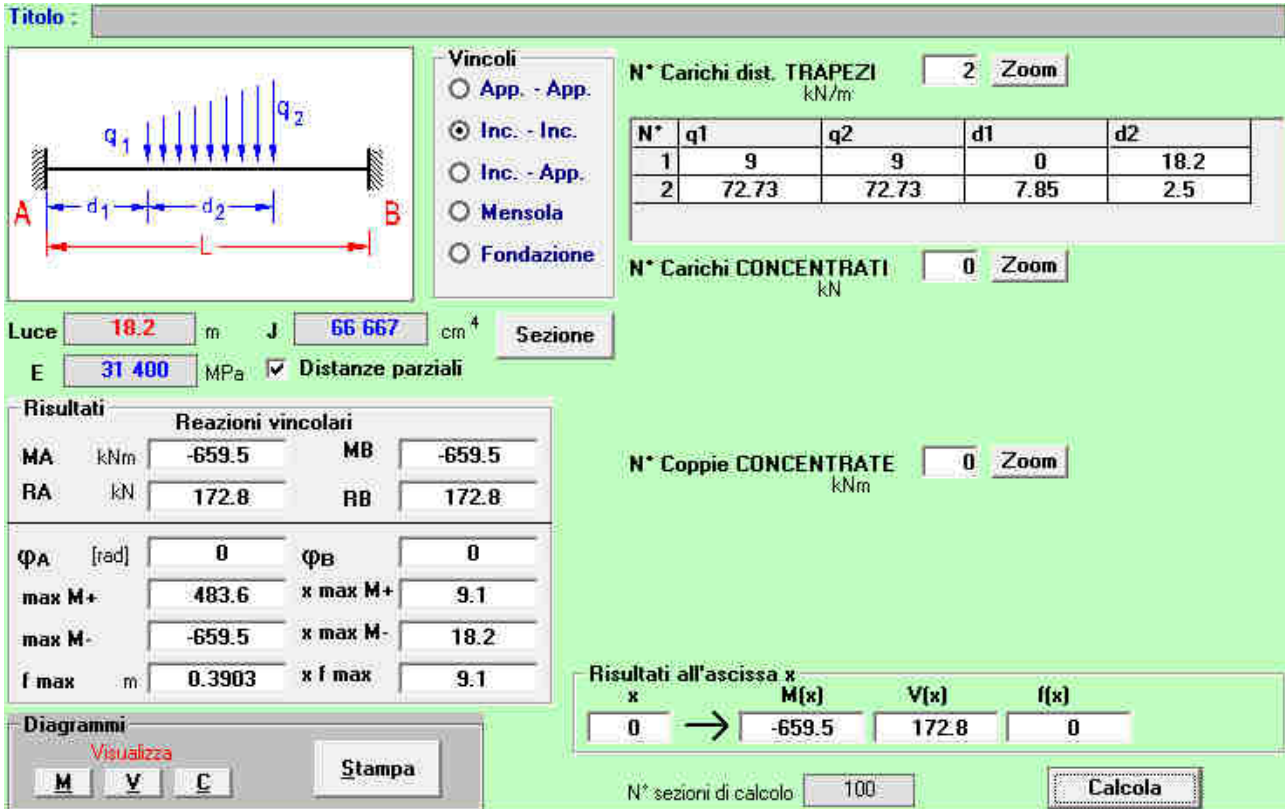


Figura 22: Schema con massimizzazione del momento in mezzzeria

Si ottengono le seguenti sollecitazioni:

$$V_{incastrato} = 172.8 \text{ kN/m}$$

$$M_{mezzzeria} = \frac{1}{24} q_{eq} L^2 = 483.6 \frac{\text{kNm}}{\text{m}} \quad q_{eq} = 35.04 \frac{\text{kN}}{\text{m}}$$

$$M_{incastrato} = -\frac{1}{12} q_{eq} L^2 = -659.5 \frac{\text{kNm}}{\text{m}} \quad q_{eq} = 23.89 \frac{\text{kN}}{\text{m}}$$

A favore di sicurezza si considera il carico distribuito equivalente maggiore, il quale sarà cautelativamente aumentato del 10%.

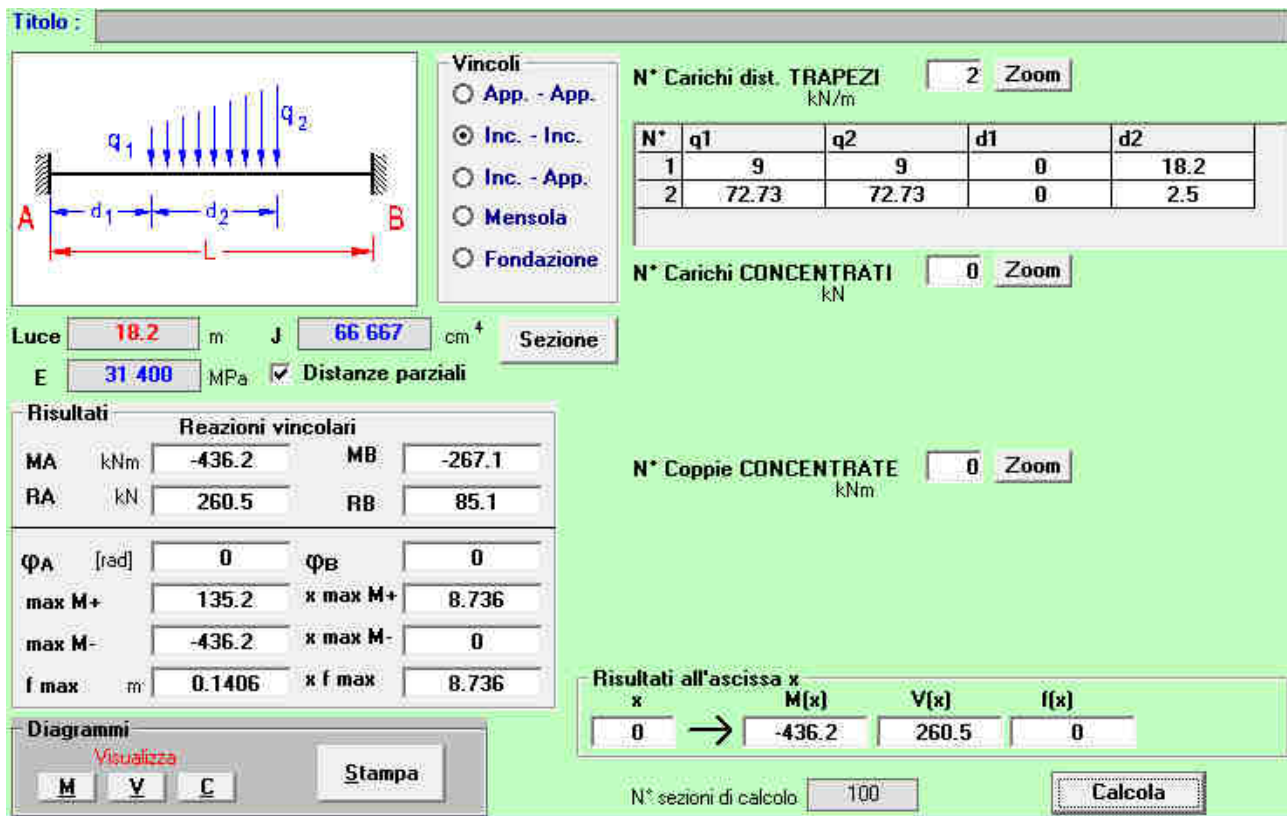


Figura 23: Schema con massimizzazione della reazione all'incastro

$$V_{incastro} = 260.5 \frac{kN}{m}$$

L'azione verticale da applicare all'incastro sarà data dalla differenza delle reazioni ottenute dai due schemi:

$$V_{incastro} = 260.5 \frac{kN}{m} - 172.8 \frac{kN}{m} = 87.7 \frac{kN}{m}$$

#### 8.4.2 Azioni variabili a monte degli scavi (Q<sub>1</sub>)

Le spinte orizzontali Δσ<sub>h</sub> dei sovraccarichi applicati sul profilo di monte sono calcolate in automatico dai software valutando le sovrappressioni verticali indotte Δσ<sub>v</sub> secondo il metodo del semispazio elastico o della distribuzione delle pressioni (cfr. schemi seguenti) e considerandone a favore di sicurezza il valore maggiore.

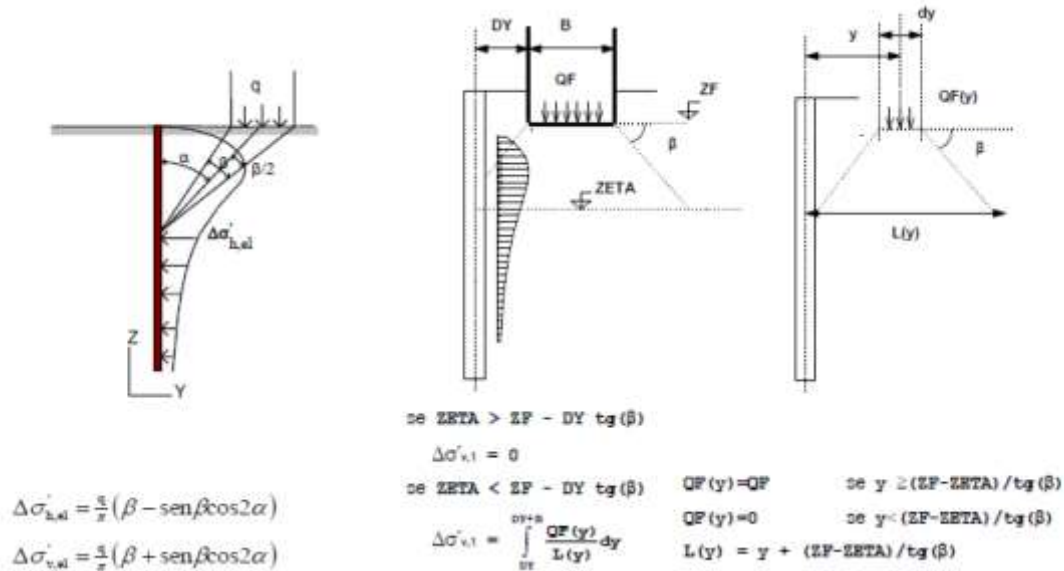


Figura 24: Schema di calcolo delle sovraspinte sulla parete

Le spinte orizzontali  $\Delta\sigma'_h$  dei sovraccarichi pertanto sono calcolate dalle condizioni iniziali geostatiche e successivamente per ogni fase di scavo, a seconda della condizione di spinta attiva o passiva che agisce sulle pareti. Nel caso in esame, date le ridotte dimensioni geometriche della via di transito che comporta il passaggio di automezzi di portata ridotta, secondo il §3.1.4 ci si riferisce alla categoria "G" (rimesse e parcheggi per transito di automezzi di peso a pieno carico superiore a 30 kN: da valutarsi caso per caso).

Si tiene conto pertanto di un sovraccarico stradale di 20 kPa distribuito a monte della paratia.

## 9 AZIONE SISMICA (E)

A Le azioni sismiche di progetto, in base alle quali valutare il rispetto dei diversi stati limite considerati, si definiscono a partire dalla "pericolosità sismica di base" del sito di costruzione, che costituisce l'elemento di conoscenza primario per la determinazione delle azioni sismiche. La pericolosità sismica del sito è definita in termini di:

$a_g$	Accelerazione orizzontale massima del terreno
$F_0$	Valore massimo del fattore di amplificazione dello spettro in accelerazione orizzontale
$T_C^*$	Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale

L'accelerazione orizzontale massima attesa  $a_g$  è riferita in condizioni di campo libero su sito di riferimento rigido con superficie topografica orizzontale di categoria A, nonché di ordinate dello spettro di risposta elastico in accelerazione ad essa corrispondente  $S_e(T)$ , con riferimento a prefissate probabilità di eccedenza  $P_{VR}$  nel periodo di riferimento  $V_R$  per ogni stato limite considerato. I valori dei parametri  $a_g$ ,  $F_0$  e  $T_C^*$  relativi alla pericolosità sismica su reticolo di riferimento nell'intervallo di riferimento sono forniti nelle tabelle riportate nell'ALLEGATO B del [40]. Una trattazione più approfondita è contenuta nella documentazione di riferimento [3].

### 9.1 Stati limite di progetto sismici

Le azioni di riferimento sono calcolate sulla base delle effettive coordinate geografiche in accordo alla griglia di riferimento con cui è stato suddiviso il territorio nazionale.

Comune:	Siena (SI)		
Coordinate:	Longitudine:	11.330855	
	Latitudine:	43.27905	

Dato il periodo di riferimento della struttura  $V_R = 50$  anni, si individuano i seguenti stati limite:

STATO LIMITE	$T_R$ [anni]	$a_g$ [g]	$F_0$ [-]	$T_C^*$ [s]
SLO	60	0.064	2.518	0.258
SLD	101	0.079	2.509	0.264
SLV	949	0.174	2.516	0.283
SLC	1950	0.212	2.556	0.290

### 9.2 Definizione dell'azione sismica

In accordo a quanto contenuto nel [40] si ricorre ad un metodo pseudostatico dove l'azione sismica è rappresentata da una forza statica equivalente pari al prodotto delle forze di gravità per un opportuno coefficiente sismico.

I coefficienti sismici sono stimati come:

$$k_h = \beta_s \cdot \frac{a_{max}}{g} \quad \text{Coefficiente sismico orizzontale}$$

$$k_v = \pm 0.5 \cdot k_h \quad \text{Coefficiente sismico verticale}$$

$$a_{max} = S_T \cdot S_S \cdot a_g \quad \text{Massima accelerazione orizzontale attesa al suolo}$$

$$S_T \quad \text{Coefficiente di amplificazione topografica (cfr. tabelle seguenti)}$$

$S_S$

Coefficiente di amplificazione stratigrafica (cfr. tabelle seguenti)

$\beta_S$

Coefficiente di riduzione dell'accelerazione massima attesa al sito (cfr. tabelle seguenti)

Categoria topografica	Ubicazione dell'opera o dell'intervento	$S_T$
T1	-	1,0
T2	In corrispondenza della sommità del pendio	1,2
T3	In corrispondenza della cresta del rilievo	1,2
T4	In corrispondenza della cresta del rilievo	1,4

Categoria sottosuolo	$S_S$	$C_C$
A	1,00	1,00
B	$1,00 \leq 1,40 - 0,40 \cdot F_0 \cdot \frac{a_g}{g} \leq 1,20$	$1,10 \cdot (T_C^*)^{-0,20}$
C	$1,00 \leq 1,70 - 0,60 \cdot F_0 \cdot \frac{a_g}{g} \leq 1,50$	$1,05 \cdot (T_C^*)^{-0,33}$
D	$0,90 \leq 2,40 - 1,50 \cdot F_0 \cdot \frac{a_g}{g} \leq 1,80$	$1,25 \cdot (T_C^*)^{-0,50}$
E	$1,00 \leq 2,00 - 1,10 \cdot F_0 \cdot \frac{a_g}{g} \leq 1,60$	$1,15 \cdot (T_C^*)^{-0,40}$

	Categoria di sottosuolo	
	A	B, C, D, E
	$\beta_s$	$\beta_s$
$0,2 < a_g(g) \leq 0,4$	0,30	0,28
$0,1 < a_g(g) \leq 0,2$	0,27	0,24
$a_g(g) \leq 0,1$	0,20	0,20

### 9.2.1 Accelerazione di riferimento

Nella tabella seguente sono riassunte le azioni sismiche per differenti i periodi di ritorno.

$T_R$ [anni]	$a_g$ [g]	$F_0$ [-]	$T_C^*$ [s]
30	0.048	2.503	0.246
50	0.059	2.535	0.255
72	0.069	2.501	0.261
101	0.079	2.510	0.264
140	0.091	2.481	0.268
201	0.104	2.476	0.269
475	0.141	2.484	0.277
975	0.176	2.518	0.283
2475	0.226	2.571	0.292

L'accelerazione ottenuta deve essere moltiplicata per il coefficiente di amplificazione locale, funzione della categoria di suolo e di coefficiente di amplificazione topografica, per definire l'azione

sismica di calcolo.

### 9.2.2 Categoria di suolo

Le prove di geofisica di superficie, tipo MASW, in corrispondenza dell'area di intervento riportate in [3] relazione sismica hanno evidenziato profili di velocità caratteristici di terreni appartenenti alla categoria C.

Sulla base dei risultati delle indagini eseguite e del locale contesto geologico è possibile adottare, per l'area oggetto di intervento, la categoria di suolo tipo "C", ovvero: "Depositi di terreni a grana grossa mediamente addensati o terreni a grana fina mediamente consistenti con profondità del substrato superiori a 30 m, caratterizzati da un miglioramento delle proprietà meccaniche con la profondità e da valori di velocità equivalente compresi tra 180 m/s e 360 m/s".

### 9.2.3 Categoria topografica

La categoria topografica di riferimento è la T1, contrassegnante aree con superfici pianeggianti, pendii e rilievi isolati con inclinazione media  $\leq 15^\circ$ .

### 9.3 Azioni inerziali masse

Con riferimento a §3.2.4 del [40], si ritiene trascurabile in fase sismica il contributo delle azioni accidentali, pertanto vengono considerati i contributi dei soli carichi permanenti:

$$G = G_1 + G_2 + \sum_j \Psi_{2j} \cdot Q_{kj}$$

$G$	Massa totale efficace
$G_1$	Masse dei pesi propri strutturali
$G_2$	Masse dei carichi permanenti non strutturali (permanent, terreno)
$Q_{kj}$	Masse dei carichi accidentali
$\Psi_{2j}$	

Le azioni inerziali orizzontali  $E_x$  e verticali  $E_y$  delle masse efficaci sono determinate incrementando i pesi propri  $G$  con accelerazioni verticali e orizzontali definite dai coefficienti di amplificazione dinamica  $k_h$  e  $k_v$ :

$E_x = G \cdot k_h$	Azione inerziale orizzontale
$E_y = G \cdot k_v$	Azione inerziale verticale
$G = G_1 + G_2$	Masse efficaci sismiche

### 9.4 Paratie

La deformabilità della parete viene tenuta in conto mediante dei coefficienti riduttivi correlati al massimo spostamento  $u_s$  che l'opera di altezza complessiva  $H$ , può ammettere senza riduzioni di resistenza ( $u_{s,max}$ ) e tale per cui sia verificata l'ipotesi di riduzione dell'azione sismica per duttilità strutturale ( $u_{s,min}$ ).

$k_h = \alpha \cdot \beta \cdot \frac{a_{max}}{g}$	Coefficiente sismico orizzontale
$k_v = \pm 0.5 \cdot k_h$	Coefficiente sismico verticale (generalmente trascurato per il calcolo delle paratie)
$a_{max} = S_T \cdot S_S \cdot a_g$	Massima accelerazione orizzontale attesa al suolo

$S_T$	Coefficiente di amplificazione topografica
$S_S$	Coefficiente di amplificazione stratigrafica
$\alpha$	Coefficiente di asincronicità del moto parete (cfr. tabelle seguenti)
$\beta$	Coefficiente di duttilità strutturale parete (cfr. tabelle seguenti)
$u_{s,max} = 0.005 \cdot H$	Massimo spostamento parete ammissibile senza riduzioni di resistenza
$u_{s,min} = \frac{1.8}{e^{\beta/0.135}}$	Minimo spostamento parete per riduzione duttilità $\beta$ (interpolazione grafico)

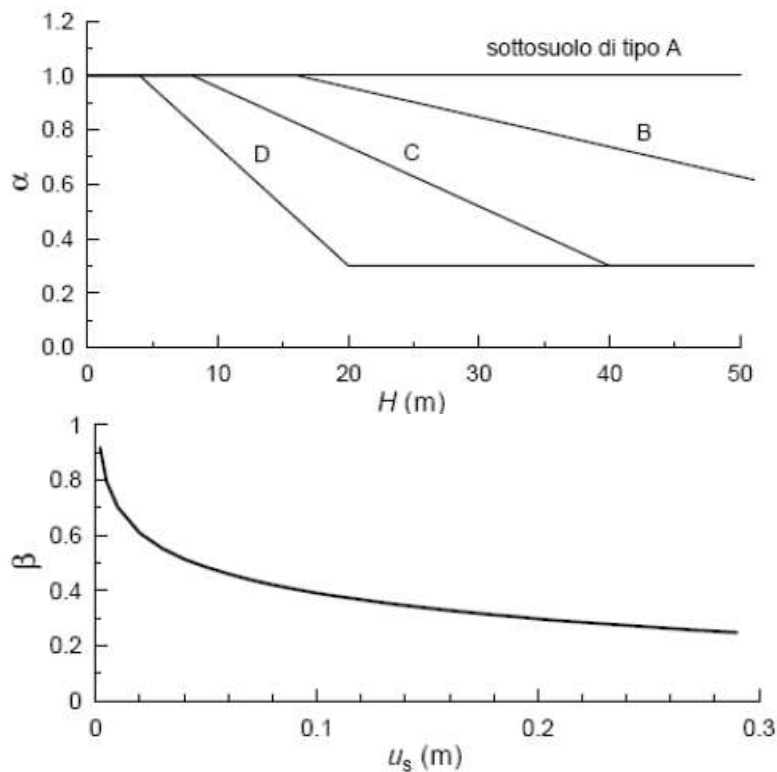


Figura 25: Coefficienti  $\alpha$ ,  $\beta$  di riduzione dell'accelerazione sismica attesa in sito (NTC 2018)

## 10 ANALISI DELLA PARATIA

### 10.1 Geometria

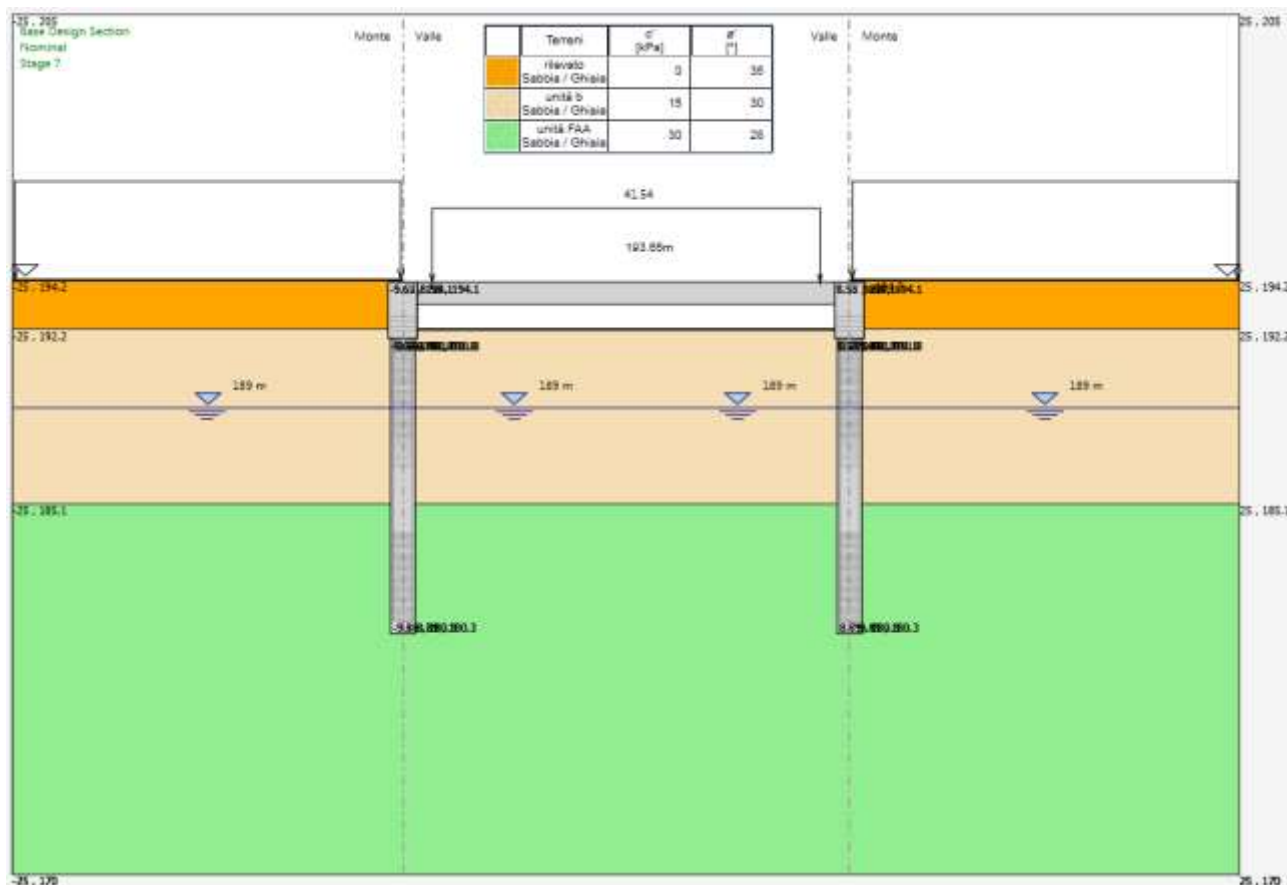


Figura 26: Schema geometrico e stratigrafico del modello di calcolo

### 10.2 Fasi costruttive

- |         |  |
|---------|--|
| Fase 1) | Inizializzazione condizione geostatica                   |
| Fase 2) | Sbancamento terreno fino a quota testa pali              |
| Fase 3) | Realizzazione della paratia, dei cordoli e della soletta |
| Fase 4) | Realizzazione del rilevato a monte della paratia         |
| Fase 5) | Applicazione dei carichi di progetto                     |
| Fase 6) | Condizione sismica                                       |

### 10.3 Risultati delle analisi e verifica delle sezioni

Nel seguito si riportano i risultati di maggior interesse. Per ulteriori approfondimenti si vedano i relativi allegati di calcolo.

Per le verifiche di resistenza si considera la seguente geometria:

#### Pali

Diametro	Ø1000
Armatura longitudinale	30Ø20
Armatura a taglio (spirale)	Ø12/10
Incidenza	≈ 130kg/m <sup>3</sup>

#### Cordolo



Altezza sezione	$H = 1.20m$
Armatura flessione	$(1 + 1)\varnothing 24/10$
Armatura a taglio	$\varnothing 12/20$
Incidenza	$\approx 130kg/m^3$

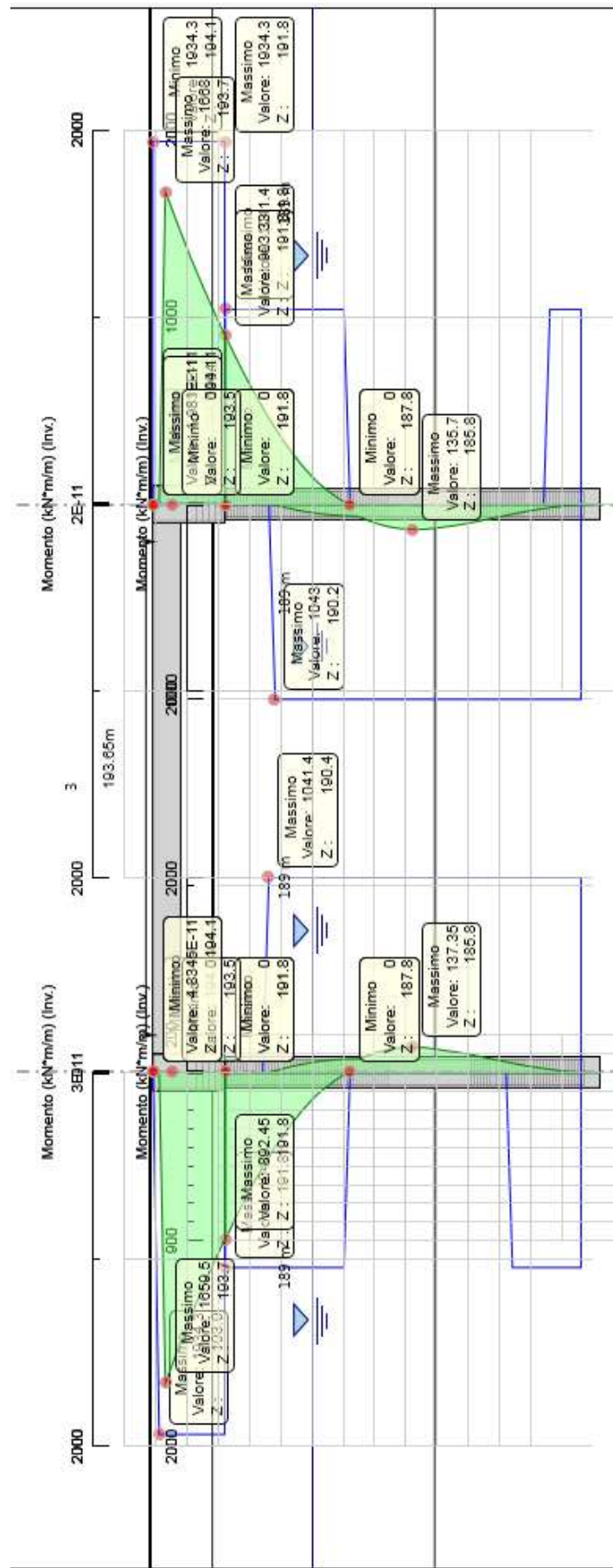


Figura 27: Inviluppo SLU – Momento flettente vs momento resistente

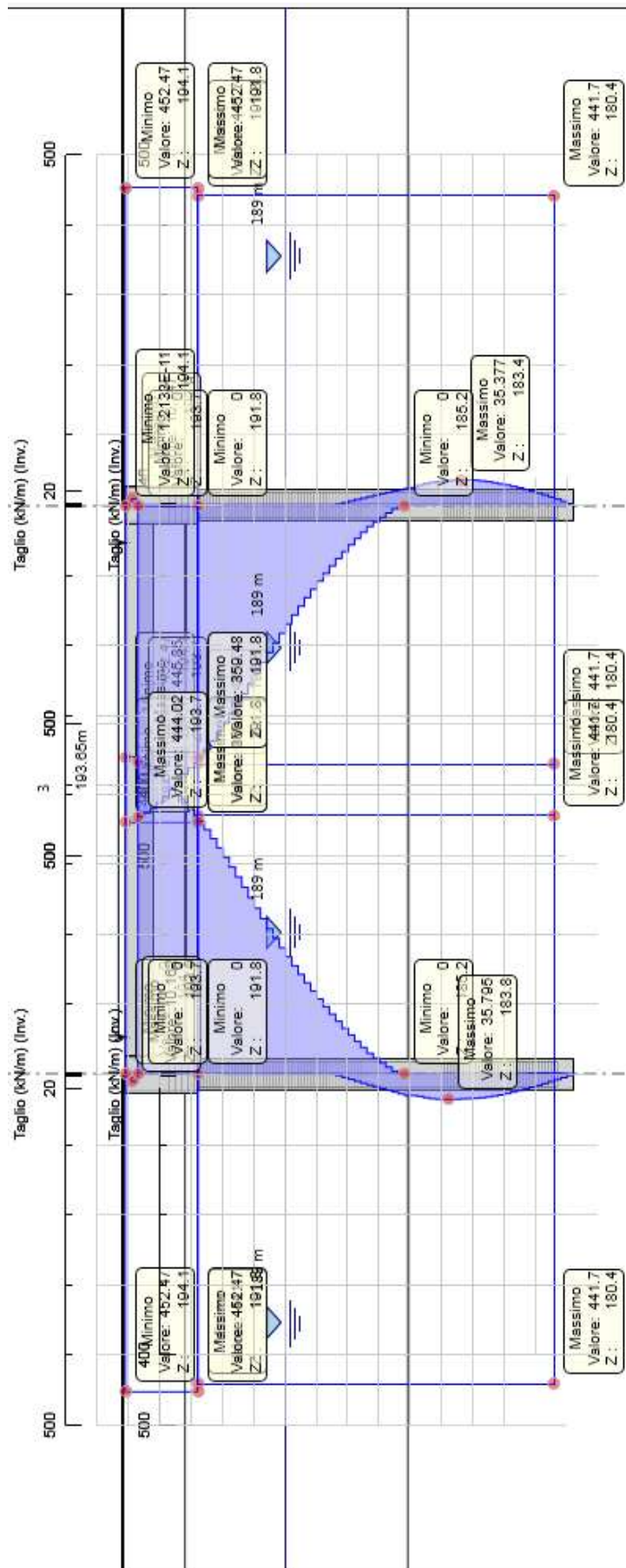


Figura 28: Involuppo SLU – Azione tagliante vs taglio resistente

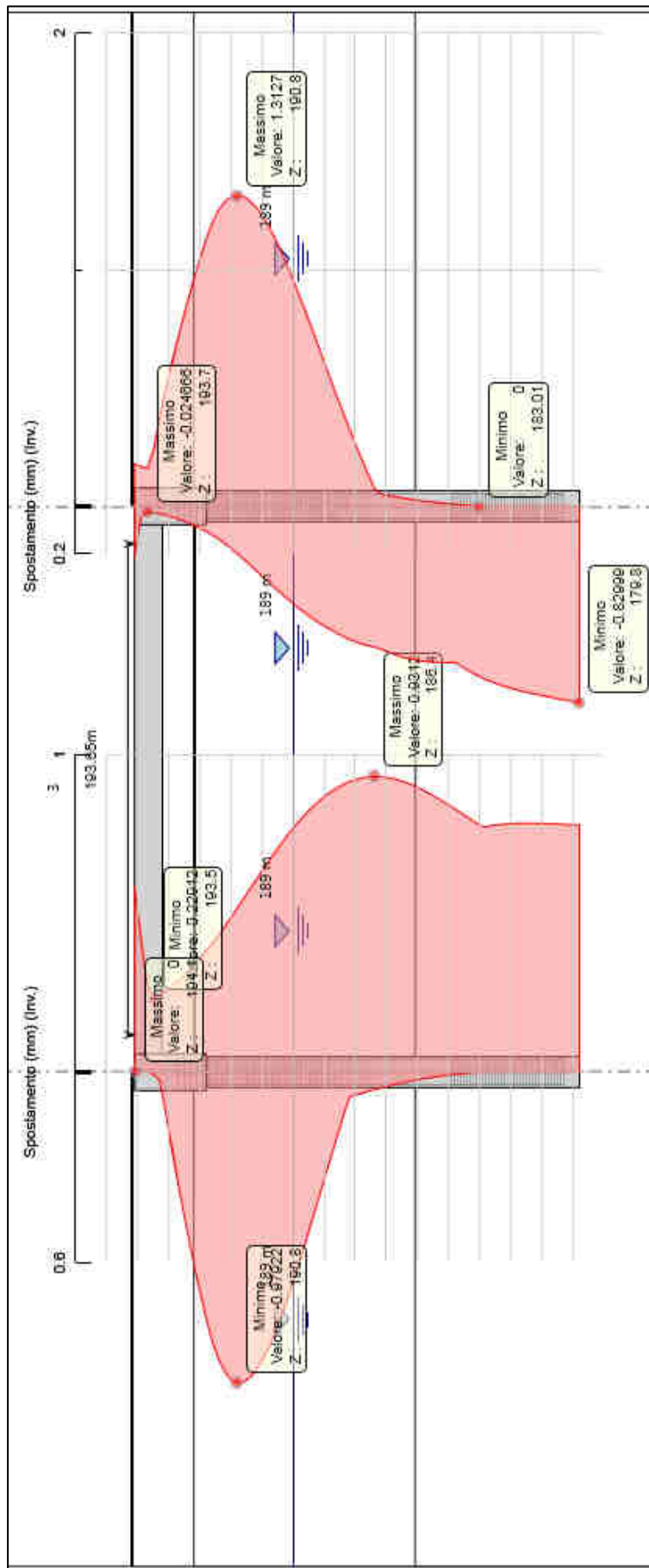


Figura 29: Involuppo SLE – Spostamenti

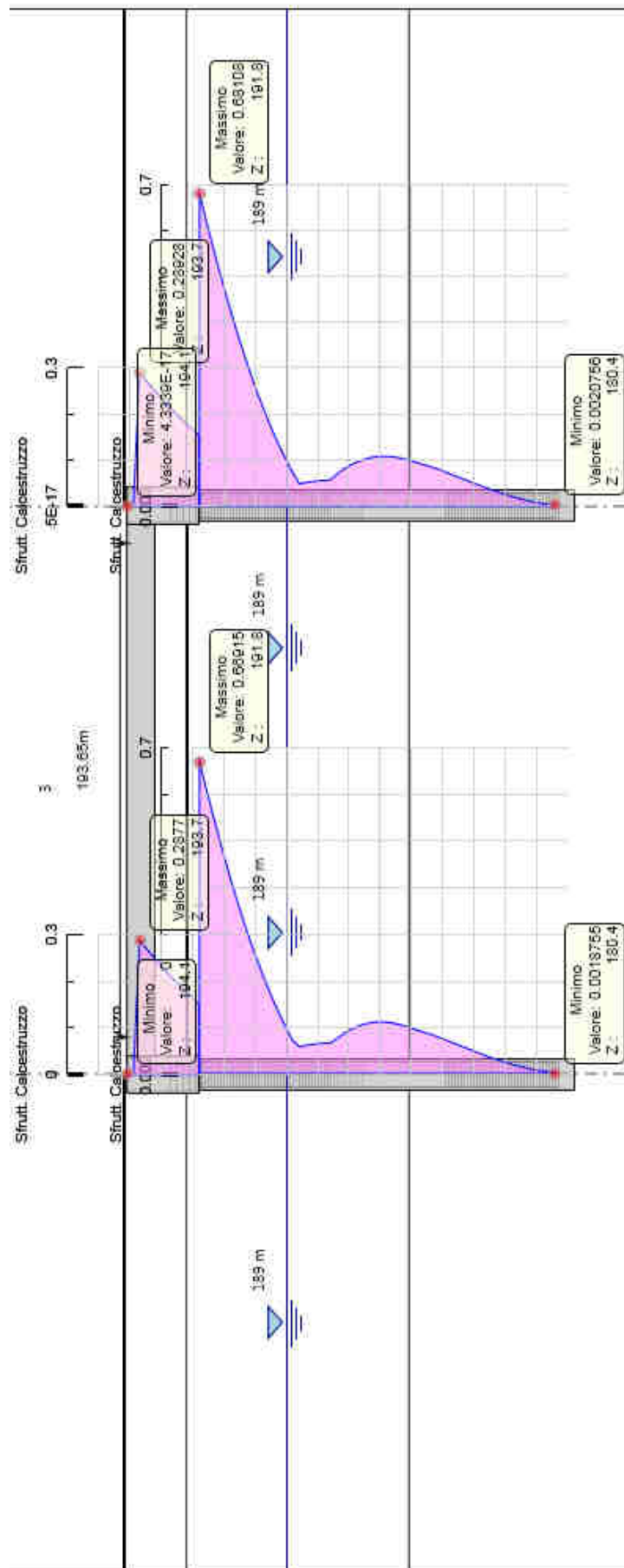


Figura 30: Involuppo SLE – Tasso di sfruttamento del calcestruzzo

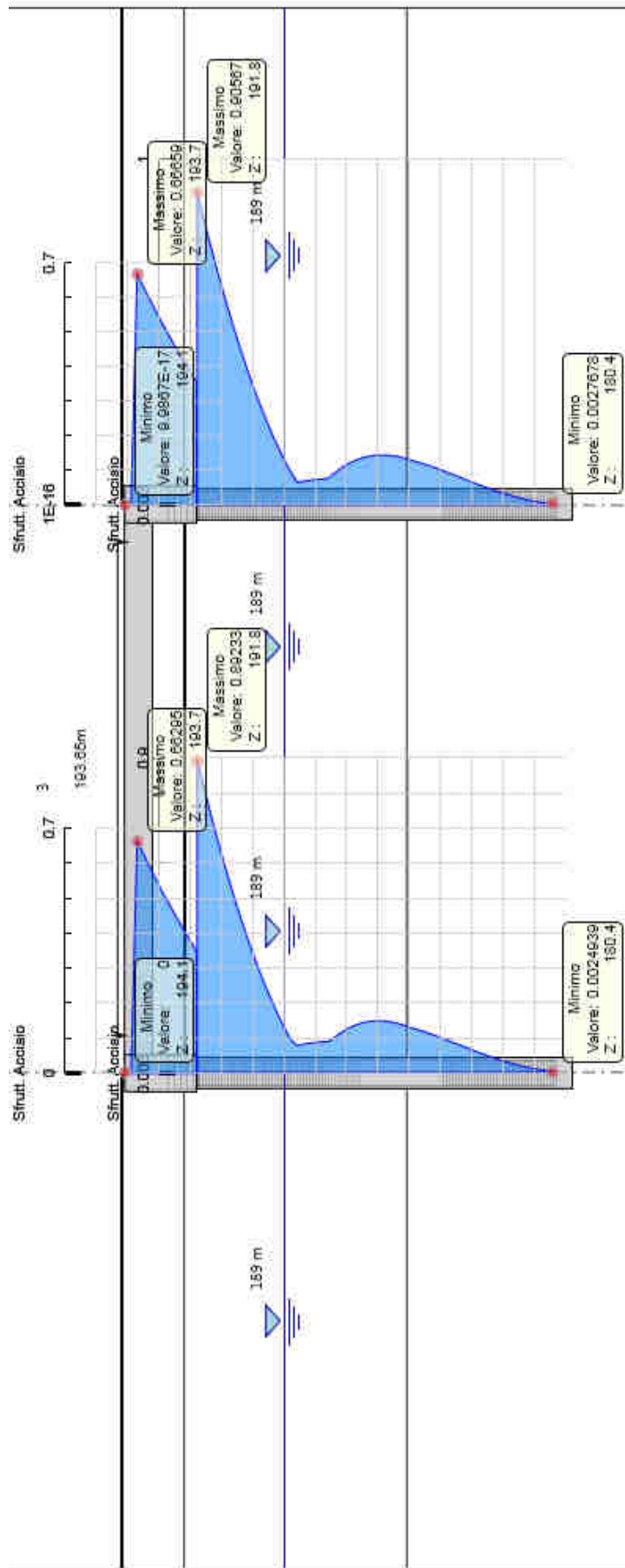


Figura 31: Involuppo SLE – Tasso di sfruttamento dell'acciaio

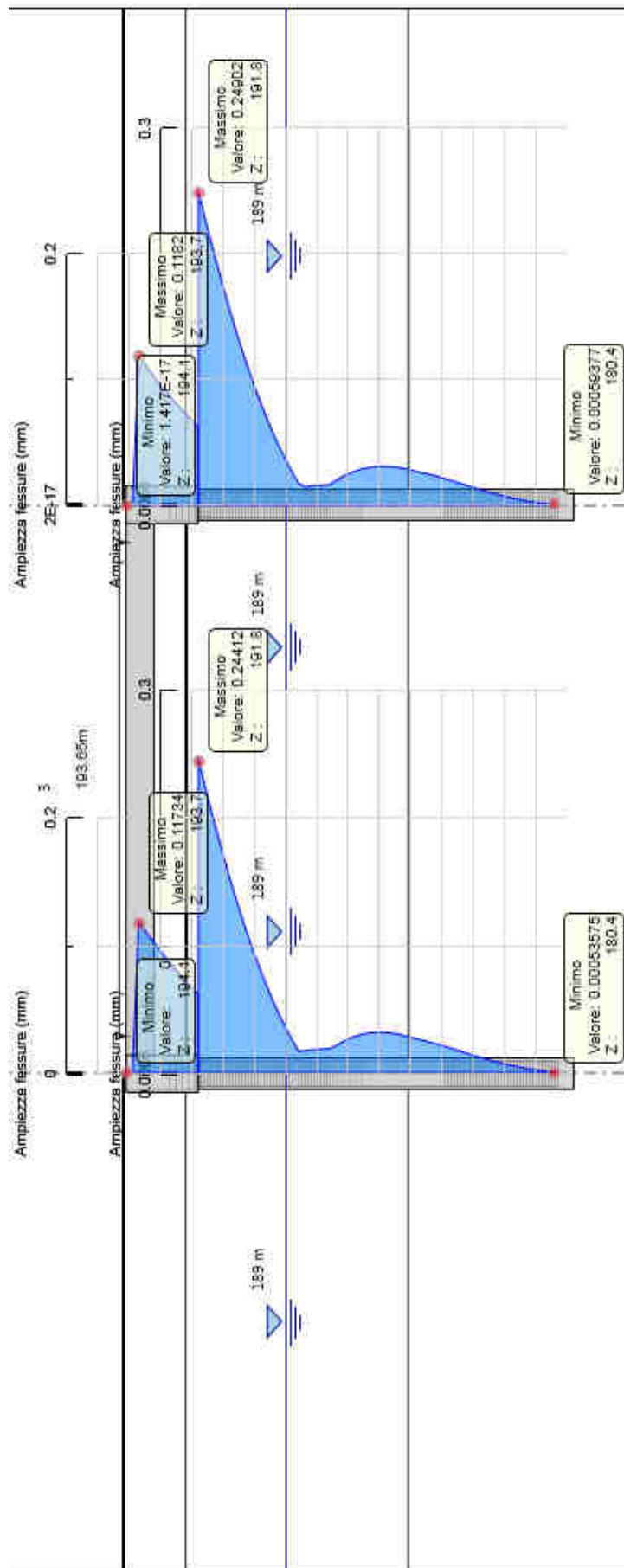


Figura 32: Inviluppo SLE – Ampiezza delle fessure

### 10.4 Verifica di capacità portante al carico limite pali

NOME: pali D1000		VERIFICA DI CAPACITA' PORTANTE								
DATI GEOMETRICI			RESISTENZE DI CALCOLO				RESISTENZE CARATTERISTICHE			
D (m)	1.00	Diametro	$R_{c,cal}$ (kN)	1994.9	Resist. laterale comp.	$R_{c,k}$ (kN)	1424.9	Resist. laterale comp.		
L (m)	12.00	Lunghezza	$R_{t,cal}$ (kN)	1994.9	Resist. laterale traz.	$R_{t,k}$ (kN)	1424.9	Resist. laterale traz.		
$A_b$ (m <sup>2</sup> )	0.79	Area base	$R_{b,cal}$ (kN)	1609.1	Resist. di base	$R_{b,k}$ (kN)	1149.3	Resist. di base		
$S_{lat}$ (m)	3.14	Superficie laterale	$\alpha_{r,c}$	1.000	coeff. riduzione $\tau_{lim}$ comp.	$\xi$	1.40	coeff. N° indagini		
			$\alpha_{r,t}$	1.000	coeff. riduzione $\tau_{lim}$ traz.	$W'$ (kN)	141.4	Peso efficace palo		
			$\alpha_q$	1.000	coeff. riduzione $q_{b,lim}$					
RESISTENZE DI PROGETTO			$Y_b$	$Y_s$	$R_d$ (kN)	$E_d$ (kN)	$E_d/R_d$	CEDIMENTI DI PROGETTO		
SLU STR [A1+M1+R3] comp.	1.35	1.15	1949.1	985.7	50.6%	VERIFICA OK	$\delta$ (mm)	$K_{sec}$ (kN/mm)		
SLU STR [A1+M1+R3] traz.	-	1.25	1281.3	0.0	0.0%	VERIFICA OK	+1.3	765.9		
							+0.0			

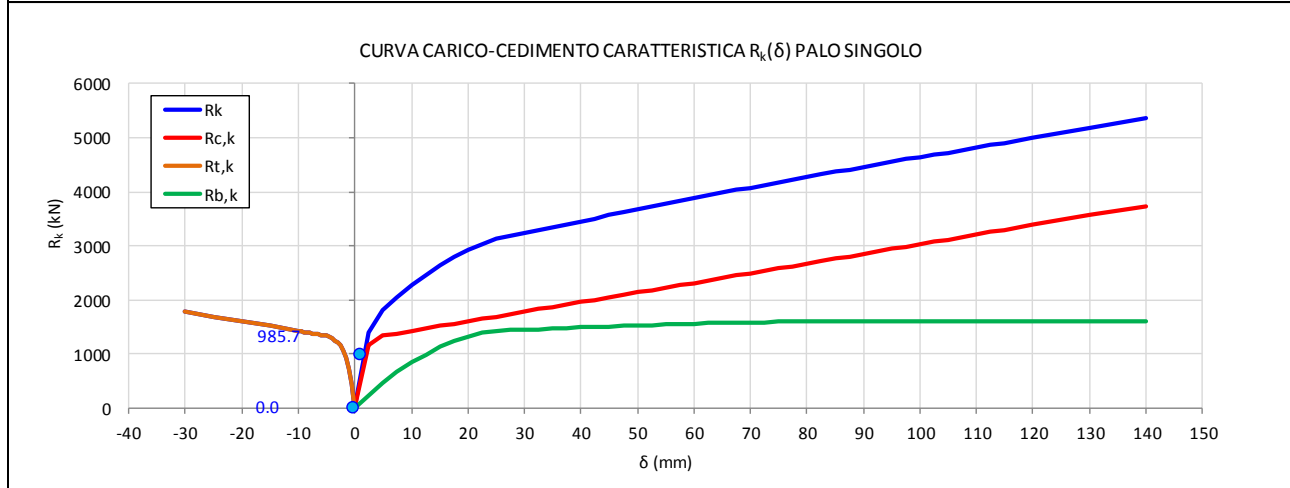


Figura 33: Riepilogo calcolo capacità portante





## 11 ALLEGATI DI CALCOLO

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# 1. Descrizione della Stratigrafia e degli Strati di Terreno

Tipo : HORIZONTAL  
 Quota : 200 m  
 OCR : 1

Tipo : HORIZONTAL  
 Quota : 192.2 m  
 OCR : 1

Tipo : HORIZONTAL  
 Quota : 185.1 m  
 OCR : 1

Strato di Terreno	Terreno	$\gamma$ dry	$\gamma$ sat	$\phi'$	$\phi_{cv}$	$\phi_p$	$c'$	Su	Modulo	Elastico	Eu	Evc	Eur	Ah	Av	exp	Pa	Rur/Rvc	Rvc	Ku	Kvc	Kur	
		kN/m <sup>3</sup>	kN/m <sup>3</sup>	°	°	°	kPa	kPa			kPa	kPa	kPa				kPa		kPa	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>3</sup>	
1	rilevato	20	20	35			0		Constant		30000	90000											
2	unità b	19.5	20.5	30			15		Constant		10000	30000											
3	unità FAA	20	21	28			30		Constant		20000	60000											

## 2. Descrizione Pareti

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Muro di sinistra

Armatura Lunghezza segmenti : 1 m

Rinforzo longitudinale 1

Lunghezza : 11.5 m

Materiale :

Quota iniziale : 191.8 m

Barre 1

Numero di barre : 30

Diametro : 0.02 m

Distanza dal bordo : 0.097 m

Staffe 1

Numero di staffe : 2

Copertura : 0.075 m

Diametro : 0.012 m

Lunghezza : 11.5 m

Quota iniziale : 191.8 m

Passo : 0.1 m

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

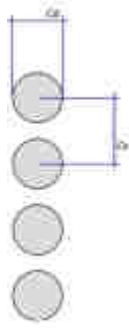
Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1





X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Muro di sinistra

Armatura Lunghezza segmenti : 1 m  
Rinforzo longitudinale 1  
Lunghezza : 11.5 m  
Materiale :  
Quota iniziale : 191.8 m  
Barre 1  
Numero di barre : 30  
Diametro : 0.02 m  
Distanza dal bordo : 0.097 m  
Staffe 1  
Numero di staffe : 2  
Copertura : 0.075 m  
Diametro : 0.012 m  
Lunghezza : 11.5 m  
Quota iniziale : 191.8 m  
Passo : 0.1 m

Armatura Lunghezza segmenti : 1 m  
Rinforzo longitudinale 1  
Lunghezza : 2.3 m  
Materiale :  
Quota iniziale : 194.1 m  
Barre di sinistra 1  
Numero di barre : 10  
Diametro : 0.024 m  
Distanza dal bordo : 0.064 m  
Barre di destra 1  
Numero di barre : 10  
Diametro : 0.024 m  
Distanza dal bordo : 0.064 m  
Staffe 1  
Numero di staffe : 2  
Copertura : 0.04 m  
Diametro : 0.012 m  
Lunghezza : 2.3 m  
Quota iniziale : 194.1 m  
Passo : 0.2 m

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1

Sezione : cordolo

Area equivalente : 1.2 m

Inerzia equivalente : 0.144 m<sup>4</sup>/m

Materiale calcestruzzo : C32/40

Tipo sezione : Solid

Spessore : 1.2 m

Efficacia : 1



X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Muro di destra

Armatura            Lunghezza segmenti : 1 m  
Rinforzo longitudinale 1  
Lunghezza : 11.5 m  
Materiale :  
Quota iniziale : 191.8 m  
Barre 1  
                        Numero di barre : 30  
                        Diametro : 0.02 m  
                        Distanza dal bordo : 0.097 m  
Staffe 1  
                        Numero di staffe : 2  
                        Copertura : 0.075 m  
                        Diametro : 0.012 m  
                        Lunghezza : 11.5 m  
                        Quota iniziale : 191.8 m  
                        Passo : 0.1 m

Armatura            Lunghezza segmenti : 1 m  
Rinforzo longitudinale 1  
Lunghezza : 2.3 m  
Materiale :  
Quota iniziale : 194.1 m  
Barre di sinistra 1  
                        Numero di barre : 10  
                        Diametro : 0.024 m  
                        Distanza dal bordo : 0.064 m  
Barre di destra 1  
                        Numero di barre : 10  
                        Diametro : 0.024 m  
                        Distanza dal bordo : 0.064 m  
Staffe 1  
                        Numero di staffe : 2  
                        Copertura : 0.04 m  
                        Diametro : 0.012 m  
                        Lunghezza : 2.3 m  
                        Quota iniziale : 194.1 m  
                        Passo : 0.2 m

Armatura            Lunghezza segmenti : 1 m  
Rinforzo longitudinale 1  
Lunghezza : 11.5 m  
Materiale :  
Quota iniziale : 191.8 m  
Barre 1  
                        Numero di barre : 30  
                        Diametro : 0.02 m

Distanza dal bordo : 0.097 m

Staffe 1

Numero di staffe : 2

Copertura : 0.075 m

Diametro : 0.012 m

Lunghezza : 11.5 m

Quota iniziale : 191.8 m

Passo : 0.1 m

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1

Sezione : cordolo

Area equivalente : 1.2 m

Inerzia equivalente : 0.144 m<sup>4</sup>/m

Materiale calcestruzzo : C32/40

Tipo sezione : Solid

Spessore : 1.2 m

Efficacia : 1

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

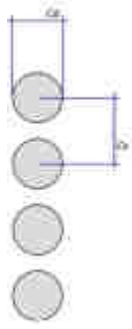
Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1



X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Muro di destra

Armatura Lunghezza segmenti : 1 m

Rinforzo longitudinale 1

Lunghezza : 11.5 m

Materiale :

Quota iniziale : 191.8 m

Barre 1

Numero di barre : 30

Diametro : 0.02 m

Distanza dal bordo : 0.097 m

Staffe 1

Numero di staffe : 2

Copertura : 0.075 m

Diametro : 0.012 m

Lunghezza : 11.5 m

Quota iniziale : 191.8 m

Passo : 0.1 m

Armatura Lunghezza segmenti : 1 m

Rinforzo longitudinale 1

Lunghezza : 2.3 m

Materiale :

Quota iniziale : 194.1 m

Barre di sinistra 1

Numero di barre : 10

Diametro : 0.024 m

Distanza dal bordo : 0.064 m

Barre di destra 1

Numero di barre : 10

Diametro : 0.024 m

Distanza dal bordo : 0.064 m

Staffe 1

Numero di staffe : 2

Copertura : 0.04 m

Diametro : 0.012 m

Lunghezza : 2.3 m

Quota iniziale : 194.1 m

Passo : 0.2 m

Armatura Lunghezza segmenti : 1 m

Rinforzo longitudinale 1

Lunghezza : 11.5 m

Materiale :

Quota iniziale : 191.8 m

Barre 1

Numero di barre : 30

Diametro : 0.02 m

Distanza dal bordo : 0.097 m

Staffe 1

Numero di staffe : 2

Copertura : 0.075 m

Diametro : 0.012 m

Lunghezza : 11.5 m

Quota iniziale : 191.8 m

Passo : 0.1 m

Armatura Lunghezza segmenti : 1 m

Rinforzo longitudinale 1

Lunghezza : 2.3 m

Materiale :

Quota iniziale : 194.1 m

Barre di sinistra 1

Numero di barre : 10

Diametro : 0.024 m

Distanza dal bordo : 0.064 m

Barre di destra 1

Numero di barre : 10

Diametro : 0.024 m

Distanza dal bordo : 0.064 m

Staffe 1

Numero di staffe : 2

Copertura : 0.04 m

Diametro : 0.012 m

Lunghezza : 2.3 m

Quota iniziale : 194.1 m

Passo : 0.2 m

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1

Sezione : cordolo

Area equivalente : 1.2 m

Inerzia equivalente : 0.144 m<sup>4</sup>/m

Materiale calcestruzzo : C32/40

Tipo sezione : Solid

Spessore : 1.2 m

Efficacia : 1

Sezione : palo D1000

Area equivalente : 0.604152433382652 m

Inerzia equivalente : 0.0378 m<sup>4</sup>/m

Materiale calcestruzzo : C28/35

Tipo sezione : Tangent

Spaziatura : 1.3 m

Diametro : 1 m

Efficacia : 1

Sezione : cordolo

Area equivalente : 1.2 m

Inerzia equivalente : 0.144 m<sup>4</sup>/m

Materiale calcestruzzo : C32/40

Tipo sezione : Solid

Spessore : 1.2 m

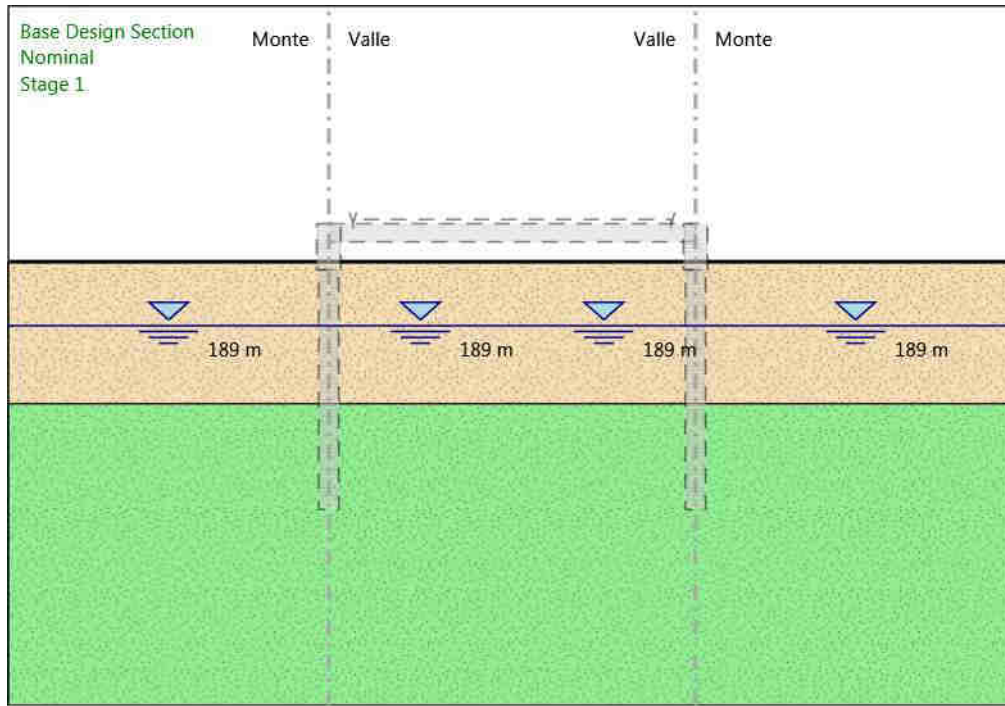
Efficacia : 1





### 3. Fasi di Calcolo

#### 3.1. Stage 1



Stage 1

Scavo

Muro di sinistra

Lato monte : 192.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 192.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

192.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

192.2 m

Falda acquifera

Falda di sinistra : 189 m

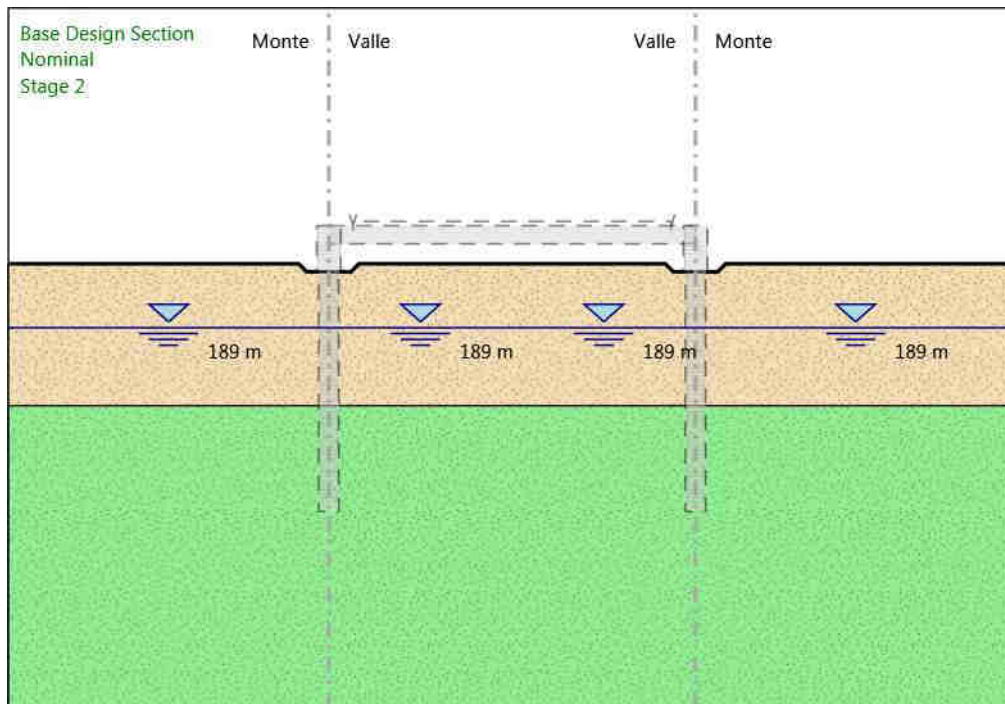
Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m



### 3.2. Stage 2



Stage 2

Scavo

Muro di sinistra

Lato monte : 191.8 m

Lato valle : 191.8 m

Muro di destra

Lato monte : 191.8 m

Lato valle : 191.8 m

Linea di scavo di sinistra (Irregolare)

(-25;192.2)

(-10.6;192.2)

(-10.2;191.8)

(-9.1;191.8)

Linea di scavo centrale (Irregolare)

(-9.1;191.8)

(-8;191.8)

(-7.6;192.2)

(7.6;192.2)

(8;191.8)

(9.1;191.8)

Linea di scavo di destra (Irregolare)

(9.1;191.8)

(10.2;191.8)

(10.6;192.2)

(25;192.2)

Falda acquifera

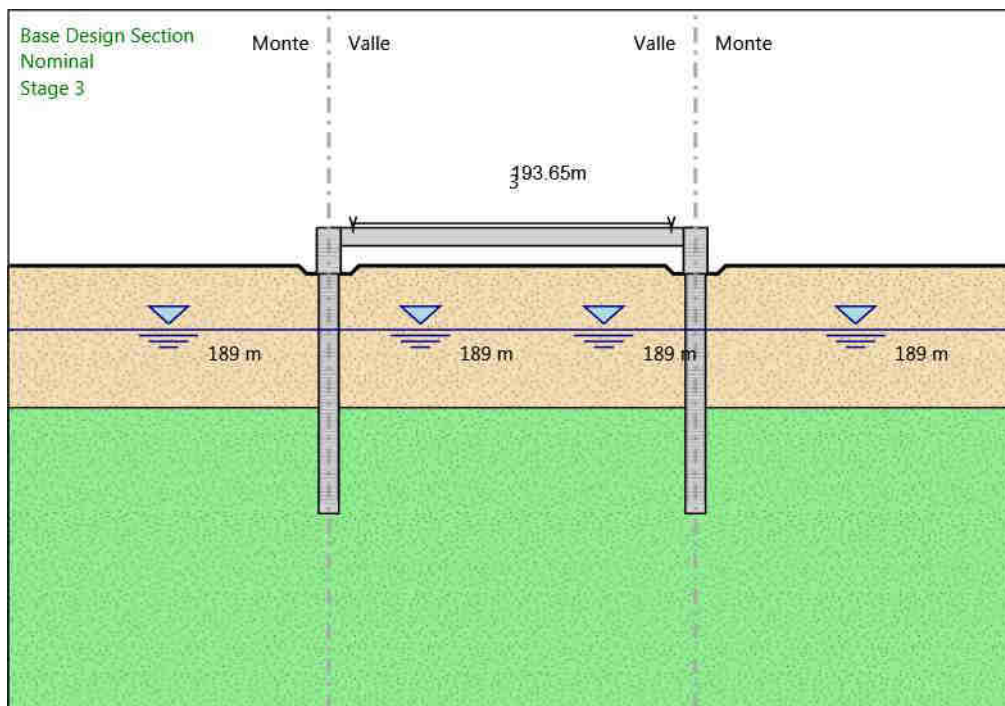
Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

### 3.3. Stage 3



Stage 3

Scavo

Muro di sinistra

Lato monte : 191.8 m

Lato valle : 191.8 m

Muro di destra

Lato monte : 191.8 m

Lato valle : 191.8 m

Linea di scavo di sinistra (Irregolare)

(-25;192.2)

(-10.6;192.2)

(-10.2;191.8)

(-9.1;191.8)

Linea di scavo centrale (Irregolare)

(-9.1;191.8)

(-8;191.8)

(-7.6;192.2)

(7.6;192.2)

(8;191.8)

(9.1;191.8)

Linea di scavo di destra (Irregolare)

(9.1;191.8)

(10.2;191.8)

(10.6;192.2)

(25;192.2)

#### Falda acquifera

Falda di sinistra : 189 m  
Falda di destra : 189 m  
Falda centrale-sinistra : 189 m  
Falda centrale-destra : 189 m

#### Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

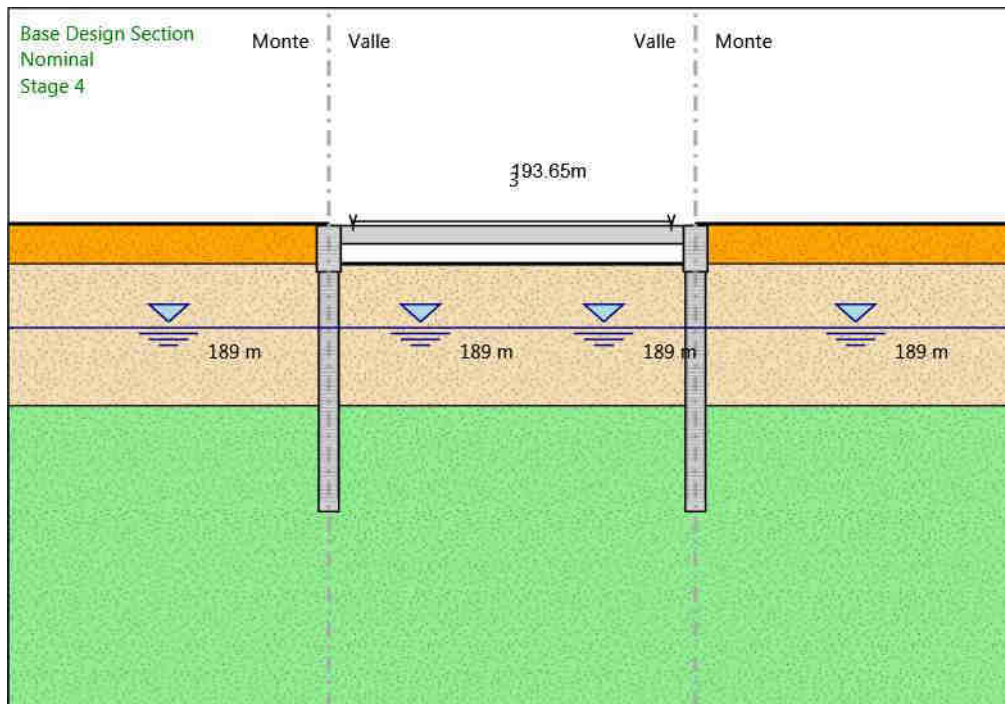
Z : 193.65 m

Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta

### 3.4. Stage 4



Stage 4

Scavo

Muro di sinistra

Lato monte : 194.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 194.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

194.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

194.2 m

Falda acquifera

Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

## Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

Z : 193.65 m

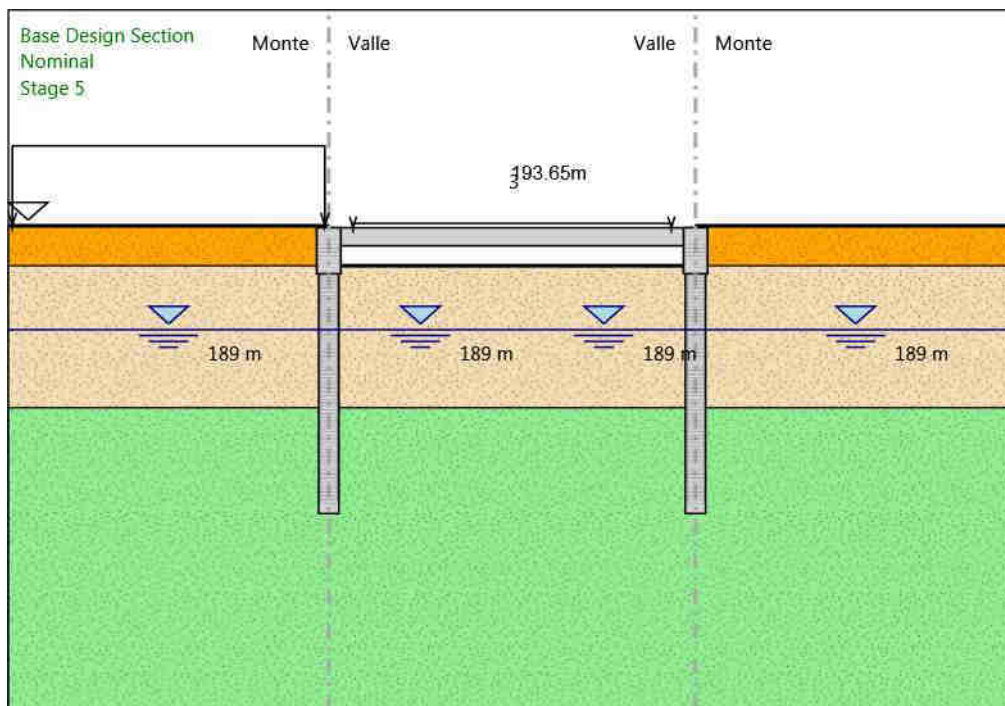
Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta



### 3.5. Stage 5



Stage 5

Scavo

Muro di sinistra

Lato monte : 194.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 194.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

194.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

194.2 m

Falda acquifera

Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

## Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

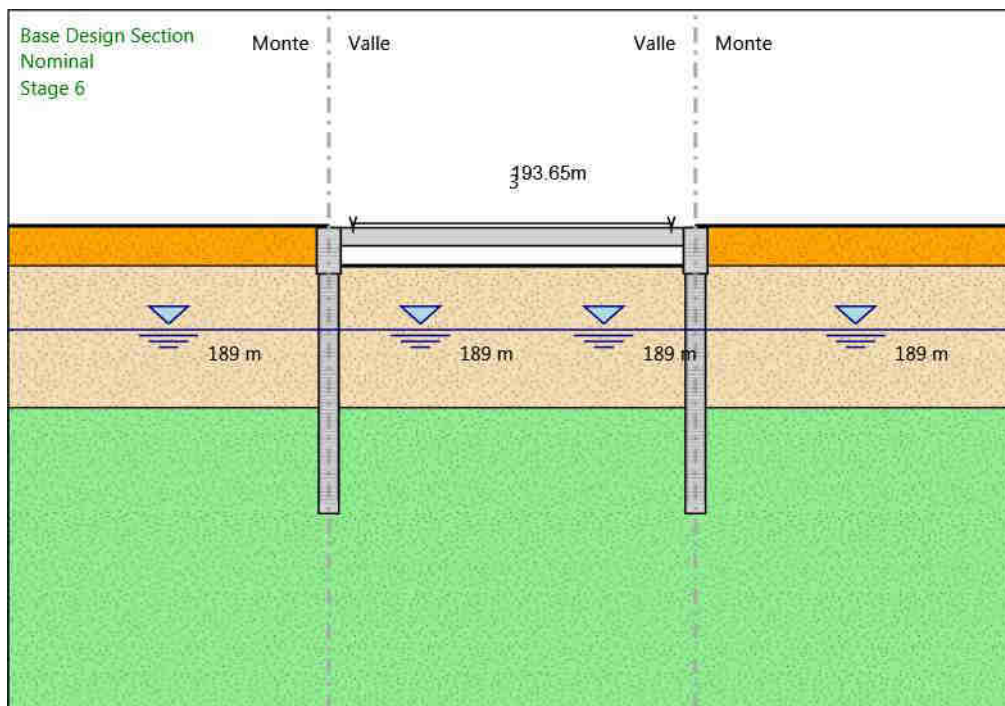
Z : 193.65 m

Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta

### 3.6. Stage 6



Stage 6

Scavo

Muro di sinistra

Lato monte : 194.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 194.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

194.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

194.2 m

Falda acquifera

Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

## Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

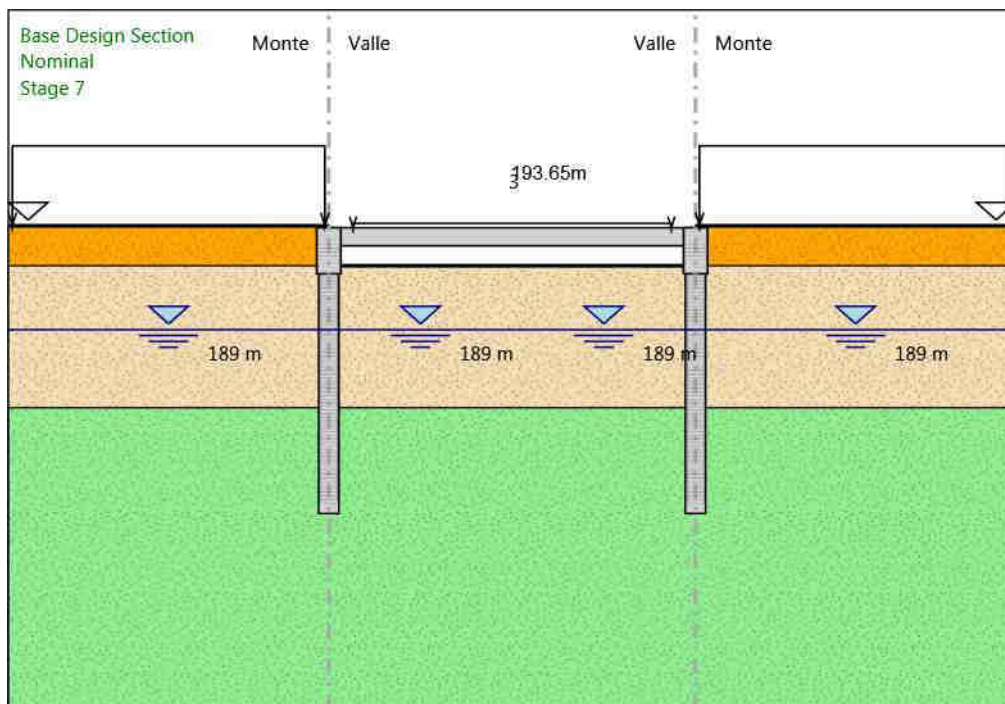
Z : 193.65 m

Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta

### 3.7. Stage 7



Stage 7

Scavo

Muro di sinistra

Lato monte : 194.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 194.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

194.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

194.2 m

Falda acquifera

Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

## Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

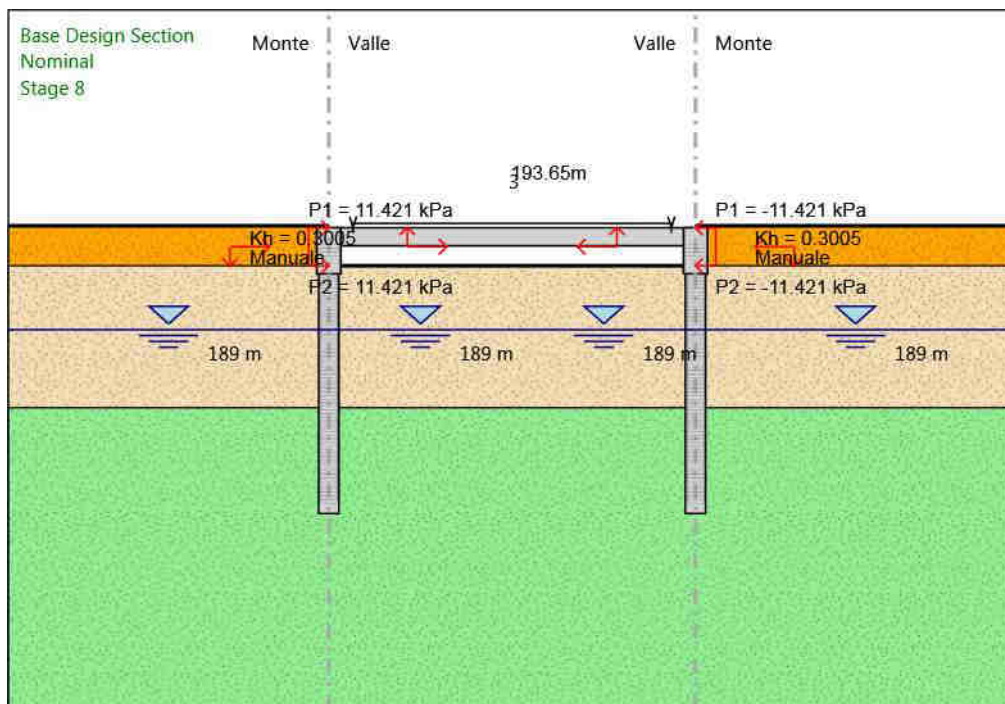
Z : 193.65 m

Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta

### 3.8. Stage 8



Stage 8

Scavo

Muro di sinistra

Lato monte : 194.2 m

Lato valle : 192.2 m

Muro di destra

Lato monte : 194.2 m

Lato valle : 192.2 m

Linea di scavo di sinistra (Orizzontale)

194.2 m

Linea di scavo centrale (Orizzontale)

192.2 m

Linea di scavo di destra (Orizzontale)

194.2 m

Falda acquifera

Falda di sinistra : 189 m

Falda di destra : 189 m

Falda centrale-sinistra : 189 m

Falda centrale-destra : 189 m

## Elementi strutturali

Paratia : pali\_sx

X : -9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_sx

X : -9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Paratia : pali\_dx

X : 9.1 m

Quota in alto : 191.8 m

Quota di fondo : 179.8 m

Sezione : palo D1000

Paratia : cordolo\_dx

X : 9.1 m

Quota in alto : 194.1 m

Quota di fondo : 191.8 m

Sezione : cordolo

Soletta : soletta

X del primo muro : -9.1 m

X del secondo muro : 9.1 m

Z : 193.65 m

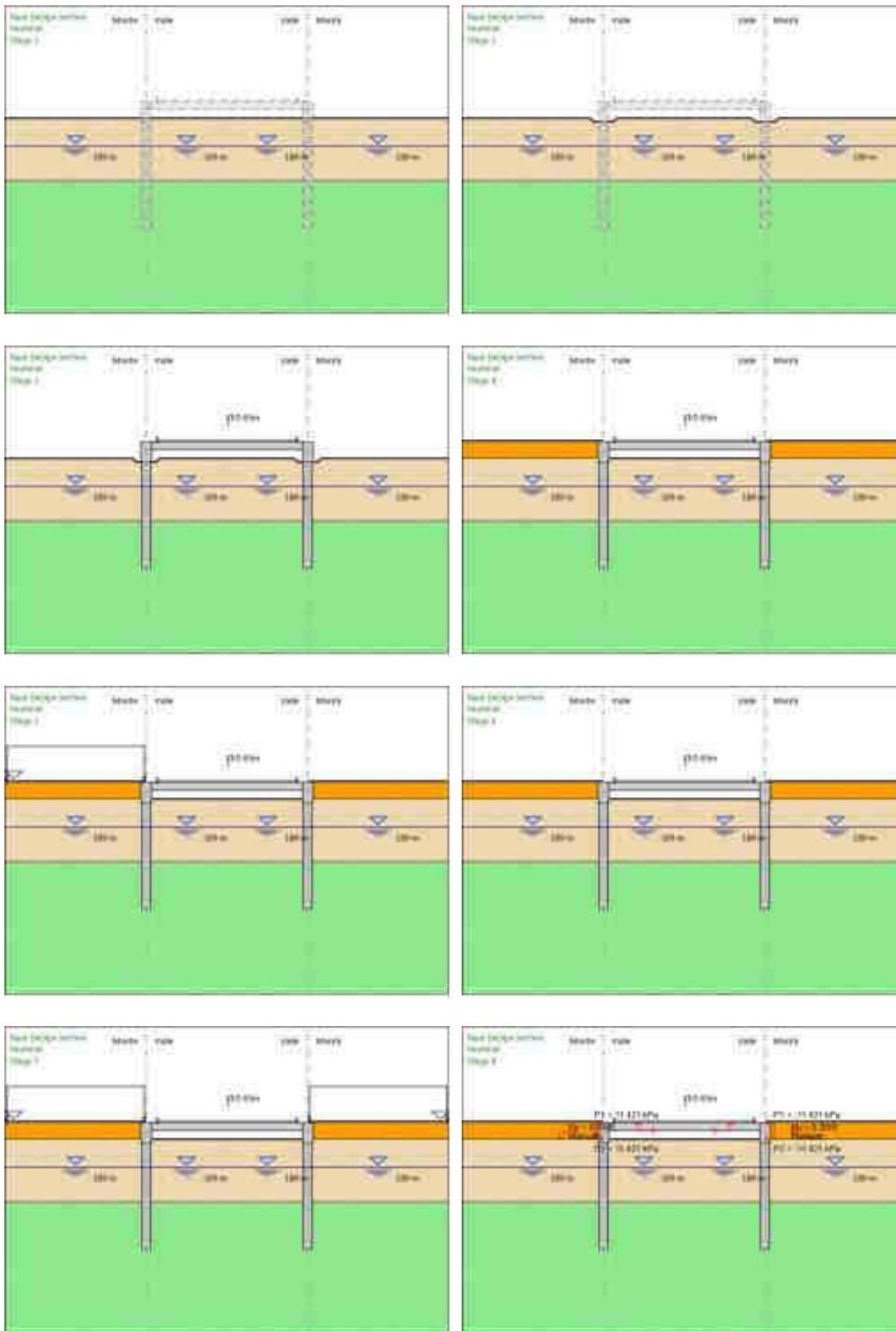
Lunghezza : 18.2 m

Angolo : 0 °

Sezione : soletta



### 3.9. Tabella Configurazione Stage (Nominal)



## 4. Descrizione Coefficienti Design Assumption

### Coefficienti A

Nome	Carichi Per- manenti Sfavorevoli (F_dead_lo ad_unfa- vour)	Carichi Per- manenti Favorevoli (F_dead_lo ad_favour)	Carichi Va- riabili Sfa- vorevoli (F_live_loa d_unfa- vour)	Carichi Va- riabili Fa- vorevoli (F_live_loa d_favour)	Carico Si- smico (F_seism_ load)	Pres sioni Lato Mon te (F_ Wa- terD R)	Pres sioni Lato Vall e (F_ Wa- ter Res)	Carichi Perma- nenti De- stabiliz- zanti (F_UPL_G DStab)	Carichi Perma- nenti Sta- bilizzanti (F_UPL_G Stab)	Carichi Va- riabili De- stabiliz- zanti (F_UPL_Q DStab)	Carichi Perma- nenti De- stabiliz- zanti (F_HYD_G DStab)	Carichi Perma- nenti Sta- bilizzanti (F_HYD_G Stab)	Carichi Va- riabili De- stabiliz- zanti (F_HYD_Q DStab)
Simbolo	$\gamma_G$	$\gamma_G$	$\gamma_Q$	$\gamma_Q$	$\gamma_{QE}$	$\gamma_G$	$\gamma_G$	$\gamma_{Gdst}$	$\gamma_{Gstb}$	$\gamma_{Qdst}$	$\gamma_{Gdst}$	$\gamma_{Gstb}$	$\gamma_{Qdst}$
Nominal	1	1	1	1	1	1	1	1	1	1	1	1	1
NTC2018 : SLE (Rara/Fr equente /Quasi Perma- nente)	1	1	1	1	0	1	1	1	1	1	1	1	1
NTC2018 : A1+M1+ R1 (R3 per ti- ranti)	1.3	1	1.5	1	0	1.3	1	1	1	1	1.3	0.9	1
NTC2018 : A2+M2+ R1	1	1	1.3	1	0	1	1	1	1	1	1.3	0.9	1
NTC2018 : SI- SMICA STR	1	1	1	1	1	1	1	1	1	1	1	1	1
NTC2018 : SI- SMICA GEO	1	1	1	1	1	1	1	1	1	1	1.3	0.9	1

### Coefficienti M

Nome	Parziale su $\tan(\phi')$ (F_Fr)	Parziale su c' (F_eff_cohe)	Parziale su Su (F_Su)	Parziale su qu (F_qu)	Parziale su peso specifico (F_gamma)
Simbolo	$\gamma_\phi$	$\gamma_c$	$\gamma_{cu}$	$\gamma_{qu}$	$\gamma_\gamma$
Nominal	1	1	1	1	1
NTC2018: SLE (Rara/Frequente/Quasi Permanente)	1	1	1	1	1
NTC2018: A1+M1+R1 (R3 per tiranti)	1	1	1	1	1
NTC2018: A2+M2+R1	1.25	1.25	1.4	1	1
NTC2018: SISMICA STR	1	1	1	1	1
NTC2018: SISMICA GEO	1	1	1	1	1

### Coefficienti R

Nome	Parziale resistenza terreno (es. Kp) (F_Soil_Res_walls)	Parziale resistenza Tiranti permanenti (F_Anch_P)	Parziale resistenza Tiranti temporanei (F_Anch_T)	Parziale elementi strutturali (F_wall)
Simbolo	$\gamma_{Re}$	$\gamma_{ap}$	$\gamma_{at}$	
Nominal	1	1	1	1
NTC2018: SLE (Rara/Frequente/Quasi Permanente)	1	1	1	1
NTC2018: A1+M1+R1 (R3 per tiranti)	1	1.2	1.1	1
NTC2018: A2+M2+R1	1	1.2	1.1	1
NTC2018: SISMICA STR	1	1.2	1.1	1
NTC2018: SISMICA GEO	1	1.2	1.1	1

## 4.1. Risultati NTC2018: SLE (Rara/Frequente/Quasi Permanente)

### 4.1.1. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 1

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 1	194.1	0	
Stage 1	193.9	0	
Stage 1	193.7	0	
Stage 1	193.5	0	
Stage 1	193.3	0	
Stage 1	193.1	0	
Stage 1	192.9	0	
Stage 1	192.7	0	
Stage 1	192.5	0	
Stage 1	192.3	0	
Stage 1	192.1	0	
Stage 1	191.9	0	
Stage 1	191.8	0	
Stage 1	191.6	0	
Stage 1	191.4	0	
Stage 1	191.2	0	
Stage 1	191	0	
Stage 1	190.8	0	
Stage 1	190.6	0	
Stage 1	190.4	0	
Stage 1	190.2	0	
Stage 1	190	0	
Stage 1	189.8	0	
Stage 1	189.6	0	
Stage 1	189.4	0	
Stage 1	189.2	0	
Stage 1	189	0	
Stage 1	188.8	0	
Stage 1	188.6	0	
Stage 1	188.4	0	
Stage 1	188.2	0	
Stage 1	188	0	
Stage 1	187.8	0	
Stage 1	187.6	0	
Stage 1	187.4	0	
Stage 1	187.2	0	
Stage 1	187	0	
Stage 1	186.8	0	
Stage 1	186.6	0	
Stage 1	186.4	0	
Stage 1	186.2	0	
Stage 1	186	0	
Stage 1	185.8	0	
Stage 1	185.6	0	
Stage 1	185.4	0	
Stage 1	185.2	0	
Stage 1	185	0	
Stage 1	184.8	0	
Stage 1	184.6	0	
Stage 1	184.4	0	
Stage 1	184.2	0	
Stage 1	184	0	
Stage 1	183.8	0	
Stage 1	183.6	0	
Stage 1	183.4	0	
Stage 1	183.2	0	
Stage 1	183	0	
Stage 1	182.8	0	
Stage 1	182.6	0	
Stage 1	182.4	0	
Stage 1	182.2	0	
Stage 1	182	0	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 1	181.8	0	
Stage 1	181.6	0	
Stage 1	181.4	0	
Stage 1	181.2	0	
Stage 1	181	0	
Stage 1	180.8	0	
Stage 1	180.6	0	
Stage 1	180.4	0	
Stage 1	180.2	0	
Stage 1	180	0	
Stage 1	179.8	0	

**4.1.2. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 1**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: RIGHT
Stage	Z (m)	Spostamento (mm)	
Stage 1	194.1	0	
Stage 1	193.9	0	
Stage 1	193.7	0	
Stage 1	193.5	0	
Stage 1	193.3	0	
Stage 1	193.1	0	
Stage 1	192.9	0	
Stage 1	192.7	0	
Stage 1	192.5	0	
Stage 1	192.3	0	
Stage 1	192.1	0	
Stage 1	191.9	0	
Stage 1	191.8	0	
Stage 1	191.6	0	
Stage 1	191.4	0	
Stage 1	191.2	0	
Stage 1	191	0	
Stage 1	190.8	0	
Stage 1	190.6	0	
Stage 1	190.4	0	
Stage 1	190.2	0	
Stage 1	190	0	
Stage 1	189.8	0	
Stage 1	189.6	0	
Stage 1	189.4	0	
Stage 1	189.2	0	
Stage 1	189	0	
Stage 1	188.8	0	
Stage 1	188.6	0	
Stage 1	188.4	0	
Stage 1	188.2	0	
Stage 1	188	0	
Stage 1	187.8	0	
Stage 1	187.6	0	
Stage 1	187.4	0	
Stage 1	187.2	0	
Stage 1	187	0	
Stage 1	186.8	0	
Stage 1	186.6	0	
Stage 1	186.4	0	
Stage 1	186.2	0	
Stage 1	186	0	
Stage 1	185.8	0	
Stage 1	185.6	0	
Stage 1	185.4	0	
Stage 1	185.2	0	
Stage 1	185	0	
Stage 1	184.8	0	
Stage 1	184.6	0	
Stage 1	184.4	0	
Stage 1	184.2	0	
Stage 1	184	0	
Stage 1	183.8	0	
Stage 1	183.6	0	
Stage 1	183.4	0	
Stage 1	183.2	0	
Stage 1	183	0	
Stage 1	182.8	0	
Stage 1	182.6	0	
Stage 1	182.4	0	
Stage 1	182.2	0	
Stage 1	182	0	
Stage 1	181.8	0	
Stage 1	181.6	0	
Stage 1	181.4	0	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: RIGHT
Stage	Z (m)	Spostamento (mm)	
Stage 1	181.2	0	
Stage 1	181	0	
Stage 1	180.8	0	
Stage 1	180.6	0	
Stage 1	180.4	0	
Stage 1	180.2	0	
Stage 1	180	0	
Stage 1	179.8	0	

**4.1.3. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 1**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

**4.1.4. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 1**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

**4.1.5. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 2**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 2	194.1	0	
Stage 2	193.9	0	
Stage 2	193.7	0	
Stage 2	193.5	0	
Stage 2	193.3	0	
Stage 2	193.1	0	
Stage 2	192.9	0	
Stage 2	192.7	0	
Stage 2	192.5	0	
Stage 2	192.3	0	
Stage 2	192.1	0	
Stage 2	191.9	0	
Stage 2	191.8	0	
Stage 2	191.6	0	
Stage 2	191.4	0	
Stage 2	191.2	0	
Stage 2	191	0	
Stage 2	190.8	0	
Stage 2	190.6	0	
Stage 2	190.4	0	
Stage 2	190.2	0	
Stage 2	190	0	
Stage 2	189.8	0	
Stage 2	189.6	0	
Stage 2	189.4	0	
Stage 2	189.2	0	
Stage 2	189	0	
Stage 2	188.8	0	
Stage 2	188.6	0	
Stage 2	188.4	0	
Stage 2	188.2	0	
Stage 2	188	0	
Stage 2	187.8	0	
Stage 2	187.6	0	
Stage 2	187.4	0	
Stage 2	187.2	0	
Stage 2	187	0	
Stage 2	186.8	0	
Stage 2	186.6	0	
Stage 2	186.4	0	
Stage 2	186.2	0	
Stage 2	186	0	
Stage 2	185.8	0	
Stage 2	185.6	0	
Stage 2	185.4	0	
Stage 2	185.2	0	
Stage 2	185	0	
Stage 2	184.8	0	
Stage 2	184.6	0	
Stage 2	184.4	0	
Stage 2	184.2	0	
Stage 2	184	0	
Stage 2	183.8	0	
Stage 2	183.6	0	
Stage 2	183.4	0	
Stage 2	183.2	0	
Stage 2	183	0	
Stage 2	182.8	0	
Stage 2	182.6	0	
Stage 2	182.4	0	
Stage 2	182.2	0	
Stage 2	182	0	
Stage 2	181.8	0	
Stage 2	181.6	0	
Stage 2	181.4	0	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 2	181.2	0	
Stage 2	181	0	
Stage 2	180.8	0	
Stage 2	180.6	0	
Stage 2	180.4	0	
Stage 2	180.2	0	
Stage 2	180	0	
Stage 2	179.8	0	

**4.1.6. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 2**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 2	194.1	0
Stage 2	193.9	0
Stage 2	193.7	0
Stage 2	193.5	0
Stage 2	193.3	0
Stage 2	193.1	0
Stage 2	192.9	0
Stage 2	192.7	0
Stage 2	192.5	0
Stage 2	192.3	0
Stage 2	192.1	0
Stage 2	191.9	0
Stage 2	191.8	0
Stage 2	191.6	0
Stage 2	191.4	0
Stage 2	191.2	0
Stage 2	191	0
Stage 2	190.8	0
Stage 2	190.6	0
Stage 2	190.4	0
Stage 2	190.2	0
Stage 2	190	0
Stage 2	189.8	0
Stage 2	189.6	0
Stage 2	189.4	0
Stage 2	189.2	0
Stage 2	189	0
Stage 2	188.8	0
Stage 2	188.6	0
Stage 2	188.4	0
Stage 2	188.2	0
Stage 2	188	0
Stage 2	187.8	0
Stage 2	187.6	0
Stage 2	187.4	0
Stage 2	187.2	0
Stage 2	187	0
Stage 2	186.8	0
Stage 2	186.6	0
Stage 2	186.4	0
Stage 2	186.2	0
Stage 2	186	0
Stage 2	185.8	0
Stage 2	185.6	0
Stage 2	185.4	0
Stage 2	185.2	0
Stage 2	185	0
Stage 2	184.8	0
Stage 2	184.6	0
Stage 2	184.4	0
Stage 2	184.2	0
Stage 2	184	0
Stage 2	183.8	0
Stage 2	183.6	0
Stage 2	183.4	0
Stage 2	183.2	0
Stage 2	183	0
Stage 2	182.8	0
Stage 2	182.6	0
Stage 2	182.4	0
Stage 2	182.2	0
Stage 2	182	0
Stage 2	181.8	0
Stage 2	181.6	0
Stage 2	181.4	0

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 2	181.2	0
Stage 2	181	0
Stage 2	180.8	0
Stage 2	180.6	0
Stage 2	180.4	0
Stage 2	180.2	0
Stage 2	180	0
Stage 2	179.8	0

**4.1.7. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 2**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

**4.1.8. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 2**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

**4.1.9. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 3**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 3	194.1	0.04	
Stage 3	193.9	0.03	
Stage 3	193.7	0.01	
Stage 3	193.5	-0.01	
Stage 3	193.3	-0.03	
Stage 3	193.1	-0.04	
Stage 3	192.9	-0.06	
Stage 3	192.7	-0.07	
Stage 3	192.5	-0.08	
Stage 3	192.3	-0.1	
Stage 3	192.1	-0.11	
Stage 3	191.9	-0.12	
Stage 3	191.8	-0.12	
Stage 3	191.6	-0.13	
Stage 3	191.4	-0.14	
Stage 3	191.2	-0.15	
Stage 3	191	-0.15	
Stage 3	190.8	-0.15	
Stage 3	190.6	-0.16	
Stage 3	190.4	-0.16	
Stage 3	190.2	-0.15	
Stage 3	190	-0.15	
Stage 3	189.8	-0.15	
Stage 3	189.6	-0.15	
Stage 3	189.4	-0.14	
Stage 3	189.2	-0.14	
Stage 3	189	-0.13	
Stage 3	188.8	-0.13	
Stage 3	188.6	-0.12	
Stage 3	188.4	-0.11	
Stage 3	188.2	-0.11	
Stage 3	188	-0.1	
Stage 3	187.8	-0.1	
Stage 3	187.6	-0.09	
Stage 3	187.4	-0.08	
Stage 3	187.2	-0.08	
Stage 3	187	-0.07	
Stage 3	186.8	-0.07	
Stage 3	186.6	-0.06	
Stage 3	186.4	-0.06	
Stage 3	186.2	-0.05	
Stage 3	186	-0.05	
Stage 3	185.8	-0.04	
Stage 3	185.6	-0.04	
Stage 3	185.4	-0.03	
Stage 3	185.2	-0.03	
Stage 3	185	-0.02	
Stage 3	184.8	-0.02	
Stage 3	184.6	-0.02	
Stage 3	184.4	-0.01	
Stage 3	184.2	-0.01	
Stage 3	184	-0.01	
Stage 3	183.8	-0.01	
Stage 3	183.6	-0.01	
Stage 3	183.4	0	
Stage 3	183.2	0	
Stage 3	183	0	
Stage 3	182.8	0	
Stage 3	182.6	0	
Stage 3	182.4	0	
Stage 3	182.2	0	
Stage 3	182	0.01	
Stage 3	181.8	0.01	
Stage 3	181.6	0.01	
Stage 3	181.4	0.01	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 3	181.2	0.01	
Stage 3	181	0.01	
Stage 3	180.8	0.01	
Stage 3	180.6	0.01	
Stage 3	180.4	0.01	
Stage 3	180.2	0.01	
Stage 3	180	0.01	
Stage 3	179.8	0.01	

**4.1.10. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 3**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 3	194.1	-0.04
Stage 3	193.9	-0.03
Stage 3	193.7	-0.01
Stage 3	193.5	0.01
Stage 3	193.3	0.03
Stage 3	193.1	0.04
Stage 3	192.9	0.06
Stage 3	192.7	0.07
Stage 3	192.5	0.08
Stage 3	192.3	0.1
Stage 3	192.1	0.11
Stage 3	191.9	0.12
Stage 3	191.8	0.12
Stage 3	191.6	0.13
Stage 3	191.4	0.14
Stage 3	191.2	0.15
Stage 3	191	0.15
Stage 3	190.8	0.15
Stage 3	190.6	0.16
Stage 3	190.4	0.16
Stage 3	190.2	0.15
Stage 3	190	0.15
Stage 3	189.8	0.15
Stage 3	189.6	0.15
Stage 3	189.4	0.14
Stage 3	189.2	0.14
Stage 3	189	0.13
Stage 3	188.8	0.13
Stage 3	188.6	0.12
Stage 3	188.4	0.11
Stage 3	188.2	0.11
Stage 3	188	0.1
Stage 3	187.8	0.1
Stage 3	187.6	0.09
Stage 3	187.4	0.08
Stage 3	187.2	0.08
Stage 3	187	0.07
Stage 3	186.8	0.07
Stage 3	186.6	0.06
Stage 3	186.4	0.06
Stage 3	186.2	0.05
Stage 3	186	0.05
Stage 3	185.8	0.04
Stage 3	185.6	0.04
Stage 3	185.4	0.03
Stage 3	185.2	0.03
Stage 3	185	0.02
Stage 3	184.8	0.02
Stage 3	184.6	0.02
Stage 3	184.4	0.01
Stage 3	184.2	0.01
Stage 3	184	0.01
Stage 3	183.8	0.01
Stage 3	183.6	0.01
Stage 3	183.4	0
Stage 3	183.2	0
Stage 3	183	0
Stage 3	182.8	0
Stage 3	182.6	0
Stage 3	182.4	0
Stage 3	182.2	0
Stage 3	182	-0.01
Stage 3	181.8	-0.01
Stage 3	181.6	-0.01
Stage 3	181.4	-0.01

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 3	181.2	-0.01
Stage 3	181	-0.01
Stage 3	180.8	-0.01
Stage 3	180.6	-0.01
Stage 3	180.4	-0.01
Stage 3	180.2	-0.01
Stage 3	180	-0.01
Stage 3	179.8	-0.01

**4.1.11. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 3**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	-66.04	26.86
Stage 3	191.6	-60.67	26.86
Stage 3	191.4	-55.51	25.8
Stage 3	191.2	-50.56	24.72
Stage 3	191	-45.84	23.63
Stage 3	190.8	-41.34	22.52
Stage 3	190.6	-37.06	21.39
Stage 3	190.4	-33	20.27
Stage 3	190.2	-29.17	19.14
Stage 3	190	-25.57	18.03
Stage 3	189.8	-22.18	16.92
Stage 3	189.6	-19.02	15.84
Stage 3	189.4	-16.06	14.77
Stage 3	189.2	-13.32	13.73
Stage 3	189	-10.78	12.71
Stage 3	188.8	-8.43	11.72
Stage 3	188.6	-6.28	10.76
Stage 3	188.4	-4.31	9.83
Stage 3	188.2	-2.52	8.94
Stage 3	188	-0.91	8.08
Stage 3	187.8	0.54	7.25
Stage 3	187.6	1.83	6.46
Stage 3	187.4	2.98	5.7
Stage 3	187.2	3.97	4.98
Stage 3	187	4.83	4.27
Stage 3	186.8	5.55	3.62
Stage 3	186.6	6.15	3.02
Stage 3	186.4	6.65	2.47
Stage 3	186.2	7.04	1.96
Stage 3	186	7.34	1.51
Stage 3	185.8	7.56	1.1
Stage 3	185.6	7.71	0.73
Stage 3	185.4	7.79	0.41
Stage 3	185.2	7.81	0.12
Stage 3	185	7.79	-0.13
Stage 3	184.8	7.67	-0.57
Stage 3	184.6	7.48	-0.94
Stage 3	184.4	7.23	-1.26
Stage 3	184.2	6.93	-1.52
Stage 3	184	6.58	-1.73
Stage 3	183.8	6.2	-1.9
Stage 3	183.6	5.79	-2.03
Stage 3	183.4	5.37	-2.12
Stage 3	183.2	4.93	-2.18
Stage 3	183	4.49	-2.21
Stage 3	182.8	4.05	-2.21
Stage 3	182.6	3.62	-2.18
Stage 3	182.4	3.19	-2.13
Stage 3	182.2	2.78	-2.06
Stage 3	182	2.38	-1.98
Stage 3	181.8	2.01	-1.87
Stage 3	181.6	1.66	-1.75
Stage 3	181.4	1.33	-1.62
Stage 3	181.2	1.04	-1.47
Stage 3	181	0.78	-1.31
Stage 3	180.8	0.55	-1.14
Stage 3	180.6	0.36	-0.96
Stage 3	180.4	0.2	-0.76
Stage 3	180.2	0.09	-0.56
Stage 3	180	0.02	-0.34
Stage 3	179.8	0	-0.12



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	-118.04	0
Stage 3	193.5	-112.57	27.37
Stage 3	193.3	-107.09	27.37
Stage 3	193.1	-101.62	27.37
Stage 3	192.9	-96.15	27.37
Stage 3	192.7	-90.67	27.37
Stage 3	192.5	-85.2	27.37
Stage 3	192.3	-79.73	27.37
Stage 3	192.1	-74.25	27.37
Stage 3	191.9	-68.78	27.37
Stage 3	191.8	-66.04	27.37

**4.1.12. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 3**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	66.04	-26.86
Stage 3	191.6	60.67	-26.86
Stage 3	191.4	55.51	-25.8
Stage 3	191.2	50.56	-24.72
Stage 3	191	45.84	-23.63
Stage 3	190.8	41.34	-22.52
Stage 3	190.6	37.06	-21.39
Stage 3	190.4	33	-20.27
Stage 3	190.2	29.17	-19.14
Stage 3	190	25.57	-18.03
Stage 3	189.8	22.18	-16.92
Stage 3	189.6	19.02	-15.84
Stage 3	189.4	16.06	-14.77
Stage 3	189.2	13.32	-13.73
Stage 3	189	10.78	-12.71
Stage 3	188.8	8.43	-11.72
Stage 3	188.6	6.28	-10.76
Stage 3	188.4	4.31	-9.83
Stage 3	188.2	2.52	-8.94
Stage 3	188	0.91	-8.08
Stage 3	187.8	-0.54	-7.25
Stage 3	187.6	-1.83	-6.46
Stage 3	187.4	-2.98	-5.7
Stage 3	187.2	-3.97	-4.98
Stage 3	187	-4.83	-4.27
Stage 3	186.8	-5.55	-3.62
Stage 3	186.6	-6.15	-3.02
Stage 3	186.4	-6.65	-2.47
Stage 3	186.2	-7.04	-1.96
Stage 3	186	-7.34	-1.51
Stage 3	185.8	-7.56	-1.1
Stage 3	185.6	-7.71	-0.73
Stage 3	185.4	-7.79	-0.41
Stage 3	185.2	-7.81	-0.12
Stage 3	185	-7.79	0.13
Stage 3	184.8	-7.67	0.57
Stage 3	184.6	-7.48	0.94
Stage 3	184.4	-7.23	1.26
Stage 3	184.2	-6.93	1.52
Stage 3	184	-6.58	1.73
Stage 3	183.8	-6.2	1.9
Stage 3	183.6	-5.79	2.03
Stage 3	183.4	-5.37	2.12
Stage 3	183.2	-4.93	2.18
Stage 3	183	-4.49	2.21
Stage 3	182.8	-4.05	2.21
Stage 3	182.6	-3.62	2.18
Stage 3	182.4	-3.19	2.13
Stage 3	182.2	-2.78	2.06
Stage 3	182	-2.38	1.98
Stage 3	181.8	-2.01	1.87
Stage 3	181.6	-1.66	1.75
Stage 3	181.4	-1.33	1.62
Stage 3	181.2	-1.04	1.47
Stage 3	181	-0.78	1.31
Stage 3	180.8	-0.55	1.14
Stage 3	180.6	-0.36	0.96
Stage 3	180.4	-0.2	0.76
Stage 3	180.2	-0.09	0.56
Stage 3	180	-0.02	0.34
Stage 3	179.8	0	0.12

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	118.04	0
Stage 3	193.5	112.57	-27.37
Stage 3	193.3	107.09	-27.37
Stage 3	193.1	101.62	-27.37
Stage 3	192.9	96.15	-27.37
Stage 3	192.7	90.67	-27.37
Stage 3	192.5	85.2	-27.37
Stage 3	192.3	79.73	-27.37
Stage 3	192.1	74.25	-27.37
Stage 3	191.9	68.78	-27.37
Stage 3	191.8	66.04	-27.37

**4.1.13. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage:  
Stage 4**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 4	194.1	0.02	
Stage 4	193.9	0.02	
Stage 4	193.7	0.02	
Stage 4	193.5	0.03	
Stage 4	193.3	0.03	
Stage 4	193.1	0.04	
Stage 4	192.9	0.05	
Stage 4	192.7	0.05	
Stage 4	192.5	0.06	
Stage 4	192.3	0.08	
Stage 4	192.1	0.09	
Stage 4	191.9	0.1	
Stage 4	191.8	0.11	
Stage 4	191.6	0.12	
Stage 4	191.4	0.14	
Stage 4	191.2	0.16	
Stage 4	191	0.18	
Stage 4	190.8	0.2	
Stage 4	190.6	0.23	
Stage 4	190.4	0.25	
Stage 4	190.2	0.27	
Stage 4	190	0.3	
Stage 4	189.8	0.32	
Stage 4	189.6	0.35	
Stage 4	189.4	0.37	
Stage 4	189.2	0.39	
Stage 4	189	0.41	
Stage 4	188.8	0.43	
Stage 4	188.6	0.45	
Stage 4	188.4	0.47	
Stage 4	188.2	0.49	
Stage 4	188	0.51	
Stage 4	187.8	0.52	
Stage 4	187.6	0.54	
Stage 4	187.4	0.55	
Stage 4	187.2	0.56	
Stage 4	187	0.57	
Stage 4	186.8	0.58	
Stage 4	186.6	0.58	
Stage 4	186.4	0.59	
Stage 4	186.2	0.59	
Stage 4	186	0.59	
Stage 4	185.8	0.59	
Stage 4	185.6	0.59	
Stage 4	185.4	0.59	
Stage 4	185.2	0.59	
Stage 4	185	0.59	
Stage 4	184.8	0.58	
Stage 4	184.6	0.58	
Stage 4	184.4	0.57	
Stage 4	184.2	0.57	
Stage 4	184	0.56	
Stage 4	183.8	0.55	
Stage 4	183.6	0.54	
Stage 4	183.4	0.54	
Stage 4	183.2	0.53	
Stage 4	183	0.52	
Stage 4	182.8	0.51	
Stage 4	182.6	0.5	
Stage 4	182.4	0.5	
Stage 4	182.2	0.49	
Stage 4	182	0.48	
Stage 4	181.8	0.47	
Stage 4	181.6	0.46	
Stage 4	181.4	0.45	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 4	181.2	0.45	
Stage 4	181	0.44	
Stage 4	180.8	0.43	
Stage 4	180.6	0.42	
Stage 4	180.4	0.41	
Stage 4	180.2	0.4	
Stage 4	180	0.4	
Stage 4	179.8	0.39	

**4.1.14. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 4**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 4	194.1	-0.02
Stage 4	193.9	-0.02
Stage 4	193.7	-0.02
Stage 4	193.5	-0.03
Stage 4	193.3	-0.03
Stage 4	193.1	-0.04
Stage 4	192.9	-0.05
Stage 4	192.7	-0.05
Stage 4	192.5	-0.06
Stage 4	192.3	-0.08
Stage 4	192.1	-0.09
Stage 4	191.9	-0.1
Stage 4	191.8	-0.11
Stage 4	191.6	-0.12
Stage 4	191.4	-0.14
Stage 4	191.2	-0.16
Stage 4	191	-0.18
Stage 4	190.8	-0.2
Stage 4	190.6	-0.23
Stage 4	190.4	-0.25
Stage 4	190.2	-0.27
Stage 4	190	-0.3
Stage 4	189.8	-0.32
Stage 4	189.6	-0.35
Stage 4	189.4	-0.37
Stage 4	189.2	-0.39
Stage 4	189	-0.41
Stage 4	188.8	-0.43
Stage 4	188.6	-0.45
Stage 4	188.4	-0.47
Stage 4	188.2	-0.49
Stage 4	188	-0.51
Stage 4	187.8	-0.52
Stage 4	187.6	-0.54
Stage 4	187.4	-0.55
Stage 4	187.2	-0.56
Stage 4	187	-0.57
Stage 4	186.8	-0.58
Stage 4	186.6	-0.58
Stage 4	186.4	-0.59
Stage 4	186.2	-0.59
Stage 4	186	-0.59
Stage 4	185.8	-0.59
Stage 4	185.6	-0.59
Stage 4	185.4	-0.59
Stage 4	185.2	-0.59
Stage 4	185	-0.59
Stage 4	184.8	-0.58
Stage 4	184.6	-0.58
Stage 4	184.4	-0.57
Stage 4	184.2	-0.57
Stage 4	184	-0.56
Stage 4	183.8	-0.55
Stage 4	183.6	-0.54
Stage 4	183.4	-0.54
Stage 4	183.2	-0.53
Stage 4	183	-0.52
Stage 4	182.8	-0.51
Stage 4	182.6	-0.5
Stage 4	182.4	-0.5
Stage 4	182.2	-0.49
Stage 4	182	-0.48
Stage 4	181.8	-0.47
Stage 4	181.6	-0.46
Stage 4	181.4	-0.45

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 4	181.2	-0.45
Stage 4	181	-0.44
Stage 4	180.8	-0.43
Stage 4	180.6	-0.42
Stage 4	180.4	-0.41
Stage 4	180.2	-0.4
Stage 4	180	-0.4
Stage 4	179.8	-0.39

**4.1.15. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 4**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	-82.64	61.67
Stage 4	191.6	-70.31	61.67
Stage 4	191.4	-58.73	57.87
Stage 4	191.2	-47.9	54.16
Stage 4	191	-37.8	50.54
Stage 4	190.8	-28.39	47.02
Stage 4	190.6	-19.67	43.62
Stage 4	190.4	-11.6	40.32
Stage 4	190.2	-4.18	37.13
Stage 4	190	2.63	34.06
Stage 4	189.8	8.85	31.1
Stage 4	189.6	14.5	28.25
Stage 4	189.4	19.6	25.5
Stage 4	189.2	24.18	22.86
Stage 4	189	28.24	20.32
Stage 4	188.8	31.81	17.87
Stage 4	188.6	34.92	15.52
Stage 4	188.4	37.56	13.24
Stage 4	188.2	39.77	11.05
Stage 4	188	41.56	8.93
Stage 4	187.8	42.94	6.88
Stage 4	187.6	43.92	4.89
Stage 4	187.4	44.51	2.95
Stage 4	187.2	44.72	1.06
Stage 4	187	44.56	-0.79
Stage 4	186.8	44.04	-2.6
Stage 4	186.6	43.18	-4.33
Stage 4	186.4	41.98	-5.99
Stage 4	186.2	40.46	-7.59
Stage 4	186	38.63	-9.14
Stage 4	185.8	36.51	-10.64
Stage 4	185.6	34.09	-12.11
Stage 4	185.4	31.38	-13.54
Stage 4	185.2	28.39	-14.96
Stage 4	185	25.12	-16.35
Stage 4	184.8	22.07	-15.24
Stage 4	184.6	19.24	-14.13
Stage 4	184.4	16.64	-13.02
Stage 4	184.2	14.25	-11.91
Stage 4	184	12.09	-10.83
Stage 4	183.8	10.13	-9.77
Stage 4	183.6	8.39	-8.75
Stage 4	183.4	6.83	-7.76
Stage 4	183.2	5.47	-6.82
Stage 4	183	4.28	-5.93
Stage 4	182.8	3.27	-5.08
Stage 4	182.6	2.41	-4.3
Stage 4	182.4	1.69	-3.56
Stage 4	182.2	1.12	-2.89
Stage 4	182	0.66	-2.28
Stage 4	181.8	0.32	-1.73
Stage 4	181.6	0.07	-1.24
Stage 4	181.4	-0.1	-0.82
Stage 4	181.2	-0.19	-0.47
Stage 4	181	-0.23	-0.18
Stage 4	180.8	-0.22	0.04
Stage 4	180.6	-0.18	0.19
Stage 4	180.4	-0.13	0.27
Stage 4	180.2	-0.07	0.29
Stage 4	180	-0.02	0.24
Stage 4	179.8	0	0.11



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	-0.15
Stage 4	193.9	-0.03	-0.15
Stage 4	193.7	-0.18	-0.77
Stage 4	193.7	-223.09	-0.77
Stage 4	193.5	-207.13	79.8
Stage 4	193.3	-191.35	78.88
Stage 4	193.1	-175.79	77.83
Stage 4	192.9	-160.46	76.63
Stage 4	192.7	-145.42	75.22
Stage 4	192.5	-130.7	73.6
Stage 4	192.3	-116.35	71.76
Stage 4	192.1	-102.41	69.7
Stage 4	191.9	-89.08	66.63
Stage 4	191.8	-82.64	64.41

**4.1.16. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 4**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	82.64	-61.67
Stage 4	191.6	70.31	-61.67
Stage 4	191.4	58.73	-57.87
Stage 4	191.2	47.9	-54.16
Stage 4	191	37.8	-50.54
Stage 4	190.8	28.39	-47.02
Stage 4	190.6	19.67	-43.62
Stage 4	190.4	11.6	-40.32
Stage 4	190.2	4.18	-37.13
Stage 4	190	-2.63	-34.06
Stage 4	189.8	-8.85	-31.1
Stage 4	189.6	-14.5	-28.25
Stage 4	189.4	-19.6	-25.5
Stage 4	189.2	-24.18	-22.86
Stage 4	189	-28.24	-20.32
Stage 4	188.8	-31.81	-17.87
Stage 4	188.6	-34.92	-15.52
Stage 4	188.4	-37.56	-13.24
Stage 4	188.2	-39.77	-11.05
Stage 4	188	-41.56	-8.93
Stage 4	187.8	-42.94	-6.88
Stage 4	187.6	-43.92	-4.89
Stage 4	187.4	-44.51	-2.95
Stage 4	187.2	-44.72	-1.06
Stage 4	187	-44.56	0.79
Stage 4	186.8	-44.04	2.6
Stage 4	186.6	-43.18	4.33
Stage 4	186.4	-41.98	5.99
Stage 4	186.2	-40.46	7.59
Stage 4	186	-38.63	9.14
Stage 4	185.8	-36.51	10.64
Stage 4	185.6	-34.09	12.11
Stage 4	185.4	-31.38	13.54
Stage 4	185.2	-28.39	14.96
Stage 4	185	-25.12	16.35
Stage 4	184.8	-22.07	15.24
Stage 4	184.6	-19.24	14.13
Stage 4	184.4	-16.64	13.02
Stage 4	184.2	-14.25	11.91
Stage 4	184	-12.09	10.83
Stage 4	183.8	-10.13	9.77
Stage 4	183.6	-8.39	8.75
Stage 4	183.4	-6.83	7.76
Stage 4	183.2	-5.47	6.82
Stage 4	183	-4.28	5.93
Stage 4	182.8	-3.27	5.08
Stage 4	182.6	-2.41	4.3
Stage 4	182.4	-1.69	3.56
Stage 4	182.2	-1.12	2.89
Stage 4	182	-0.66	2.28
Stage 4	181.8	-0.32	1.73
Stage 4	181.6	-0.07	1.24
Stage 4	181.4	0.1	0.82
Stage 4	181.2	0.19	0.47
Stage 4	181	0.23	0.18
Stage 4	180.8	0.22	-0.04
Stage 4	180.6	0.18	-0.19
Stage 4	180.4	0.13	-0.27
Stage 4	180.2	0.07	-0.29
Stage 4	180	0.02	-0.24
Stage 4	179.8	0	-0.11

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	0.15
Stage 4	193.9	0.03	0.15
Stage 4	193.7	0.18	0.77
Stage 4	193.7	223.09	0.77
Stage 4	193.5	207.13	-79.8
Stage 4	193.3	191.35	-78.88
Stage 4	193.1	175.79	-77.83
Stage 4	192.9	160.46	-76.63
Stage 4	192.7	145.42	-75.22
Stage 4	192.5	130.7	-73.6
Stage 4	192.3	116.35	-71.76
Stage 4	192.1	102.41	-69.7
Stage 4	191.9	89.08	-66.63
Stage 4	191.8	82.64	-64.41

#### 4.1.17. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 5

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 5	194.1	0.2	
Stage 5	193.9	0.21	
Stage 5	193.7	0.22	
Stage 5	193.5	0.23	
Stage 5	193.3	0.24	
Stage 5	193.1	0.26	
Stage 5	192.9	0.27	
Stage 5	192.7	0.29	
Stage 5	192.5	0.31	
Stage 5	192.3	0.33	
Stage 5	192.1	0.35	
Stage 5	191.9	0.37	
Stage 5	191.8	0.39	
Stage 5	191.6	0.41	
Stage 5	191.4	0.43	
Stage 5	191.2	0.46	
Stage 5	191	0.49	
Stage 5	190.8	0.52	
Stage 5	190.6	0.55	
Stage 5	190.4	0.58	
Stage 5	190.2	0.61	
Stage 5	190	0.64	
Stage 5	189.8	0.67	
Stage 5	189.6	0.69	
Stage 5	189.4	0.72	
Stage 5	189.2	0.75	
Stage 5	189	0.77	
Stage 5	188.8	0.79	
Stage 5	188.6	0.82	
Stage 5	188.4	0.84	
Stage 5	188.2	0.85	
Stage 5	188	0.87	
Stage 5	187.8	0.88	
Stage 5	187.6	0.9	
Stage 5	187.4	0.91	
Stage 5	187.2	0.92	
Stage 5	187	0.92	
Stage 5	186.8	0.93	
Stage 5	186.6	0.93	
Stage 5	186.4	0.93	
Stage 5	186.2	0.93	
Stage 5	186	0.93	
Stage 5	185.8	0.92	
Stage 5	185.6	0.92	
Stage 5	185.4	0.91	
Stage 5	185.2	0.91	
Stage 5	185	0.9	
Stage 5	184.8	0.89	
Stage 5	184.6	0.88	
Stage 5	184.4	0.86	
Stage 5	184.2	0.85	
Stage 5	184	0.84	
Stage 5	183.8	0.83	
Stage 5	183.6	0.82	
Stage 5	183.4	0.8	
Stage 5	183.2	0.79	
Stage 5	183	0.78	
Stage 5	182.8	0.76	
Stage 5	182.6	0.75	
Stage 5	182.4	0.74	
Stage 5	182.2	0.72	
Stage 5	182	0.71	
Stage 5	181.8	0.7	
Stage 5	181.6	0.68	
Stage 5	181.4	0.67	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 5	181.2	0.66	
Stage 5	181	0.64	
Stage 5	180.8	0.63	
Stage 5	180.6	0.62	
Stage 5	180.4	0.61	
Stage 5	180.2	0.59	
Stage 5	180	0.58	
Stage 5	179.8	0.57	

**4.1.18. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 5**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 5	194.1	0.18
Stage 5	193.9	0.17
Stage 5	193.7	0.16
Stage 5	193.5	0.15
Stage 5	193.3	0.13
Stage 5	193.1	0.12
Stage 5	192.9	0.1
Stage 5	192.7	0.09
Stage 5	192.5	0.07
Stage 5	192.3	0.05
Stage 5	192.1	0.03
Stage 5	191.9	0.01
Stage 5	191.8	-0.01
Stage 5	191.6	-0.03
Stage 5	191.4	-0.05
Stage 5	191.2	-0.08
Stage 5	191	-0.11
Stage 5	190.8	-0.14
Stage 5	190.6	-0.17
Stage 5	190.4	-0.2
Stage 5	190.2	-0.23
Stage 5	190	-0.26
Stage 5	189.8	-0.29
Stage 5	189.6	-0.31
Stage 5	189.4	-0.34
Stage 5	189.2	-0.37
Stage 5	189	-0.4
Stage 5	188.8	-0.42
Stage 5	188.6	-0.44
Stage 5	188.4	-0.46
Stage 5	188.2	-0.49
Stage 5	188	-0.5
Stage 5	187.8	-0.52
Stage 5	187.6	-0.54
Stage 5	187.4	-0.55
Stage 5	187.2	-0.56
Stage 5	187	-0.57
Stage 5	186.8	-0.58
Stage 5	186.6	-0.59
Stage 5	186.4	-0.6
Stage 5	186.2	-0.6
Stage 5	186	-0.6
Stage 5	185.8	-0.6
Stage 5	185.6	-0.6
Stage 5	185.4	-0.6
Stage 5	185.2	-0.6
Stage 5	185	-0.6
Stage 5	184.8	-0.59
Stage 5	184.6	-0.59
Stage 5	184.4	-0.58
Stage 5	184.2	-0.57
Stage 5	184	-0.57
Stage 5	183.8	-0.56
Stage 5	183.6	-0.55
Stage 5	183.4	-0.55
Stage 5	183.2	-0.54
Stage 5	183	-0.53
Stage 5	182.8	-0.52
Stage 5	182.6	-0.51
Stage 5	182.4	-0.5
Stage 5	182.2	-0.49
Stage 5	182	-0.48
Stage 5	181.8	-0.48
Stage 5	181.6	-0.47
Stage 5	181.4	-0.46

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 5	181.2	-0.45
Stage 5	181	-0.44
Stage 5	180.8	-0.43
Stage 5	180.6	-0.42
Stage 5	180.4	-0.41
Stage 5	180.2	-0.4
Stage 5	180	-0.4
Stage 5	179.8	-0.39

**4.1.19. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 5**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	-73.3	67.39
Stage 5	191.6	-59.82	67.39
Stage 5	191.4	-47.23	62.95
Stage 5	191.2	-35.51	58.64
Stage 5	191	-24.61	54.46
Stage 5	190.8	-14.53	50.42
Stage 5	190.6	-5.22	46.52
Stage 5	190.4	3.33	42.77
Stage 5	190.2	11.16	39.15
Stage 5	190	18.29	35.67
Stage 5	189.8	24.76	32.33
Stage 5	189.6	30.58	29.12
Stage 5	189.4	35.79	26.03
Stage 5	189.2	40.4	23.07
Stage 5	189	44.45	20.22
Stage 5	188.8	47.94	17.48
Stage 5	188.6	50.91	14.84
Stage 5	188.4	53.36	12.28
Stage 5	188.2	55.33	9.82
Stage 5	188	56.81	7.42
Stage 5	187.8	57.83	5.1
Stage 5	187.6	58.4	2.83
Stage 5	187.4	58.52	0.61
Stage 5	187.2	58.21	-1.57
Stage 5	187	57.46	-3.72
Stage 5	186.8	56.29	-5.84
Stage 5	186.6	54.71	-7.9
Stage 5	186.4	52.73	-9.9
Stage 5	186.2	50.36	-11.86
Stage 5	186	47.6	-13.79
Stage 5	185.8	44.47	-15.69
Stage 5	185.6	40.95	-17.58
Stage 5	185.4	37.06	-19.46
Stage 5	185.2	32.79	-21.34
Stage 5	185	28.15	-23.23
Stage 5	184.8	23.9	-21.24
Stage 5	184.6	20.04	-19.29
Stage 5	184.4	16.56	-17.39
Stage 5	184.2	13.45	-15.56
Stage 5	184	10.69	-13.8
Stage 5	183.8	8.27	-12.12
Stage 5	183.6	6.16	-10.52
Stage 5	183.4	4.36	-9.01
Stage 5	183.2	2.84	-7.6
Stage 5	183	1.58	-6.29
Stage 5	182.8	0.57	-5.08
Stage 5	182.6	-0.22	-3.96
Stage 5	182.4	-0.81	-2.96
Stage 5	182.2	-1.23	-2.05
Stage 5	182	-1.48	-1.26
Stage 5	181.8	-1.59	-0.57
Stage 5	181.6	-1.59	0.01
Stage 5	181.4	-1.5	0.48
Stage 5	181.2	-1.33	0.83
Stage 5	181	-1.11	1.08
Stage 5	180.8	-0.87	1.22
Stage 5	180.6	-0.62	1.25
Stage 5	180.4	-0.38	1.17
Stage 5	180.2	-0.19	0.98
Stage 5	180	-0.05	0.67
Stage 5	179.8	0	0.26



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	-0.6
Stage 5	193.9	-0.12	-0.6
Stage 5	193.7	-0.52	-2.01
Stage 5	193.7	-233.72	-2.01
Stage 5	193.5	-214.79	94.64
Stage 5	193.3	-196.23	92.8
Stage 5	193.1	-178.09	90.74
Stage 5	192.9	-160.39	88.46
Stage 5	192.7	-143.2	85.97
Stage 5	192.5	-126.55	83.26
Stage 5	192.3	-110.48	80.33
Stage 5	192.1	-95.04	77.19
Stage 5	191.9	-80.37	73.38
Stage 5	191.8	-73.3	70.64

**4.1.20. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 5**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	74.38	-64.83
Stage 5	191.6	61.41	-64.83
Stage 5	191.4	49.33	-60.42
Stage 5	191.2	38.1	-56.15
Stage 5	191	27.69	-52.02
Stage 5	190.8	18.09	-48.03
Stage 5	190.6	9.25	-44.2
Stage 5	190.4	1.14	-40.53
Stage 5	190.2	-6.26	-37
Stage 5	190	-12.99	-33.63
Stage 5	189.8	-19.07	-30.4
Stage 5	189.6	-24.53	-27.32
Stage 5	189.4	-29.4	-24.37
Stage 5	189.2	-33.72	-21.56
Stage 5	189	-37.49	-18.87
Stage 5	188.8	-40.75	-16.31
Stage 5	188.6	-43.52	-13.85
Stage 5	188.4	-45.82	-11.51
Stage 5	188.2	-47.67	-9.26
Stage 5	188	-49.09	-7.1
Stage 5	187.8	-50.1	-5.02
Stage 5	187.6	-50.7	-3.02
Stage 5	187.4	-50.92	-1.07
Stage 5	187.2	-50.75	0.81
Stage 5	187	-50.23	2.64
Stage 5	186.8	-49.34	4.43
Stage 5	186.6	-48.11	6.13
Stage 5	186.4	-46.56	7.75
Stage 5	186.2	-44.7	9.32
Stage 5	186	-42.54	10.82
Stage 5	185.8	-40.08	12.28
Stage 5	185.6	-37.34	13.7
Stage 5	185.4	-34.32	15.08
Stage 5	185.2	-31.04	16.45
Stage 5	185	-27.48	17.79
Stage 5	184.8	-24.16	16.59
Stage 5	184.6	-21.08	15.37
Stage 5	184.4	-18.25	14.16
Stage 5	184.2	-15.66	12.97
Stage 5	184	-13.3	11.79
Stage 5	183.8	-11.17	10.65
Stage 5	183.6	-9.26	9.54
Stage 5	183.4	-7.57	8.47
Stage 5	183.2	-6.08	7.45
Stage 5	183	-4.78	6.48
Stage 5	182.8	-3.67	5.57
Stage 5	182.6	-2.73	4.72
Stage 5	182.4	-1.94	3.92
Stage 5	182.2	-1.3	3.19
Stage 5	182	-0.8	2.53
Stage 5	181.8	-0.41	1.93
Stage 5	181.6	-0.13	1.4
Stage 5	181.4	0.06	0.94
Stage 5	181.2	0.17	0.56
Stage 5	181	0.22	0.24
Stage 5	180.8	0.22	0
Stage 5	180.6	0.18	-0.17
Stage 5	180.4	0.13	-0.27
Stage 5	180.2	0.07	-0.29
Stage 5	180	0.02	-0.24
Stage 5	179.8	0	-0.11

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	0.58
Stage 5	193.9	0.12	0.58
Stage 5	193.7	0.52	2.02
Stage 5	193.7	232.27	2.02
Stage 5	193.5	213.36	-94.53
Stage 5	193.3	194.85	-92.54
Stage 5	193.1	176.8	-90.27
Stage 5	192.9	159.25	-87.73
Stage 5	192.7	142.28	-84.88
Stage 5	192.5	125.93	-81.74
Stage 5	192.3	110.27	-78.29
Stage 5	192.1	95.35	-74.63
Stage 5	191.9	81.18	-70.81
Stage 5	191.8	74.38	-68.08

**4.1.21. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 6**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 6	194.1	0.57	
Stage 6	193.9	0.42	
Stage 6	193.7	0.27	
Stage 6	193.5	0.13	
Stage 6	193.3	0	
Stage 6	193.1	-0.13	
Stage 6	192.9	-0.25	
Stage 6	192.7	-0.36	
Stage 6	192.5	-0.47	
Stage 6	192.3	-0.56	
Stage 6	192.1	-0.66	
Stage 6	191.9	-0.74	
Stage 6	191.8	-0.78	
Stage 6	191.6	-0.86	
Stage 6	191.4	-0.91	
Stage 6	191.2	-0.95	
Stage 6	191	-0.97	
Stage 6	190.8	-0.98	
Stage 6	190.6	-0.98	
Stage 6	190.4	-0.96	
Stage 6	190.2	-0.94	
Stage 6	190	-0.91	
Stage 6	189.8	-0.87	
Stage 6	189.6	-0.82	
Stage 6	189.4	-0.77	
Stage 6	189.2	-0.71	
Stage 6	189	-0.66	
Stage 6	188.8	-0.59	
Stage 6	188.6	-0.53	
Stage 6	188.4	-0.46	
Stage 6	188.2	-0.4	
Stage 6	188	-0.33	
Stage 6	187.8	-0.27	
Stage 6	187.6	-0.2	
Stage 6	187.4	-0.14	
Stage 6	187.2	-0.08	
Stage 6	187	-0.01	
Stage 6	186.8	0.04	
Stage 6	186.6	0.1	
Stage 6	186.4	0.15	
Stage 6	186.2	0.2	
Stage 6	186	0.25	
Stage 6	185.8	0.29	
Stage 6	185.6	0.34	
Stage 6	185.4	0.38	
Stage 6	185.2	0.41	
Stage 6	185	0.44	
Stage 6	184.8	0.47	
Stage 6	184.6	0.5	
Stage 6	184.4	0.53	
Stage 6	184.2	0.55	
Stage 6	184	0.57	
Stage 6	183.8	0.59	
Stage 6	183.6	0.6	
Stage 6	183.4	0.62	
Stage 6	183.2	0.63	
Stage 6	183	0.64	
Stage 6	182.8	0.65	
Stage 6	182.6	0.66	
Stage 6	182.4	0.67	
Stage 6	182.2	0.67	
Stage 6	182	0.68	
Stage 6	181.8	0.68	
Stage 6	181.6	0.69	
Stage 6	181.4	0.69	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 6	181.2	0.7	
Stage 6	181	0.7	
Stage 6	180.8	0.7	
Stage 6	180.6	0.7	
Stage 6	180.4	0.71	
Stage 6	180.2	0.71	
Stage 6	180	0.71	
Stage 6	179.8	0.71	

**4.1.22. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 6**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 6	194.1	-0.2
Stage 6	193.9	-0.05
Stage 6	193.7	0.1
Stage 6	193.5	0.24
Stage 6	193.3	0.37
Stage 6	193.1	0.5
Stage 6	192.9	0.61
Stage 6	192.7	0.72
Stage 6	192.5	0.82
Stage 6	192.3	0.92
Stage 6	192.1	1.01
Stage 6	191.9	1.09
Stage 6	191.8	1.13
Stage 6	191.6	1.2
Stage 6	191.4	1.25
Stage 6	191.2	1.29
Stage 6	191	1.31
Stage 6	190.8	1.31
Stage 6	190.6	1.31
Stage 6	190.4	1.29
Stage 6	190.2	1.26
Stage 6	190	1.22
Stage 6	189.8	1.18
Stage 6	189.6	1.13
Stage 6	189.4	1.07
Stage 6	189.2	1.01
Stage 6	189	0.95
Stage 6	188.8	0.88
Stage 6	188.6	0.81
Stage 6	188.4	0.74
Stage 6	188.2	0.67
Stage 6	188	0.6
Stage 6	187.8	0.53
Stage 6	187.6	0.46
Stage 6	187.4	0.39
Stage 6	187.2	0.32
Stage 6	187	0.26
Stage 6	186.8	0.19
Stage 6	186.6	0.13
Stage 6	186.4	0.07
Stage 6	186.2	0.02
Stage 6	186	-0.03
Stage 6	185.8	-0.08
Stage 6	185.6	-0.13
Stage 6	185.4	-0.17
Stage 6	185.2	-0.22
Stage 6	185	-0.25
Stage 6	184.8	-0.29
Stage 6	184.6	-0.32
Stage 6	184.4	-0.35
Stage 6	184.2	-0.38
Stage 6	184	-0.4
Stage 6	183.8	-0.43
Stage 6	183.6	-0.45
Stage 6	183.4	-0.47
Stage 6	183.2	-0.48
Stage 6	183	-0.5
Stage 6	182.8	-0.51
Stage 6	182.6	-0.52
Stage 6	182.4	-0.54
Stage 6	182.2	-0.55
Stage 6	182	-0.56
Stage 6	181.8	-0.57
Stage 6	181.6	-0.57
Stage 6	181.4	-0.58

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 6	181.2	-0.59
Stage 6	181	-0.6
Stage 6	180.8	-0.6
Stage 6	180.6	-0.61
Stage 6	180.4	-0.62
Stage 6	180.2	-0.62
Stage 6	180	-0.63
Stage 6	179.8	-0.64

**4.1.23. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 6**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	-596.15	242.07
Stage 6	191.6	-547.73	242.07
Stage 6	191.4	-500.91	234.13
Stage 6	191.2	-455.75	225.78
Stage 6	191	-412.34	217.04
Stage 6	190.8	-370.75	207.94
Stage 6	190.6	-331.05	198.51
Stage 6	190.4	-293.3	188.74
Stage 6	190.2	-257.57	178.66
Stage 6	190	-223.84	168.64
Stage 6	189.8	-192.09	158.75
Stage 6	189.6	-162.29	149.02
Stage 6	189.4	-134.39	139.47
Stage 6	189.2	-108.37	130.13
Stage 6	189	-84.17	120.97
Stage 6	188.8	-61.77	112.01
Stage 6	188.6	-41.13	103.25
Stage 6	188.4	-22.19	94.7
Stage 6	188.2	-4.92	86.38
Stage 6	188	10.74	78.29
Stage 6	187.8	24.83	70.43
Stage 6	187.6	37.39	62.82
Stage 6	187.4	48.48	55.43
Stage 6	187.2	58.14	48.29
Stage 6	187	66.41	41.37
Stage 6	186.8	73.35	34.7
Stage 6	186.6	79.01	28.3
Stage 6	186.4	83.44	22.16
Stage 6	186.2	86.7	16.28
Stage 6	186	88.83	10.66
Stage 6	185.8	89.91	5.39
Stage 6	185.6	90	0.44
Stage 6	185.4	89.16	-4.19
Stage 6	185.2	87.45	-8.53
Stage 6	185	84.93	-12.6
Stage 6	184.8	81.85	-15.4
Stage 6	184.6	78.31	-17.74
Stage 6	184.4	74.38	-19.63
Stage 6	184.2	70.15	-21.13
Stage 6	184	65.7	-22.25
Stage 6	183.8	61.1	-23.03
Stage 6	183.6	56.4	-23.51
Stage 6	183.4	51.66	-23.7
Stage 6	183.2	46.93	-23.64
Stage 6	183	42.26	-23.34
Stage 6	182.8	37.7	-22.83
Stage 6	182.6	33.27	-22.12
Stage 6	182.4	29.02	-21.24
Stage 6	182.2	24.98	-20.2
Stage 6	182	21.18	-19.02
Stage 6	181.8	17.64	-17.7
Stage 6	181.6	14.39	-16.25
Stage 6	181.4	11.45	-14.71
Stage 6	181.2	8.82	-13.12
Stage 6	181	6.52	-11.49
Stage 6	180.8	4.56	-9.82
Stage 6	180.6	2.94	-8.11
Stage 6	180.4	1.66	-6.37
Stage 6	180.2	0.74	-4.59
Stage 6	180	0.19	-2.78
Stage 6	179.8	0	-0.94



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	-0.05
Stage 6	193.9	-0.01	-0.05
Stage 6	193.7	-0.09	-0.38
Stage 6	193.7	-1117.16	-0.38
Stage 6	193.5	-1058.6	292.79
Stage 6	193.3	-1000.45	290.76
Stage 6	193.1	-942.99	287.33
Stage 6	192.9	-886.36	283.12
Stage 6	192.7	-830.74	278.11
Stage 6	192.5	-776.27	272.33
Stage 6	192.3	-723.12	265.79
Stage 6	192.1	-671.41	258.53
Stage 6	191.9	-620.91	252.5
Stage 6	191.8	-596.15	247.65

**4.1.24. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 6**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	603.9	-242.58
Stage 6	191.6	555.39	-242.58
Stage 6	191.4	508.35	-235.16
Stage 6	191.2	462.9	-227.27
Stage 6	191	419.11	-218.93
Stage 6	190.8	377.08	-210.18
Stage 6	190.6	336.87	-201.03
Stage 6	190.4	298.58	-191.49
Stage 6	190.2	262.26	-181.58
Stage 6	190	227.97	-171.43
Stage 6	189.8	195.7	-161.37
Stage 6	189.6	165.41	-151.44
Stage 6	189.4	137.08	-141.67
Stage 6	189.2	110.66	-132.09
Stage 6	189	86.12	-122.7
Stage 6	188.8	63.41	-113.53
Stage 6	188.6	42.51	-104.58
Stage 6	188.4	23.33	-95.88
Stage 6	188.2	5.85	-87.42
Stage 6	188	-9.99	-79.21
Stage 6	187.8	-24.24	-71.25
Stage 6	187.6	-36.95	-63.55
Stage 6	187.4	-48.17	-56.1
Stage 6	187.2	-57.95	-48.9
Stage 6	187	-66.34	-41.95
Stage 6	186.8	-73.4	-35.26
Stage 6	186.6	-79.17	-28.85
Stage 6	186.4	-83.71	-22.72
Stage 6	186.2	-87.08	-16.86
Stage 6	186	-89.35	-11.34
Stage 6	185.8	-90.59	-6.2
Stage 6	185.6	-90.87	-1.41
Stage 6	185.4	-90.26	3.05
Stage 6	185.2	-88.83	7.19
Stage 6	185	-86.62	11.03
Stage 6	184.8	-83.77	14.24
Stage 6	184.6	-80.39	16.93
Stage 6	184.4	-76.56	19.15
Stage 6	184.2	-72.38	20.92
Stage 6	184	-67.92	22.27
Stage 6	183.8	-63.27	23.24
Stage 6	183.6	-58.5	23.87
Stage 6	183.4	-53.67	24.17
Stage 6	183.2	-48.83	24.17
Stage 6	183	-44.05	23.9
Stage 6	182.8	-39.38	23.38
Stage 6	182.6	-34.85	22.62
Stage 6	182.4	-30.51	21.71
Stage 6	182.2	-26.38	20.67
Stage 6	182	-22.48	19.51
Stage 6	181.8	-18.83	18.24
Stage 6	181.6	-15.45	16.88
Stage 6	181.4	-12.37	15.43
Stage 6	181.2	-9.59	13.9
Stage 6	181	-7.13	12.28
Stage 6	180.8	-5.01	10.59
Stage 6	180.6	-3.25	8.83
Stage 6	180.4	-1.85	6.99
Stage 6	180.2	-0.83	5.08
Stage 6	180	-0.21	3.1
Stage 6	179.8	0	1.06

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	0.05
Stage 6	193.9	0.01	0.05
Stage 6	193.7	0.09	0.38
Stage 6	193.7	1123.9	0.38
Stage 6	193.5	1065.39	-292.53
Stage 6	193.3	1007.36	-290.14
Stage 6	193.1	949.99	-286.84
Stage 6	192.9	893.46	-282.67
Stage 6	192.7	837.93	-277.62
Stage 6	192.5	783.59	-271.72
Stage 6	192.3	730.59	-265
Stage 6	192.1	679.09	-257.47
Stage 6	191.9	628.67	-252.11
Stage 6	191.8	603.9	-247.72

**4.1.25. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage:  
Stage 7**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 7	194.1	0.55	
Stage 7	193.9	0.41	
Stage 7	193.7	0.28	
Stage 7	193.5	0.15	
Stage 7	193.3	0.02	
Stage 7	193.1	-0.09	
Stage 7	192.9	-0.2	
Stage 7	192.7	-0.29	
Stage 7	192.5	-0.39	
Stage 7	192.3	-0.47	
Stage 7	192.1	-0.55	
Stage 7	191.9	-0.63	
Stage 7	191.8	-0.66	
Stage 7	191.6	-0.72	
Stage 7	191.4	-0.76	
Stage 7	191.2	-0.79	
Stage 7	191	-0.8	
Stage 7	190.8	-0.8	
Stage 7	190.6	-0.79	
Stage 7	190.4	-0.76	
Stage 7	190.2	-0.73	
Stage 7	190	-0.69	
Stage 7	189.8	-0.65	
Stage 7	189.6	-0.6	
Stage 7	189.4	-0.54	
Stage 7	189.2	-0.48	
Stage 7	189	-0.42	
Stage 7	188.8	-0.35	
Stage 7	188.6	-0.29	
Stage 7	188.4	-0.22	
Stage 7	188.2	-0.15	
Stage 7	188	-0.09	
Stage 7	187.8	-0.02	
Stage 7	187.6	0.04	
Stage 7	187.4	0.1	
Stage 7	187.2	0.16	
Stage 7	187	0.22	
Stage 7	186.8	0.27	
Stage 7	186.6	0.33	
Stage 7	186.4	0.38	
Stage 7	186.2	0.42	
Stage 7	186	0.46	
Stage 7	185.8	0.5	
Stage 7	185.6	0.54	
Stage 7	185.4	0.57	
Stage 7	185.2	0.6	
Stage 7	185	0.63	
Stage 7	184.8	0.65	
Stage 7	184.6	0.67	
Stage 7	184.4	0.69	
Stage 7	184.2	0.71	
Stage 7	184	0.72	
Stage 7	183.8	0.73	
Stage 7	183.6	0.75	
Stage 7	183.4	0.75	
Stage 7	183.2	0.76	
Stage 7	183	0.77	
Stage 7	182.8	0.77	
Stage 7	182.6	0.78	
Stage 7	182.4	0.78	
Stage 7	182.2	0.78	
Stage 7	182	0.78	
Stage 7	181.8	0.78	
Stage 7	181.6	0.78	
Stage 7	181.4	0.78	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 7	181.2	0.78	
Stage 7	181	0.78	
Stage 7	180.8	0.78	
Stage 7	180.6	0.78	
Stage 7	180.4	0.78	
Stage 7	180.2	0.78	
Stage 7	180	0.78	
Stage 7	179.8	0.78	

**4.1.26. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage:  
Stage 7**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 7	194.1	-0.18
Stage 7	193.9	-0.05
Stage 7	193.7	0.09
Stage 7	193.5	0.21
Stage 7	193.3	0.34
Stage 7	193.1	0.45
Stage 7	192.9	0.55
Stage 7	192.7	0.65
Stage 7	192.5	0.74
Stage 7	192.3	0.82
Stage 7	192.1	0.9
Stage 7	191.9	0.97
Stage 7	191.8	1
Stage 7	191.6	1.06
Stage 7	191.4	1.1
Stage 7	191.2	1.12
Stage 7	191	1.13
Stage 7	190.8	1.13
Stage 7	190.6	1.11
Stage 7	190.4	1.08
Stage 7	190.2	1.05
Stage 7	190	1
Stage 7	189.8	0.95
Stage 7	189.6	0.89
Stage 7	189.4	0.83
Stage 7	189.2	0.77
Stage 7	189	0.7
Stage 7	188.8	0.63
Stage 7	188.6	0.55
Stage 7	188.4	0.48
Stage 7	188.2	0.41
Stage 7	188	0.33
Stage 7	187.8	0.26
Stage 7	187.6	0.19
Stage 7	187.4	0.12
Stage 7	187.2	0.05
Stage 7	187	-0.01
Stage 7	186.8	-0.07
Stage 7	186.6	-0.13
Stage 7	186.4	-0.19
Stage 7	186.2	-0.25
Stage 7	186	-0.3
Stage 7	185.8	-0.34
Stage 7	185.6	-0.39
Stage 7	185.4	-0.43
Stage 7	185.2	-0.47
Stage 7	185	-0.5
Stage 7	184.8	-0.53
Stage 7	184.6	-0.56
Stage 7	184.4	-0.59
Stage 7	184.2	-0.62
Stage 7	184	-0.64
Stage 7	183.8	-0.66
Stage 7	183.6	-0.68
Stage 7	183.4	-0.69
Stage 7	183.2	-0.71
Stage 7	183	-0.72
Stage 7	182.8	-0.73
Stage 7	182.6	-0.74
Stage 7	182.4	-0.75
Stage 7	182.2	-0.76
Stage 7	182	-0.77
Stage 7	181.8	-0.78
Stage 7	181.6	-0.78
Stage 7	181.4	-0.79

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 7	181.2	-0.79
Stage 7	181	-0.8
Stage 7	180.8	-0.81
Stage 7	180.6	-0.81
Stage 7	180.4	-0.82
Stage 7	180.2	-0.82
Stage 7	180	-0.83
Stage 7	179.8	-0.83

**4.1.27. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 7**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	-582.69	250.82
Stage 7	191.6	-532.53	250.82
Stage 7	191.4	-484.18	241.77
Stage 7	191.2	-437.7	232.38
Stage 7	191	-393.16	222.68
Stage 7	190.8	-350.63	212.68
Stage 7	190.6	-310.14	202.41
Stage 7	190.4	-271.77	191.88
Stage 7	190.2	-235.55	181.09
Stage 7	190	-201.47	170.4
Stage 7	189.8	-169.49	159.9
Stage 7	189.6	-139.57	149.59
Stage 7	189.4	-111.67	139.51
Stage 7	189.2	-85.74	129.67
Stage 7	189	-61.73	120.03
Stage 7	188.8	-39.61	110.61
Stage 7	188.6	-19.34	101.42
Stage 7	188.4	-0.85	92.45
Stage 7	188.2	15.9	83.71
Stage 7	188	30.94	75.22
Stage 7	187.8	44.33	66.95
Stage 7	187.6	56.11	58.92
Stage 7	187.4	66.34	51.12
Stage 7	187.2	75.05	43.54
Stage 7	187	82.28	36.17
Stage 7	186.8	88.08	29.02
Stage 7	186.6	92.51	22.13
Stage 7	186.4	95.6	15.47
Stage 7	186.2	97.41	9.04
Stage 7	186	97.98	2.85
Stage 7	185.8	97.41	-2.88
Stage 7	185.6	95.77	-8.17
Stage 7	185.4	93.16	-13.06
Stage 7	185.2	89.65	-17.57
Stage 7	185	85.3	-21.72
Stage 7	184.8	80.66	-23.2
Stage 7	184.6	75.81	-24.28
Stage 7	184.4	70.8	-25.01
Stage 7	184.2	65.72	-25.41
Stage 7	184	60.62	-25.52
Stage 7	183.8	55.54	-25.37
Stage 7	183.6	50.55	-24.98
Stage 7	183.4	45.67	-24.38
Stage 7	183.2	40.95	-23.59
Stage 7	183	36.43	-22.63
Stage 7	182.8	32.12	-21.52
Stage 7	182.6	28.06	-20.32
Stage 7	182.4	24.25	-19.05
Stage 7	182.2	20.7	-17.75
Stage 7	182	17.42	-16.41
Stage 7	181.8	14.41	-15.03
Stage 7	181.6	11.69	-13.64
Stage 7	181.4	9.24	-12.23
Stage 7	181.2	7.08	-10.81
Stage 7	181	5.2	-9.38
Stage 7	180.8	3.61	-7.94
Stage 7	180.6	2.31	-6.5
Stage 7	180.4	1.3	-5.06
Stage 7	180.2	0.58	-3.61
Stage 7	180	0.14	-2.17
Stage 7	179.8	0	-0.72



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	-0.96
Stage 7	193.9	-0.19	-0.96
Stage 7	193.7	-0.74	-2.76
Stage 7	193.7	-1132.04	-2.76
Stage 7	193.5	-1069.38	313.26
Stage 7	193.3	-1007.4	309.92
Stage 7	193.1	-946.43	304.86
Stage 7	192.9	-886.59	299.2
Stage 7	192.7	-828.01	292.89
Stage 7	192.5	-770.82	285.98
Stage 7	192.3	-715.12	278.48
Stage 7	192.1	-661.04	270.42
Stage 7	191.9	-608.42	263.07
Stage 7	191.8	-582.69	257.3

**4.1.28. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 7**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	592.49	-250.27
Stage 7	191.6	542.44	-250.27
Stage 7	191.4	494.08	-241.78
Stage 7	191.2	447.51	-232.89
Stage 7	191	402.78	-223.63
Stage 7	190.8	359.97	-214.02
Stage 7	190.6	319.16	-204.08
Stage 7	190.4	280.4	-193.81
Stage 7	190.2	243.75	-183.24
Stage 7	190	209.26	-172.47
Stage 7	189.8	176.89	-161.85
Stage 7	189.6	146.6	-151.41
Stage 7	189.4	118.37	-141.17
Stage 7	189.2	92.14	-131.15
Stage 7	189	67.87	-121.36
Stage 7	188.8	45.5	-111.82
Stage 7	188.6	25	-102.54
Stage 7	188.4	6.3	-93.52
Stage 7	188.2	-10.65	-84.77
Stage 7	188	-25.91	-76.28
Stage 7	187.8	-39.52	-68.06
Stage 7	187.6	-51.54	-60.1
Stage 7	187.4	-62.02	-52.4
Stage 7	187.2	-71.01	-44.96
Stage 7	187	-78.56	-37.76
Stage 7	186.8	-84.73	-30.81
Stage 7	186.6	-89.56	-24.15
Stage 7	186.4	-93.11	-17.76
Stage 7	186.2	-95.43	-11.63
Stage 7	186	-96.6	-5.82
Stage 7	185.8	-96.67	-0.38
Stage 7	185.6	-95.73	4.73
Stage 7	185.4	-93.83	9.51
Stage 7	185.2	-91.03	14
Stage 7	185	-87.38	18.21
Stage 7	184.8	-83.34	20.21
Stage 7	184.6	-78.99	21.74
Stage 7	184.4	-74.43	22.82
Stage 7	184.2	-69.73	23.5
Stage 7	184	-64.94	23.94
Stage 7	183.8	-60.11	24.14
Stage 7	183.6	-55.29	24.13
Stage 7	183.4	-50.51	23.92
Stage 7	183.2	-45.8	23.52
Stage 7	183	-41.21	22.97
Stage 7	182.8	-36.75	22.28
Stage 7	182.6	-32.46	21.45
Stage 7	182.4	-28.36	20.5
Stage 7	182.2	-24.47	19.44
Stage 7	182	-20.82	18.29
Stage 7	181.8	-17.41	17.05
Stage 7	181.6	-14.26	15.73
Stage 7	181.4	-11.39	14.34
Stage 7	181.2	-8.82	12.88
Stage 7	181	-6.55	11.35
Stage 7	180.8	-4.59	9.76
Stage 7	180.6	-2.97	8.11
Stage 7	180.4	-1.69	6.41
Stage 7	180.2	-0.76	4.65
Stage 7	180	-0.19	2.83
Stage 7	179.8	0	0.96

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	1.08
Stage 7	193.9	0.22	1.08
Stage 7	193.7	0.9	3.41
Stage 7	193.7	1138.26	3.41
Stage 7	193.5	1075.91	-311.71
Stage 7	193.3	1014.39	-307.62
Stage 7	193.1	953.83	-302.79
Stage 7	192.9	894.38	-297.25
Stage 7	192.7	836.18	-291
Stage 7	192.5	779.37	-284.06
Stage 7	192.3	724.08	-276.45
Stage 7	192.1	670.44	-268.21
Stage 7	191.9	618.12	-261.57
Stage 7	191.8	592.49	-256.28

**4.1.29. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 8**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 8	194.1	0.21	
Stage 8	193.9	0.21	
Stage 8	193.7	0.2	
Stage 8	193.5	0.2	
Stage 8	193.3	0.21	
Stage 8	193.1	0.21	
Stage 8	192.9	0.21	
Stage 8	192.7	0.22	
Stage 8	192.5	0.22	
Stage 8	192.3	0.23	
Stage 8	192.1	0.24	
Stage 8	191.9	0.25	
Stage 8	191.8	0.26	
Stage 8	191.6	0.27	
Stage 8	191.4	0.28	
Stage 8	191.2	0.3	
Stage 8	191	0.32	
Stage 8	190.8	0.34	
Stage 8	190.6	0.36	
Stage 8	190.4	0.39	
Stage 8	190.2	0.41	
Stage 8	190	0.43	
Stage 8	189.8	0.46	
Stage 8	189.6	0.48	
Stage 8	189.4	0.51	
Stage 8	189.2	0.53	
Stage 8	189	0.56	
Stage 8	188.8	0.58	
Stage 8	188.6	0.61	
Stage 8	188.4	0.63	
Stage 8	188.2	0.65	
Stage 8	188	0.67	
Stage 8	187.8	0.69	
Stage 8	187.6	0.7	
Stage 8	187.4	0.72	
Stage 8	187.2	0.73	
Stage 8	187	0.74	
Stage 8	186.8	0.75	
Stage 8	186.6	0.76	
Stage 8	186.4	0.77	
Stage 8	186.2	0.77	
Stage 8	186	0.78	
Stage 8	185.8	0.78	
Stage 8	185.6	0.78	
Stage 8	185.4	0.78	
Stage 8	185.2	0.77	
Stage 8	185	0.77	
Stage 8	184.8	0.77	
Stage 8	184.6	0.76	
Stage 8	184.4	0.75	
Stage 8	184.2	0.75	
Stage 8	184	0.74	
Stage 8	183.8	0.73	
Stage 8	183.6	0.72	
Stage 8	183.4	0.72	
Stage 8	183.2	0.71	
Stage 8	183	0.7	
Stage 8	182.8	0.69	
Stage 8	182.6	0.68	
Stage 8	182.4	0.67	
Stage 8	182.2	0.66	
Stage 8	182	0.65	
Stage 8	181.8	0.64	
Stage 8	181.6	0.64	
Stage 8	181.4	0.63	

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: LEFT
Stage	Z (m)	Spostamento (mm)	
Stage 8	181.2	0.62	
Stage 8	181	0.61	
Stage 8	180.8	0.6	
Stage 8	180.6	0.59	
Stage 8	180.4	0.58	
Stage 8	180.2	0.57	
Stage 8	180	0.56	
Stage 8	179.8	0.56	

**4.1.30. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - RIGHT Stage: Stage 8**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento Muro: RIGHT		
Stage	Z (m)	Spostamento (mm)
Stage 8	194.1	0.16
Stage 8	193.9	0.16
Stage 8	193.7	0.16
Stage 8	193.5	0.16
Stage 8	193.3	0.15
Stage 8	193.1	0.15
Stage 8	192.9	0.14
Stage 8	192.7	0.13
Stage 8	192.5	0.12
Stage 8	192.3	0.11
Stage 8	192.1	0.1
Stage 8	191.9	0.09
Stage 8	191.8	0.08
Stage 8	191.6	0.07
Stage 8	191.4	0.05
Stage 8	191.2	0.03
Stage 8	191	0.01
Stage 8	190.8	-0.02
Stage 8	190.6	-0.04
Stage 8	190.4	-0.07
Stage 8	190.2	-0.1
Stage 8	190	-0.13
Stage 8	189.8	-0.16
Stage 8	189.6	-0.19
Stage 8	189.4	-0.22
Stage 8	189.2	-0.25
Stage 8	189	-0.28
Stage 8	188.8	-0.31
Stage 8	188.6	-0.34
Stage 8	188.4	-0.37
Stage 8	188.2	-0.4
Stage 8	188	-0.43
Stage 8	187.8	-0.45
Stage 8	187.6	-0.48
Stage 8	187.4	-0.5
Stage 8	187.2	-0.52
Stage 8	187	-0.54
Stage 8	186.8	-0.56
Stage 8	186.6	-0.57
Stage 8	186.4	-0.59
Stage 8	186.2	-0.6
Stage 8	186	-0.61
Stage 8	185.8	-0.62
Stage 8	185.6	-0.63
Stage 8	185.4	-0.64
Stage 8	185.2	-0.65
Stage 8	185	-0.65
Stage 8	184.8	-0.65
Stage 8	184.6	-0.66
Stage 8	184.4	-0.66
Stage 8	184.2	-0.66
Stage 8	184	-0.66
Stage 8	183.8	-0.66
Stage 8	183.6	-0.66
Stage 8	183.4	-0.66
Stage 8	183.2	-0.66
Stage 8	183	-0.65
Stage 8	182.8	-0.65
Stage 8	182.6	-0.65
Stage 8	182.4	-0.65
Stage 8	182.2	-0.64
Stage 8	182	-0.64
Stage 8	181.8	-0.64
Stage 8	181.6	-0.64
Stage 8	181.4	-0.63

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento			Muro: RIGHT
Stage	Z (m)	Spostamento (mm)	
Stage 8	181.2	-0.63	
Stage 8	181	-0.63	
Stage 8	180.8	-0.62	
Stage 8	180.6	-0.62	
Stage 8	180.4	-0.62	
Stage 8	180.2	-0.61	
Stage 8	180	-0.61	
Stage 8	179.8	-0.61	

**4.1.31. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 8**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	-93.52	55.21
Stage 8	191.6	-82.47	55.21
Stage 8	191.4	-71.93	52.69
Stage 8	191.2	-61.86	50.36
Stage 8	191	-52.23	48.16
Stage 8	190.8	-43.01	46.08
Stage 8	190.6	-34.2	44.07
Stage 8	190.4	-25.79	42.06
Stage 8	190.2	-17.83	39.79
Stage 8	190	-10.31	37.58
Stage 8	189.8	-3.22	35.45
Stage 8	189.6	3.45	33.38
Stage 8	189.4	9.73	31.37
Stage 8	189.2	15.6	29.39
Stage 8	189	21.08	27.39
Stage 8	188.8	26.15	25.35
Stage 8	188.6	30.8	23.27
Stage 8	188.4	35.03	21.14
Stage 8	188.2	38.82	18.96
Stage 8	188	42.16	16.7
Stage 8	187.8	45.04	14.38
Stage 8	187.6	47.44	11.98
Stage 8	187.4	49.34	9.51
Stage 8	187.2	50.73	6.95
Stage 8	187	51.59	4.31
Stage 8	186.8	51.91	1.59
Stage 8	186.6	51.67	-1.17
Stage 8	186.4	50.88	-3.98
Stage 8	186.2	49.51	-6.83
Stage 8	186	47.57	-9.7
Stage 8	185.8	45.1	-12.36
Stage 8	185.6	42.13	-14.84
Stage 8	185.4	38.71	-17.14
Stage 8	185.2	34.85	-19.28
Stage 8	185	30.6	-21.27
Stage 8	184.8	26.62	-19.87
Stage 8	184.6	22.93	-18.44
Stage 8	184.4	19.53	-17.01
Stage 8	184.2	16.42	-15.57
Stage 8	184	13.59	-14.13
Stage 8	183.8	11.05	-12.72
Stage 8	183.6	8.78	-11.33
Stage 8	183.4	6.79	-9.96
Stage 8	183.2	5.06	-8.63
Stage 8	183	3.59	-7.35
Stage 8	182.8	2.37	-6.1
Stage 8	182.6	1.39	-4.94
Stage 8	182.4	0.61	-3.89
Stage 8	182.2	0.02	-2.94
Stage 8	182	-0.4	-2.11
Stage 8	181.8	-0.68	-1.38
Stage 8	181.6	-0.83	-0.75
Stage 8	181.4	-0.87	-0.24
Stage 8	181.2	-0.84	0.18
Stage 8	181	-0.74	0.49
Stage 8	180.8	-0.6	0.7
Stage 8	180.6	-0.44	0.8
Stage 8	180.4	-0.28	0.8
Stage 8	180.2	-0.14	0.7
Stage 8	180	-0.04	0.5
Stage 8	179.8	0	0.2



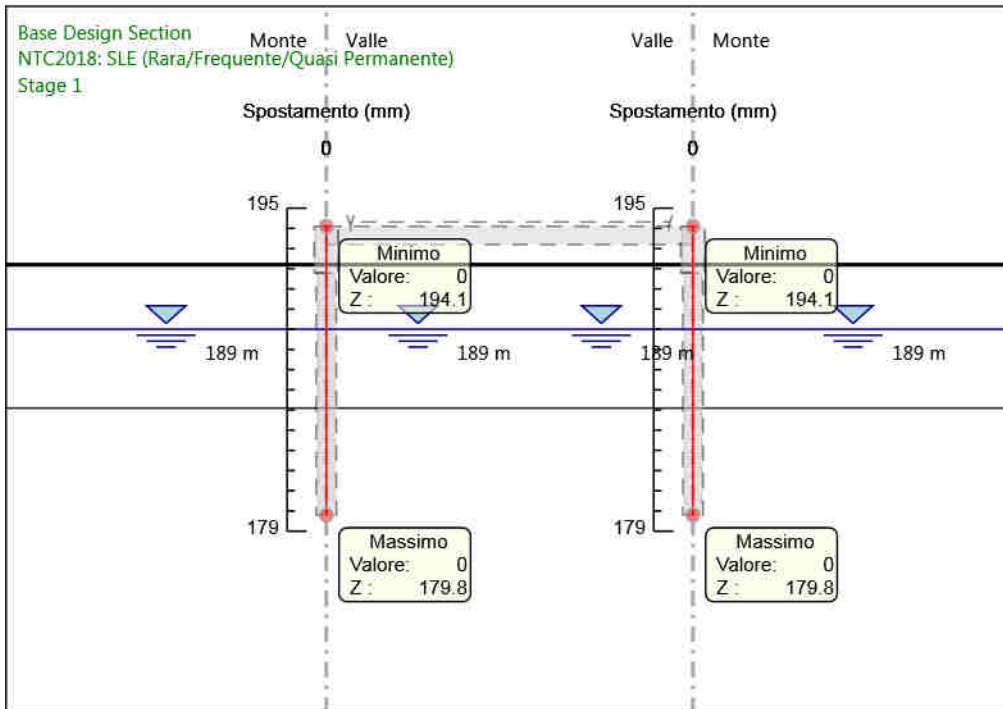
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	-1.18
Stage 8	193.9	-0.24	-1.18
Stage 8	193.7	-1.03	-3.97
Stage 8	193.7	-217.83	-3.97
Stage 8	193.5	-203.44	71.93
Stage 8	193.3	-189.33	70.55
Stage 8	193.1	-175.53	69.02
Stage 8	192.9	-161.96	67.83
Stage 8	192.7	-148.68	66.42
Stage 8	192.5	-135.72	64.79
Stage 8	192.3	-123.13	62.95
Stage 8	192.1	-110.95	60.89
Stage 8	191.9	-99.23	58.62
Stage 8	191.8	-93.52	57.15

**4.1.32. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Right wall - Stage: Stage 8**

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	102.75	-55.15
Stage 8	191.6	91.72	-55.15
Stage 8	191.4	81.12	-53.04
Stage 8	191.2	70.91	-51.04
Stage 8	191	61.08	-49.13
Stage 8	190.8	51.63	-47.26
Stage 8	190.6	42.55	-45.41
Stage 8	190.4	33.84	-43.53
Stage 8	190.2	25.54	-41.52
Stage 8	190	17.69	-39.25
Stage 8	189.8	10.28	-37.04
Stage 8	189.6	3.3	-34.88
Stage 8	189.4	-3.24	-32.74
Stage 8	189.2	-9.37	-30.62
Stage 8	189	-15.07	-28.5
Stage 8	188.8	-20.34	-26.39
Stage 8	188.6	-25.19	-24.26
Stage 8	188.4	-29.62	-22.11
Stage 8	188.2	-33.6	-19.94
Stage 8	188	-37.15	-17.74
Stage 8	187.8	-40.25	-15.49
Stage 8	187.6	-42.89	-13.2
Stage 8	187.4	-45.06	-10.87
Stage 8	187.2	-46.76	-8.49
Stage 8	187	-47.97	-6.05
Stage 8	186.8	-48.69	-3.57
Stage 8	186.6	-48.9	-1.08
Stage 8	186.4	-48.62	1.42
Stage 8	186.2	-47.83	3.93
Stage 8	186	-46.56	6.38
Stage 8	185.8	-44.81	8.73
Stage 8	185.6	-42.61	11.01
Stage 8	185.4	-39.96	13.22
Stage 8	185.2	-36.89	15.37
Stage 8	185	-33.4	17.46
Stage 8	184.8	-30.06	16.71
Stage 8	184.6	-26.88	15.88
Stage 8	184.4	-23.88	14.98
Stage 8	184.2	-21.08	14.03
Stage 8	184	-18.47	13.03
Stage 8	183.8	-16.07	11.99
Stage 8	183.6	-13.89	10.91
Stage 8	183.4	-11.91	9.89
Stage 8	183.2	-10.13	8.91
Stage 8	183	-8.54	7.98
Stage 8	182.8	-7.12	7.1
Stage 8	182.6	-5.87	6.27
Stage 8	182.4	-4.77	5.49
Stage 8	182.2	-3.81	4.76
Stage 8	182	-3	4.09
Stage 8	181.8	-2.31	3.46
Stage 8	181.6	-1.73	2.89
Stage 8	181.4	-1.26	2.37
Stage 8	181.2	-0.88	1.89
Stage 8	181	-0.58	1.48
Stage 8	180.8	-0.36	1.11
Stage 8	180.6	-0.2	0.79
Stage 8	180.4	-0.1	0.52
Stage 8	180.2	-0.04	0.31
Stage 8	180	-0.01	0.14
Stage 8	179.8	0	0.03

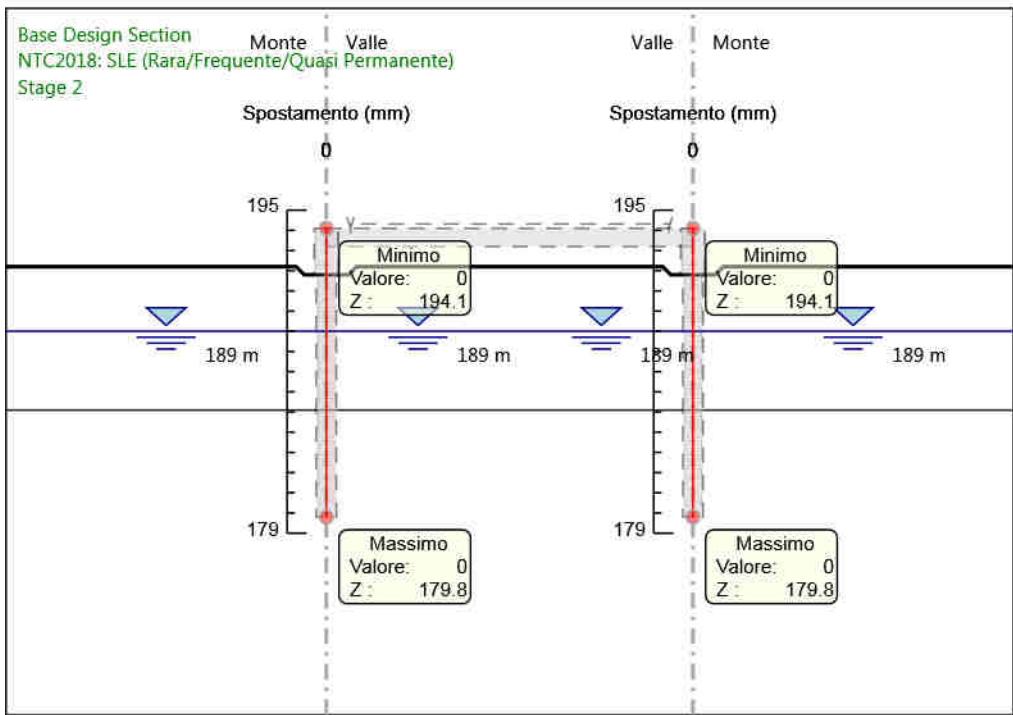
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	1.18
Stage 8	193.9	0.24	1.18
Stage 8	193.7	1.03	3.95
Stage 8	193.7	224.77	3.95
Stage 8	193.5	210.56	-71.06
Stage 8	193.3	196.77	-68.96
Stage 8	193.1	183.23	-67.68
Stage 8	192.9	169.93	-66.49
Stage 8	192.7	156.92	-65.08
Stage 8	192.5	144.23	-63.45
Stage 8	192.3	131.91	-61.61
Stage 8	192.1	120	-59.55
Stage 8	191.9	108.43	-57.84
Stage 8	191.8	102.75	-56.74

### 4.1.33. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 1



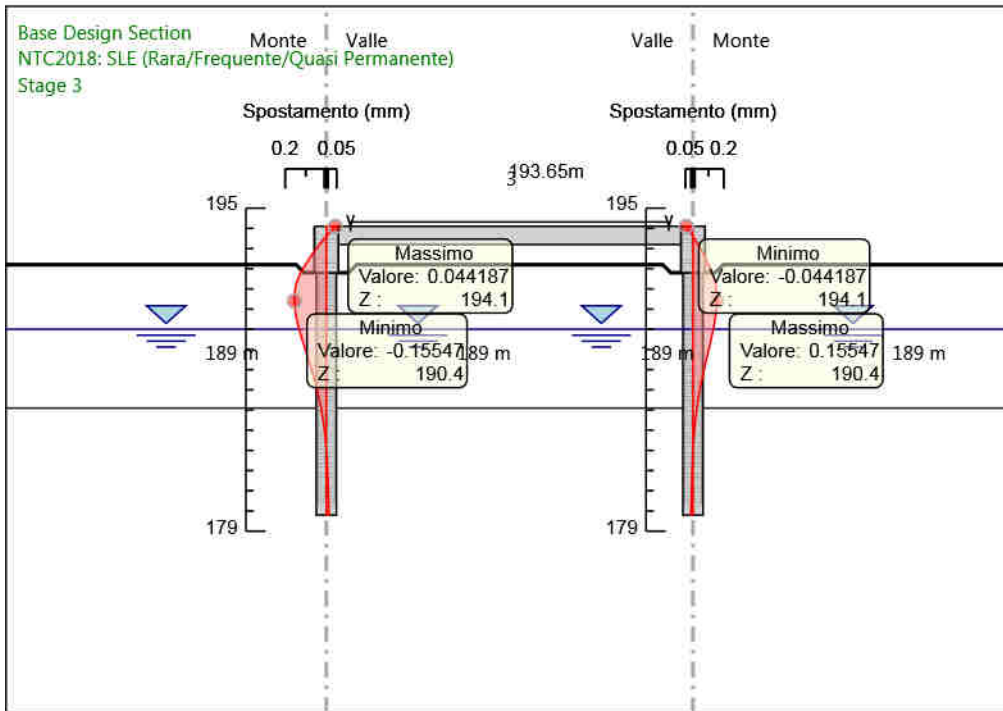
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 1  
 Spostamento

#### 4.1.34. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 2



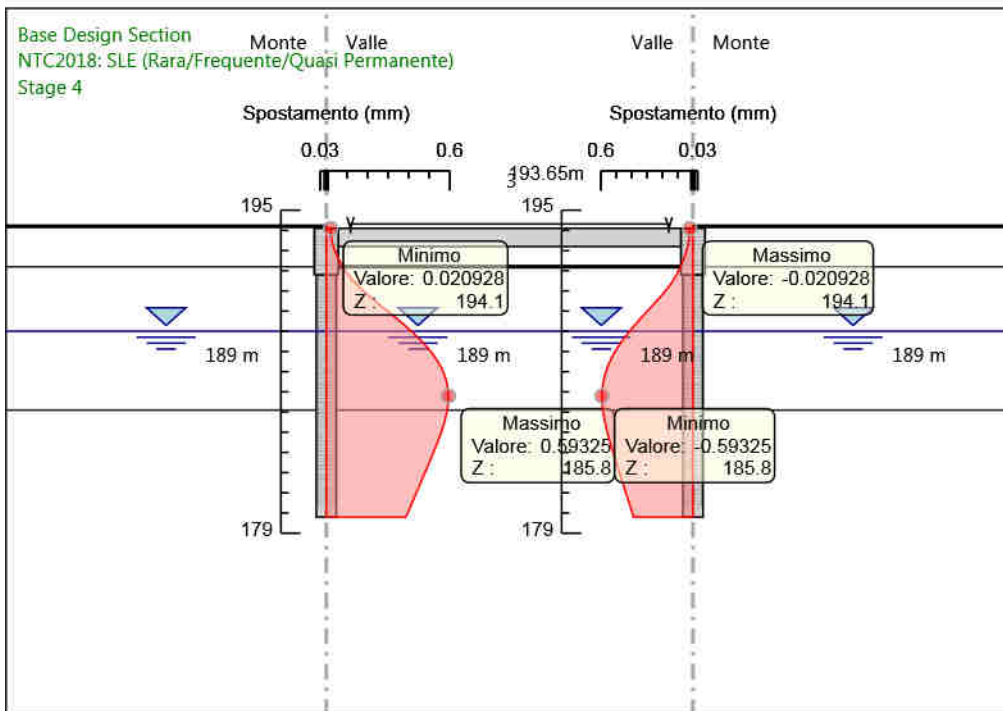
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 2  
 Spostamento

#### 4.1.35. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 3



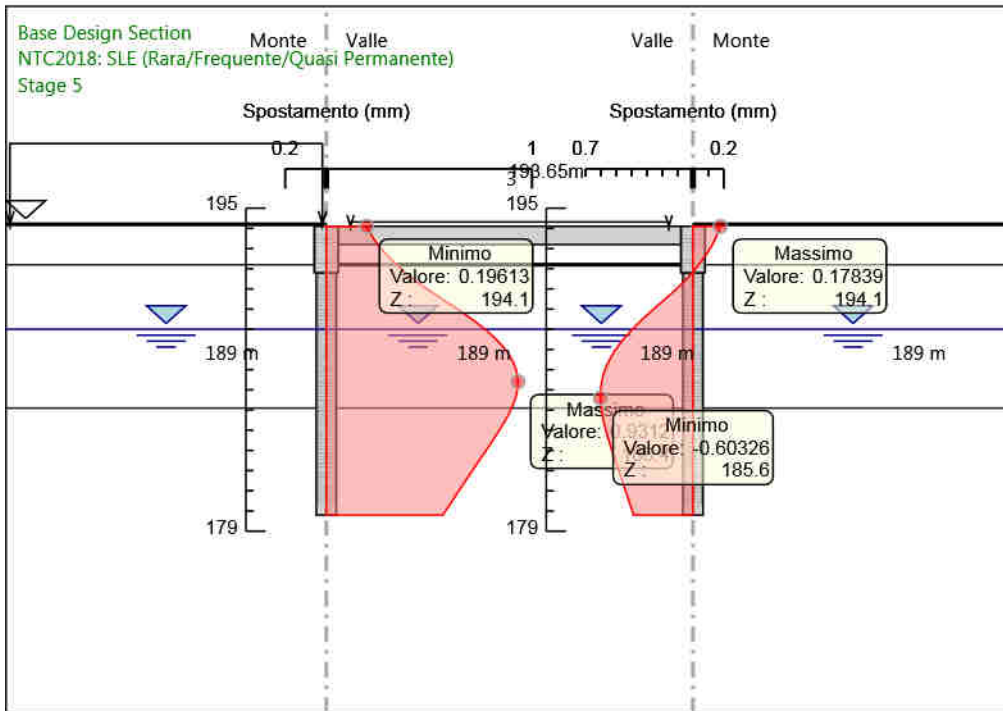
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 3  
 Spostamento

#### 4.1.36. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 4



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 4  
 Spostamento

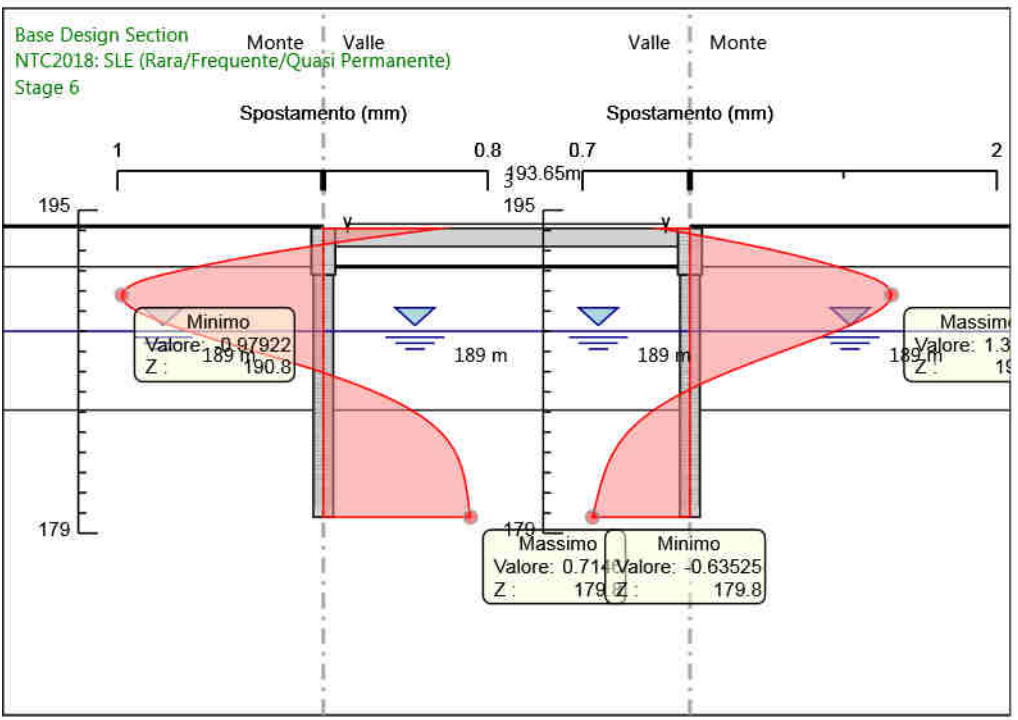
#### 4.1.37. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 5



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 5  
 Spostamento

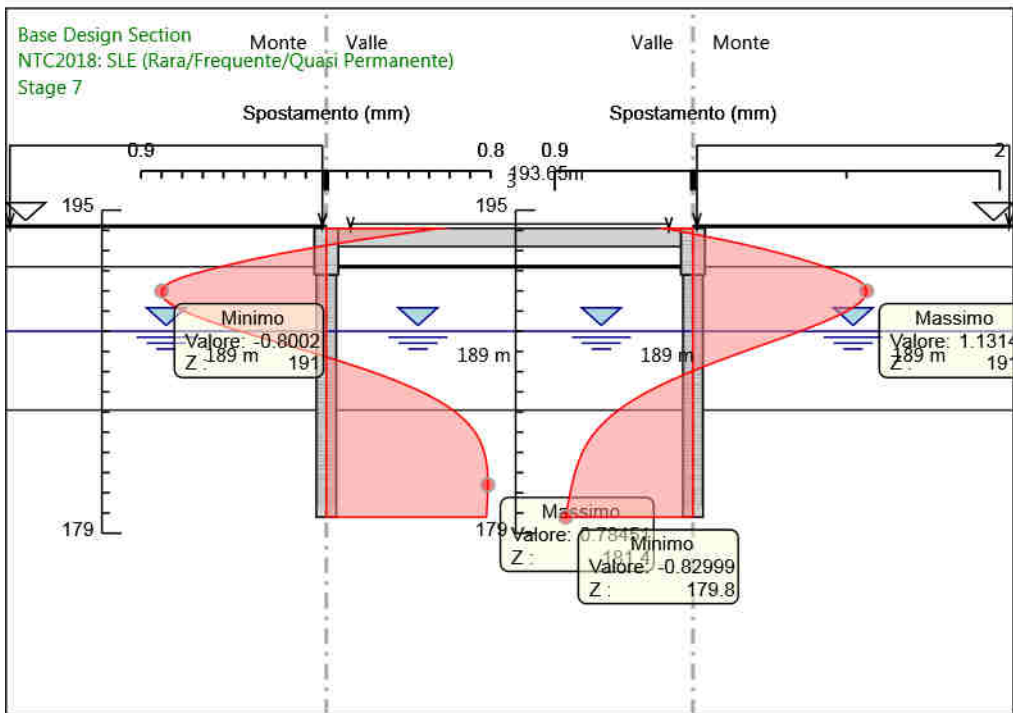


4.1.38. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 6



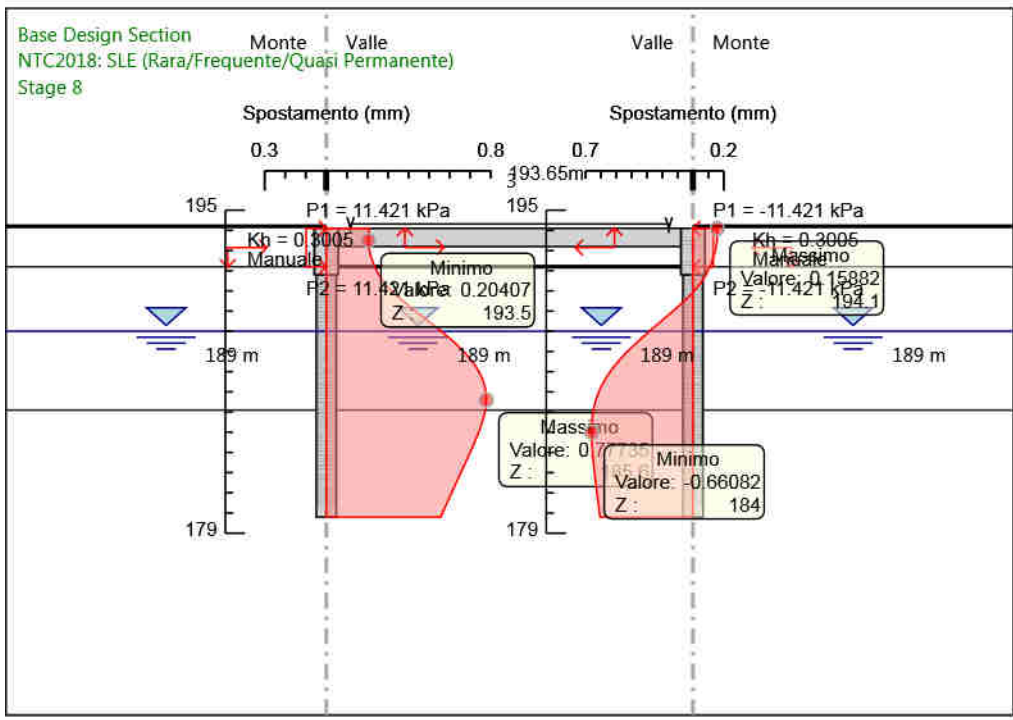
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 6  
 Spostamento

#### 4.1.39. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 7



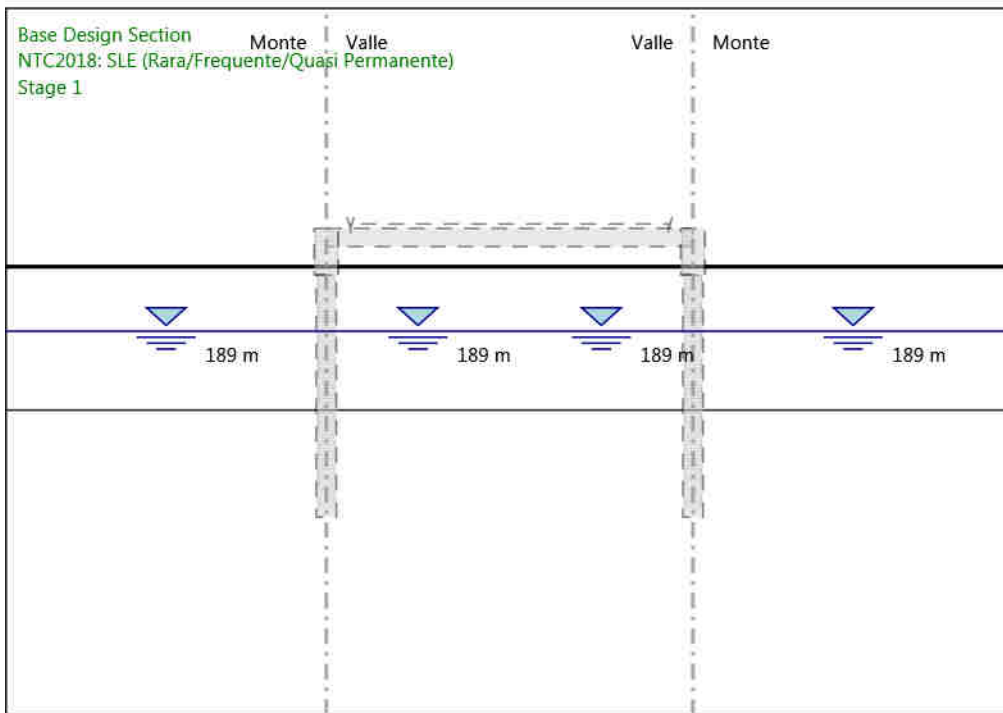
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 7  
 Spostamento

#### 4.1.40. Grafico Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 8



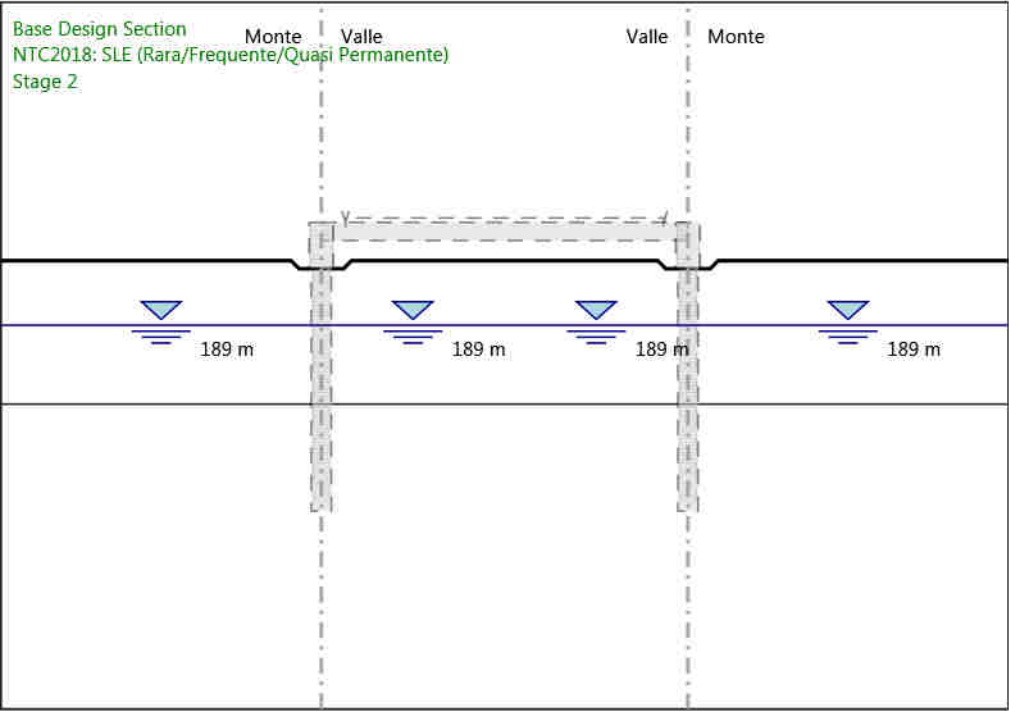
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 8  
 Spostamento

**4.1.41. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 1**



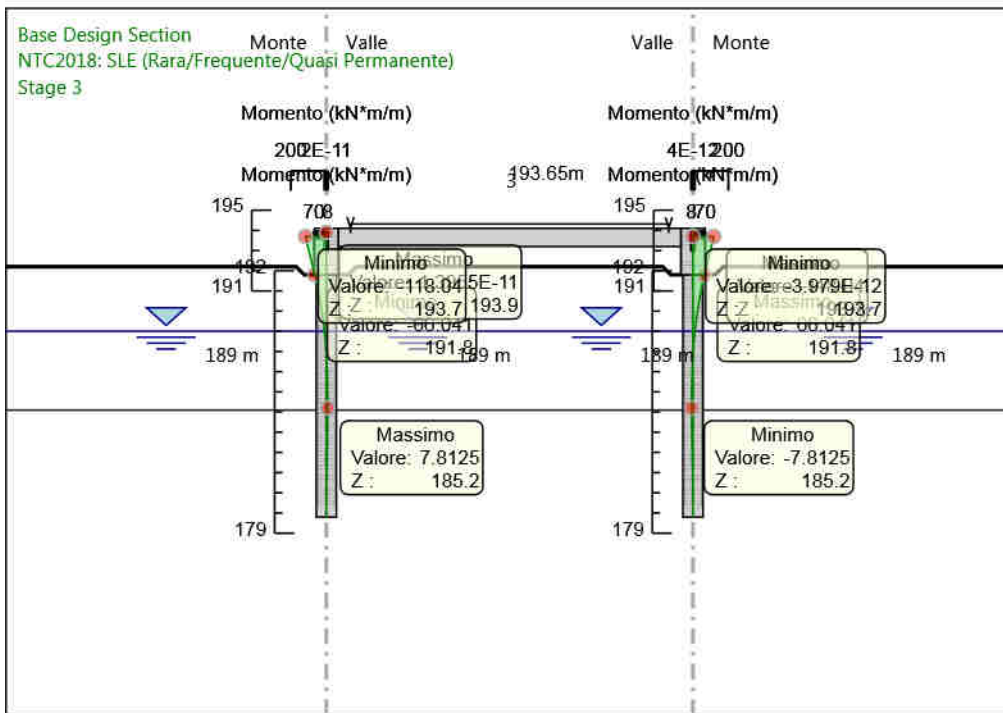
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 1  
Momento

**4.1.42. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 2**



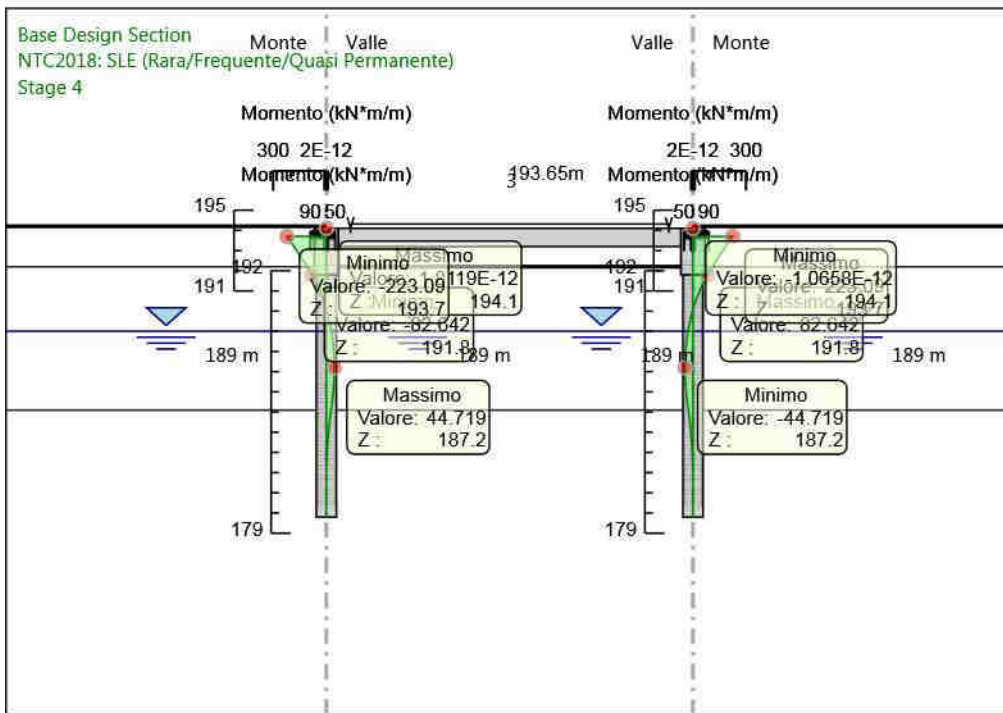
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 2  
Momento

**4.1.43. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 3**



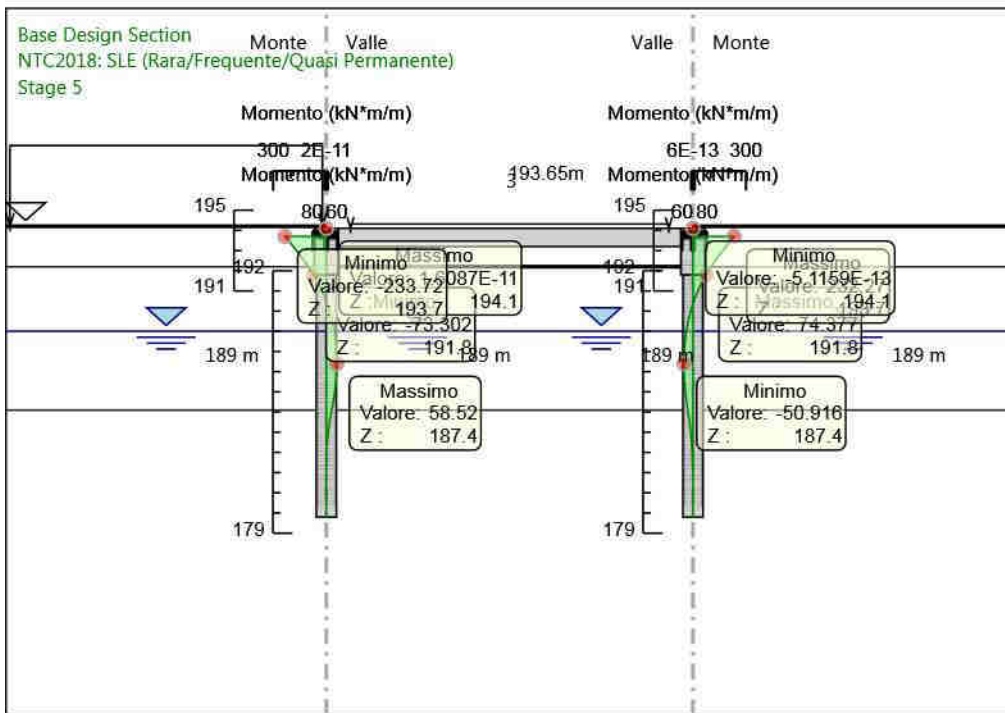
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 3  
 Momento

**4.1.44. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 4**



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 4  
 Momento

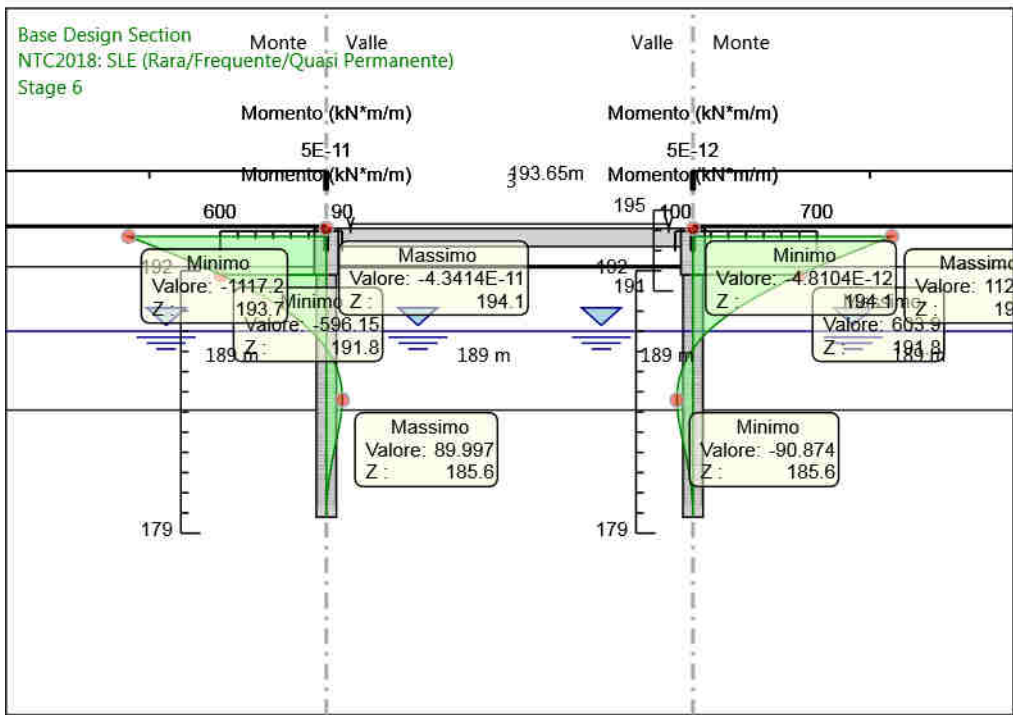
**4.1.45. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 5**



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 5  
 Momento

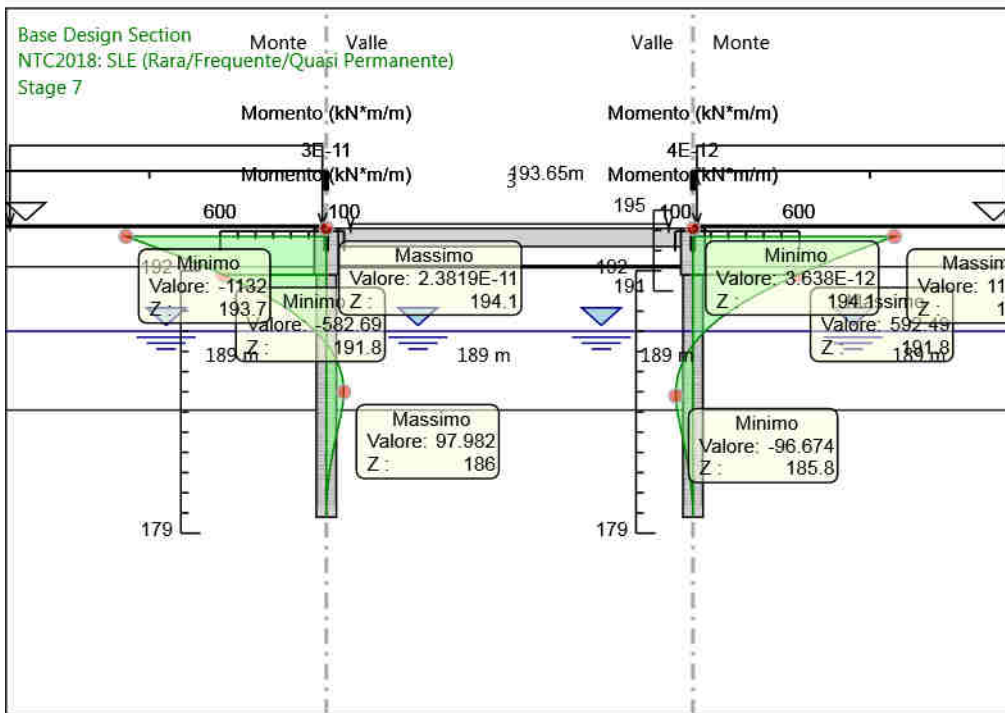


**4.1.46. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 6**



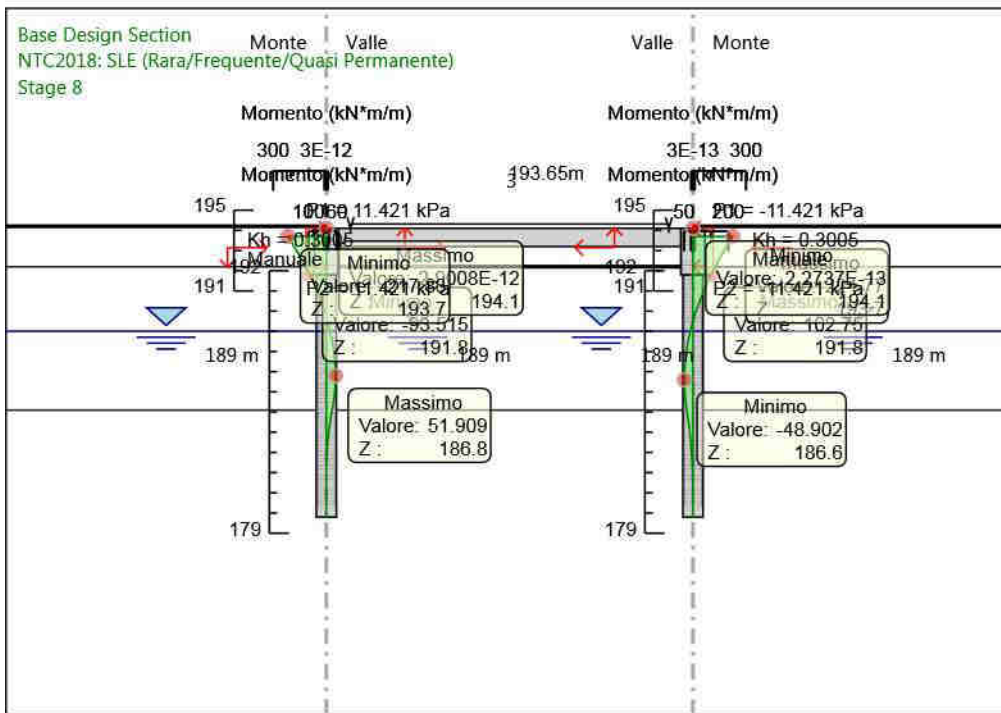
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 6  
 Momento

**4.1.47. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 7**



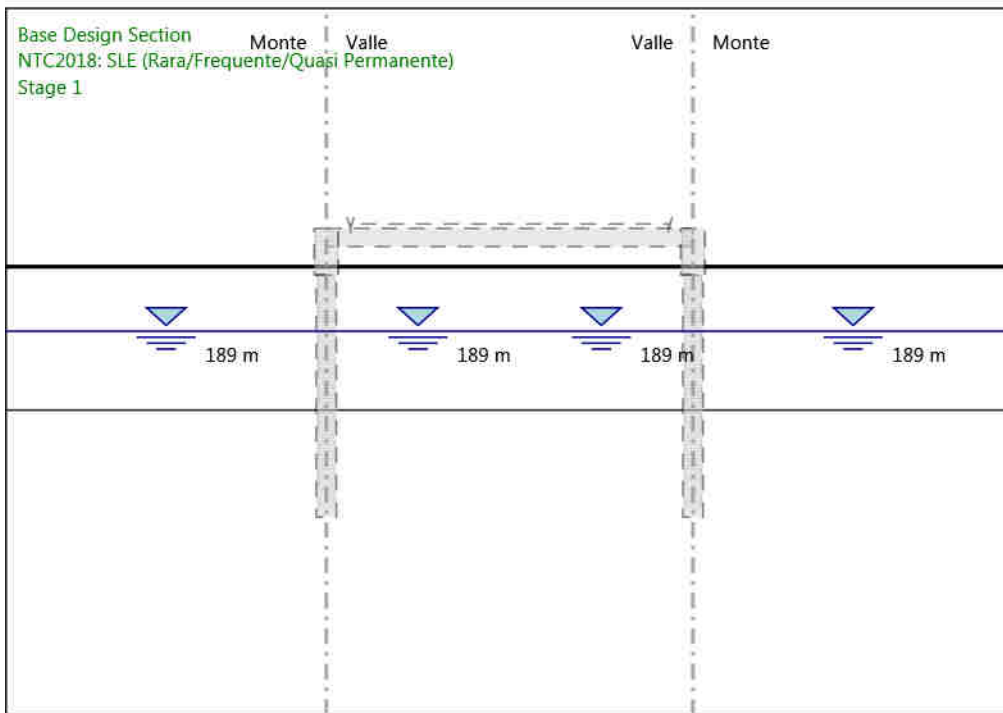
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 7  
 Momento

**4.1.48. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 8**



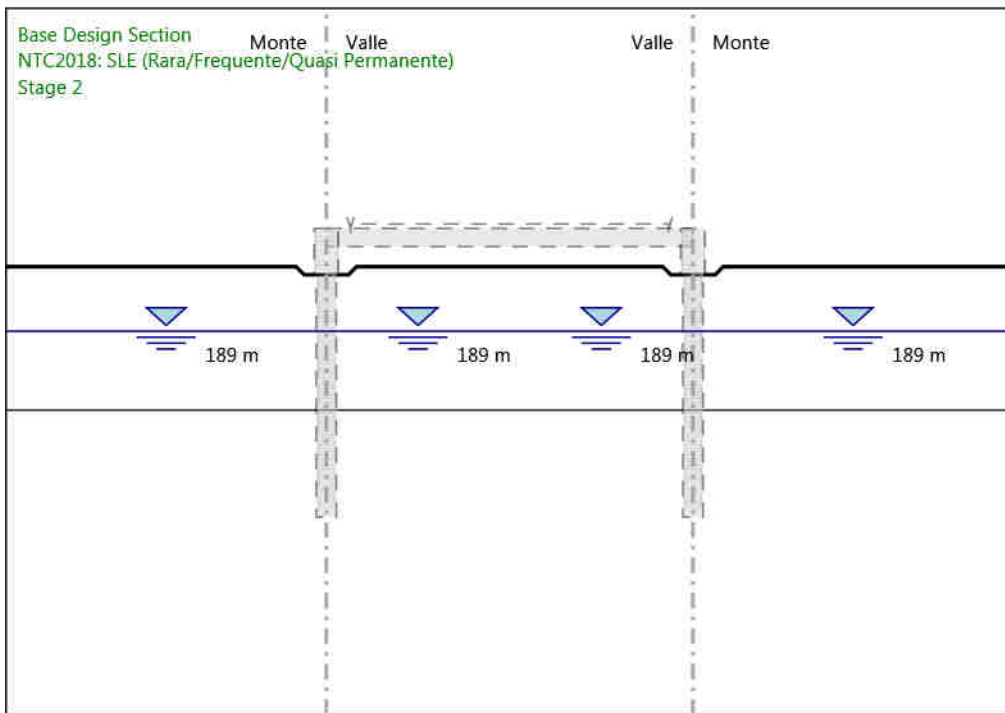
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 8  
 Momento

4.1.49. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 1



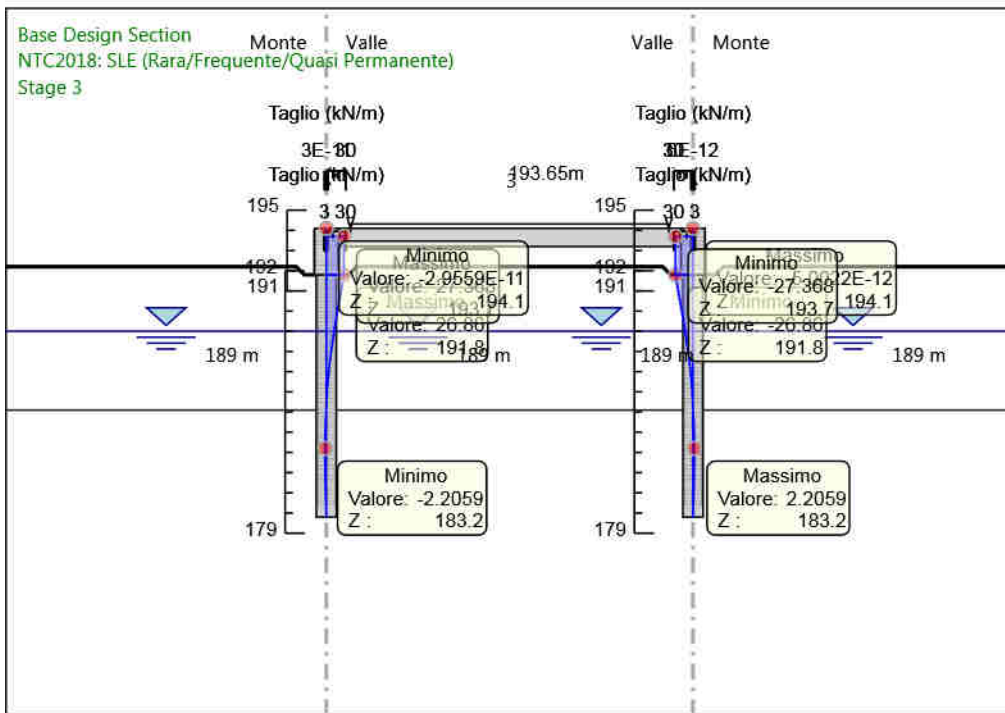
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 1  
Taglio

4.1.50. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 2



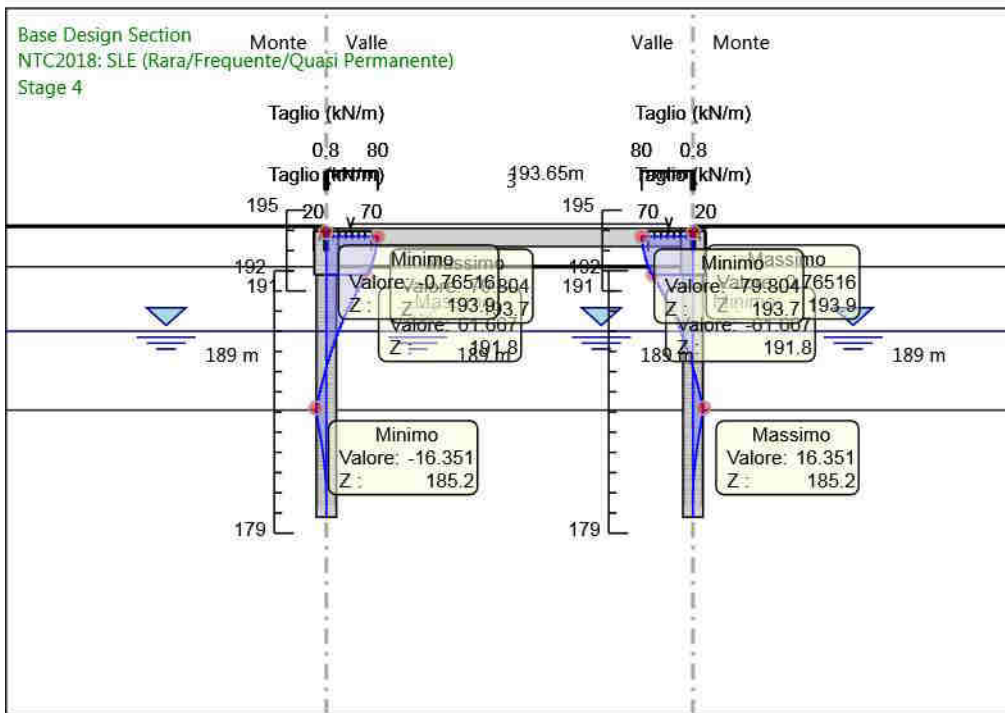
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 2  
Taglio

4.1.51. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 3



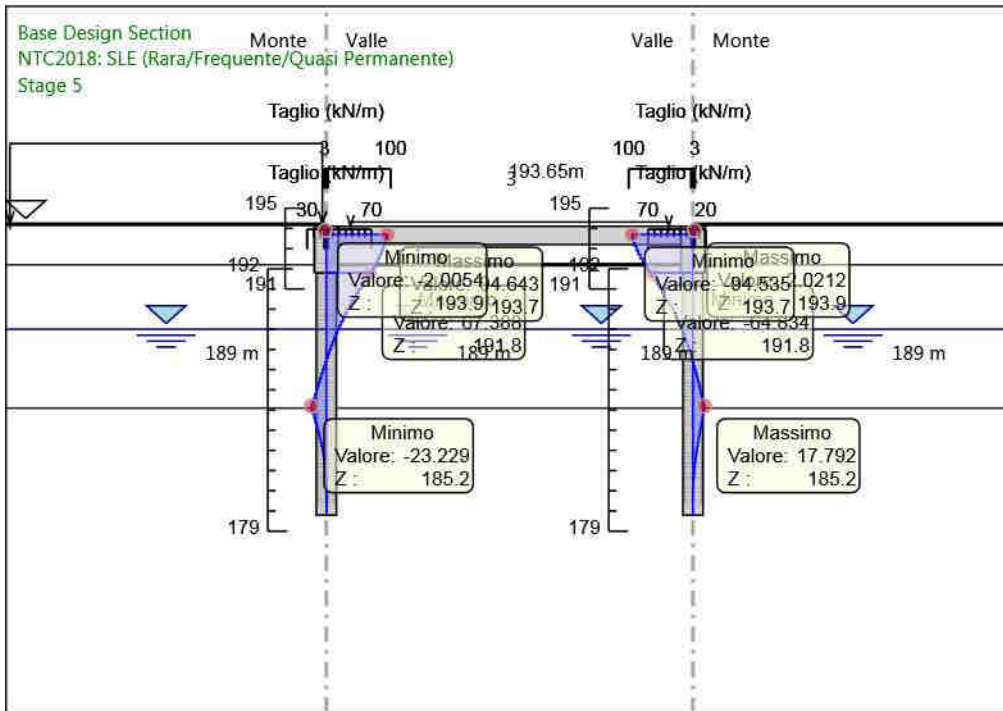
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 3  
Taglio

4.1.52. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 4



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 4  
 Taglio

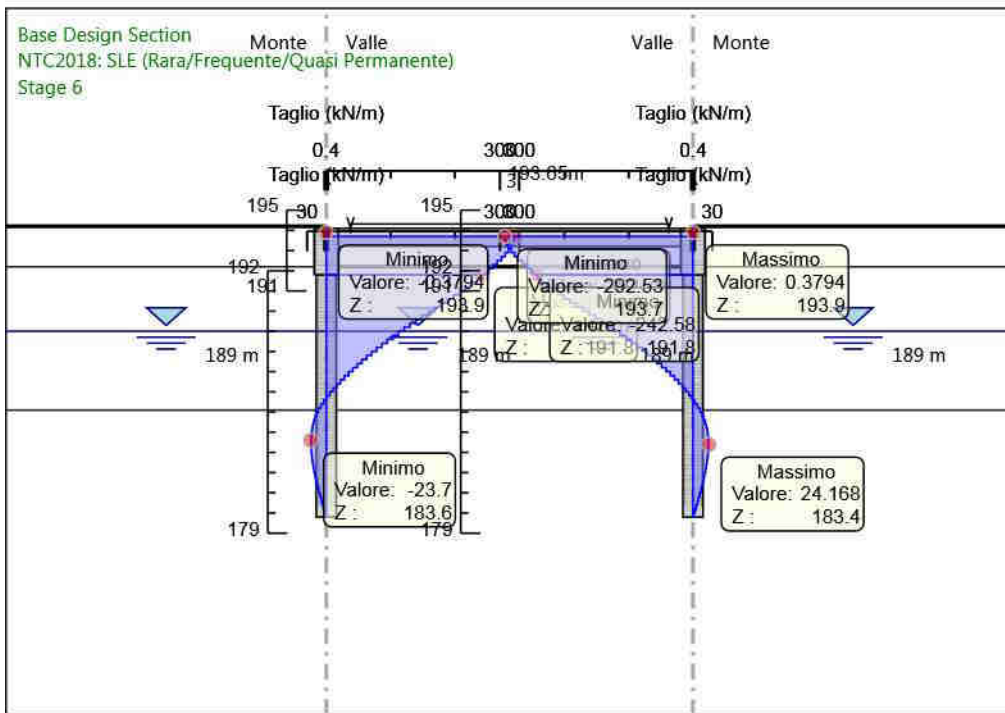
4.1.53. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 5



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 5  
 Taglio

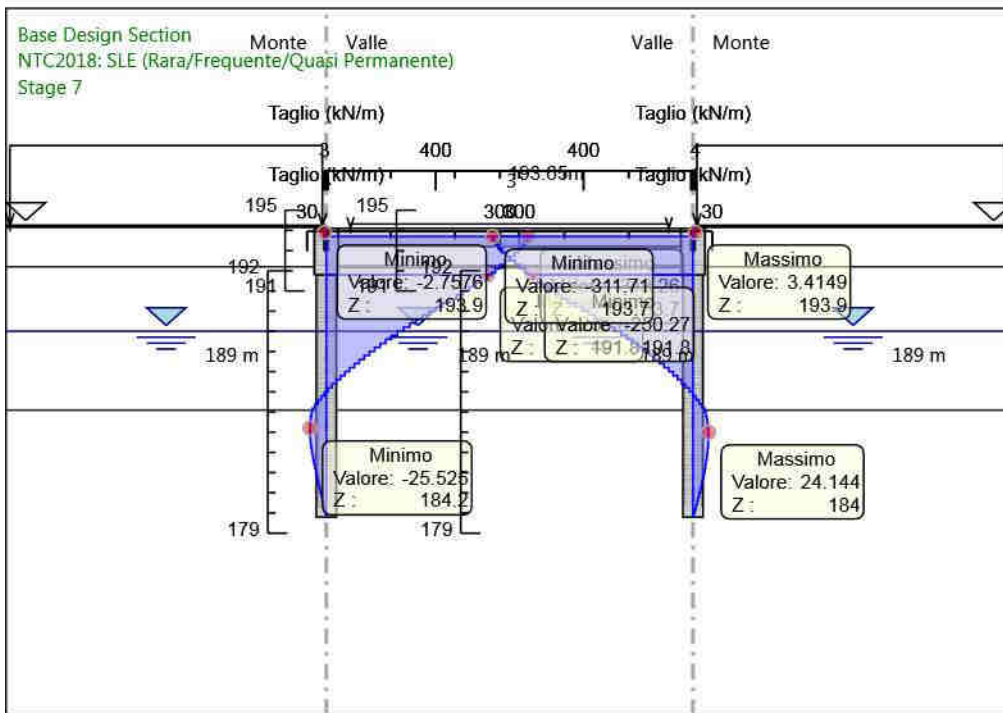


**4.1.54. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 6**



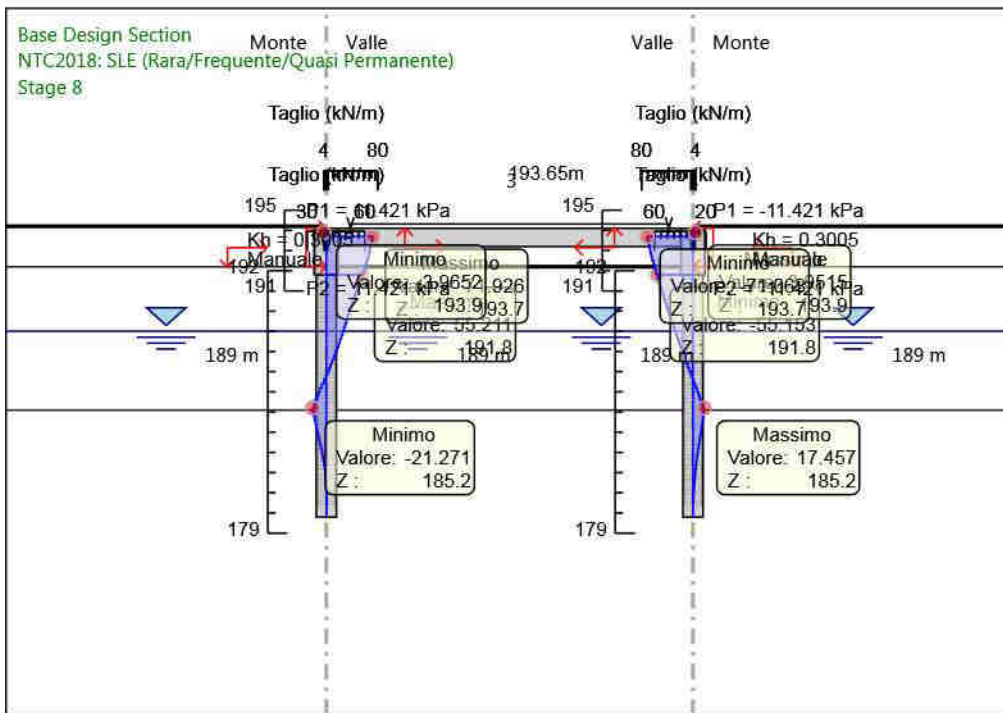
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 6  
 Taglio

4.1.55. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 7



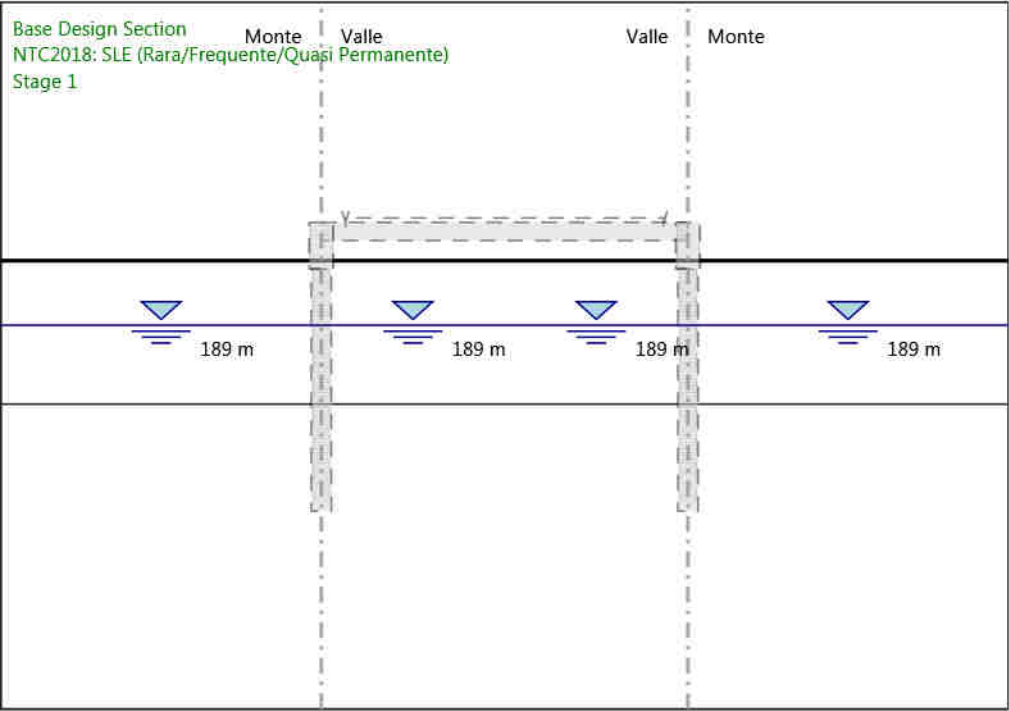
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 7  
 Taglio

4.1.56. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 8



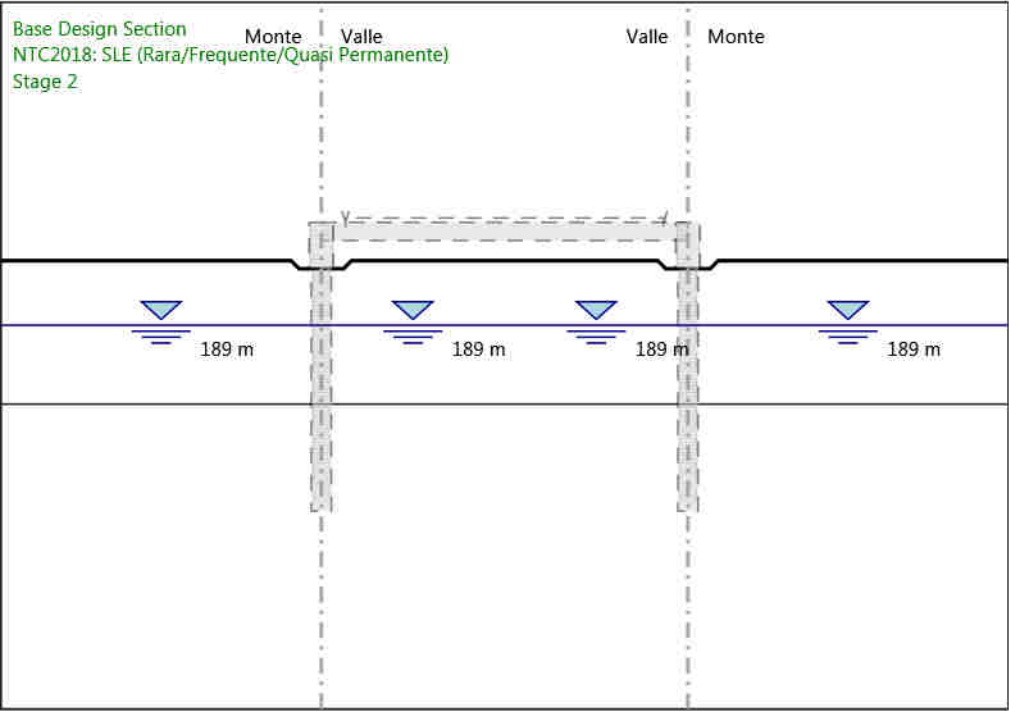
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 8  
 Taglio

**4.1.57. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 1**



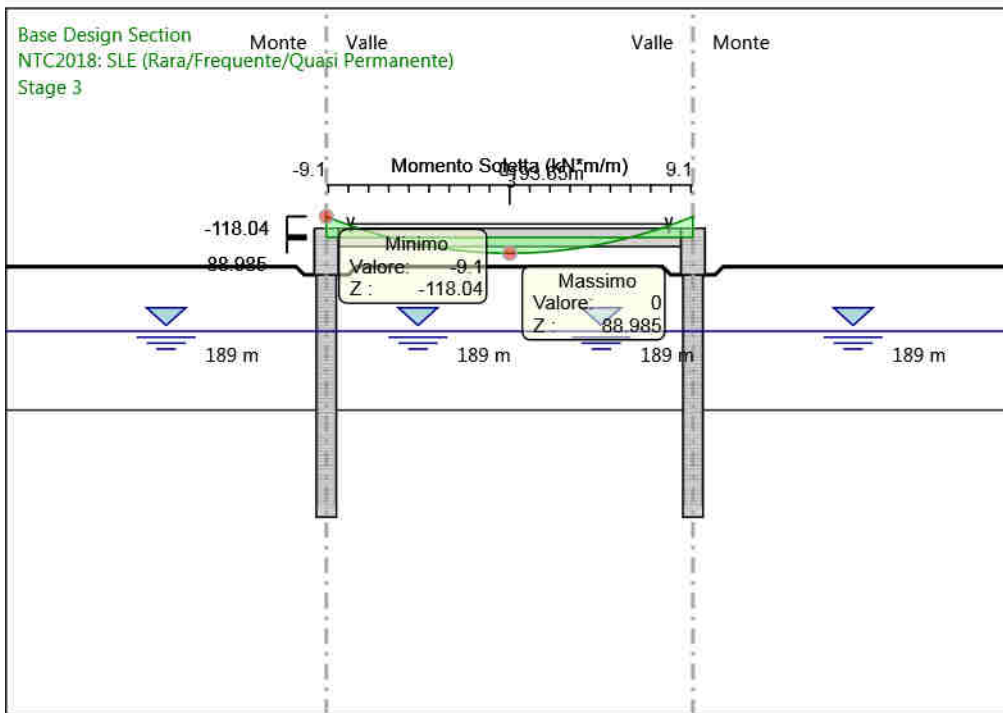
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 1  
Momento

**4.1.58. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 2**



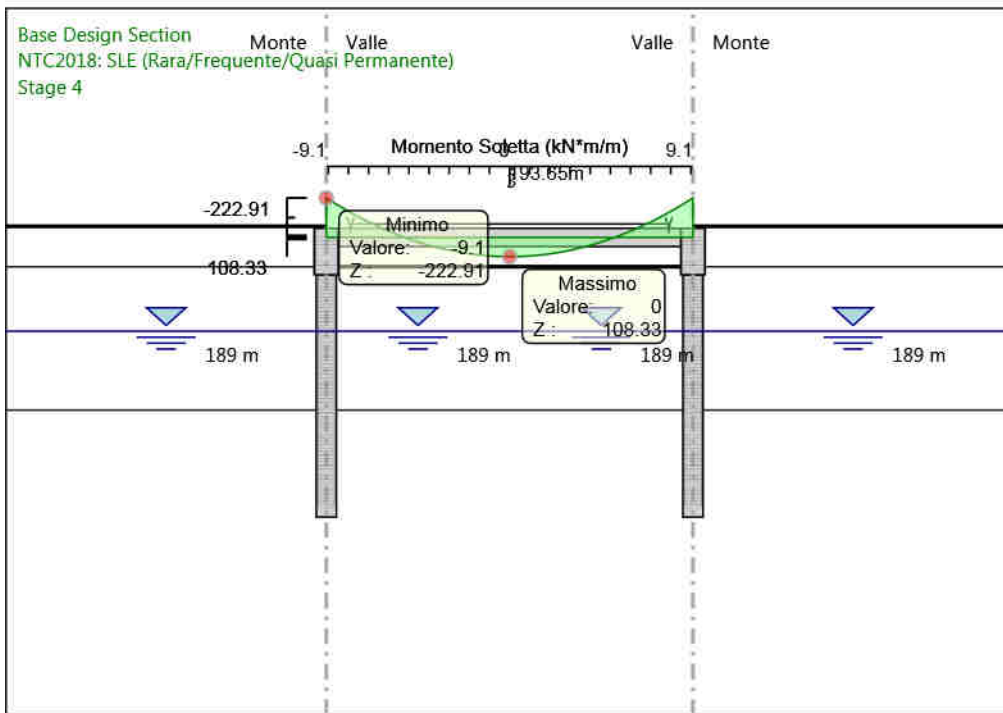
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 2  
Momento

**4.1.59. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 3**



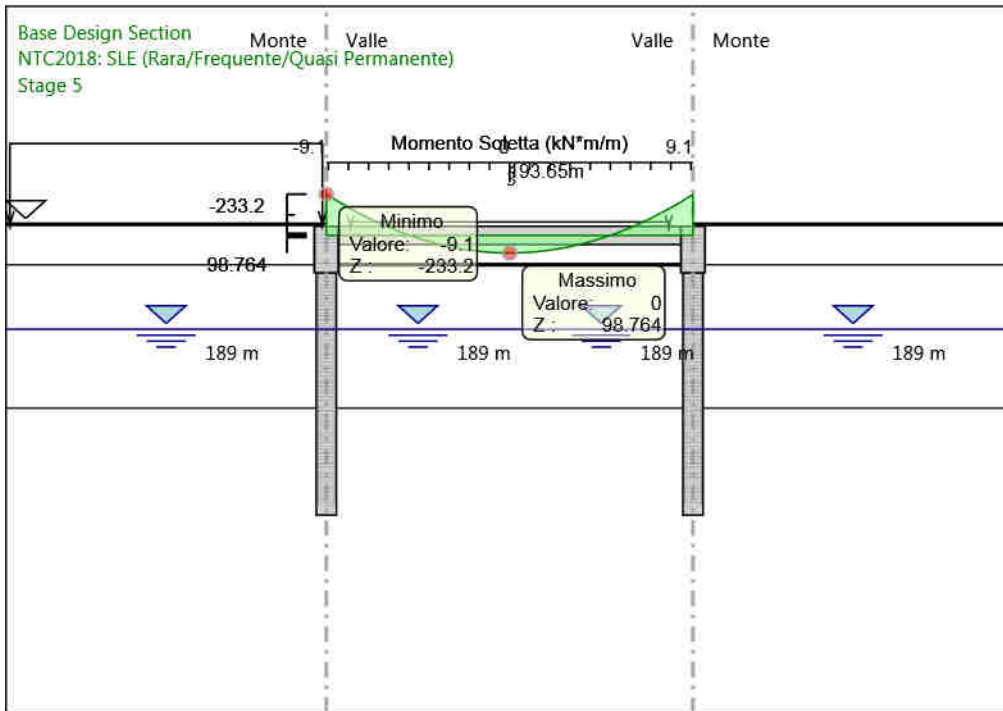
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 3  
Momento

#### 4.1.60. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 4



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 4  
Momento

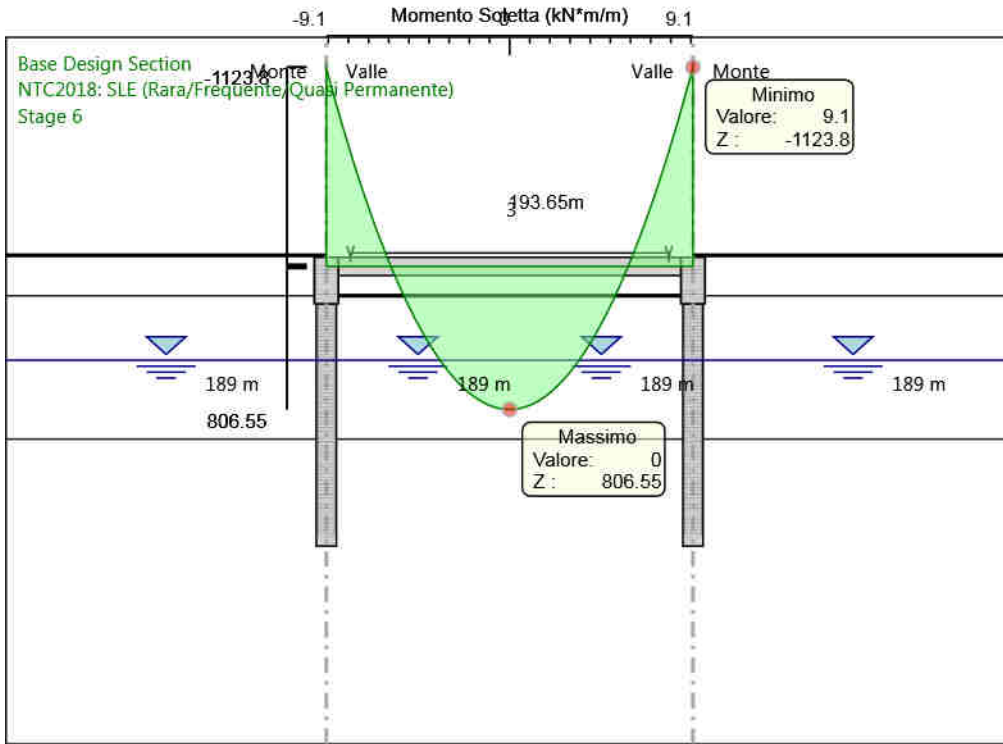
**4.1.61. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 5**



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 5  
 Momento

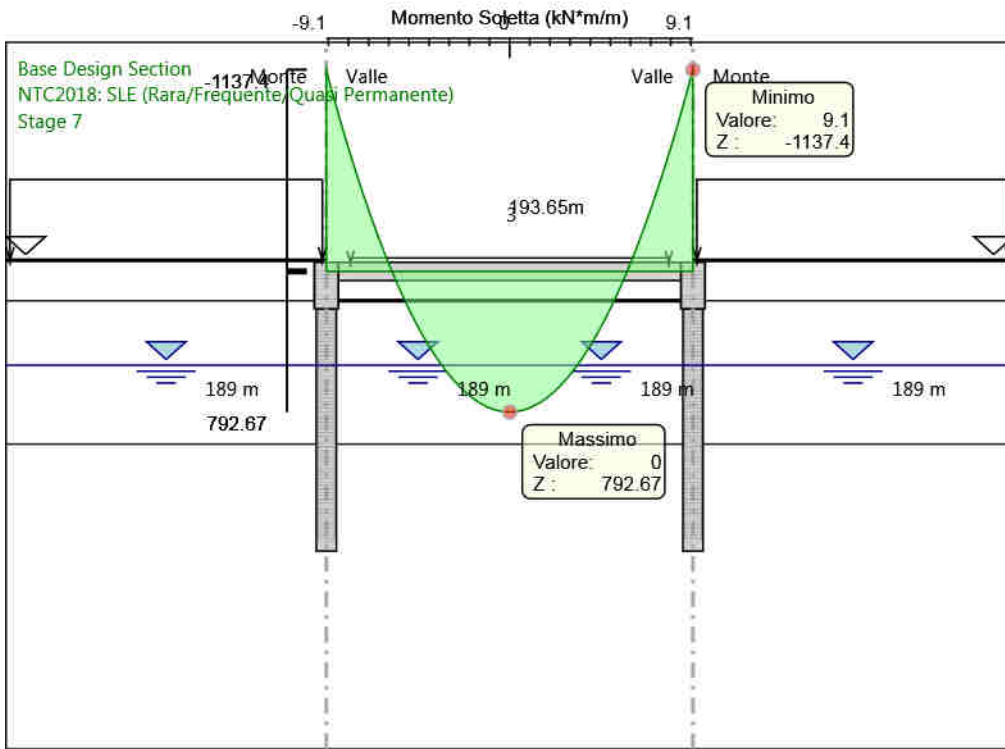


**4.1.62. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 6**



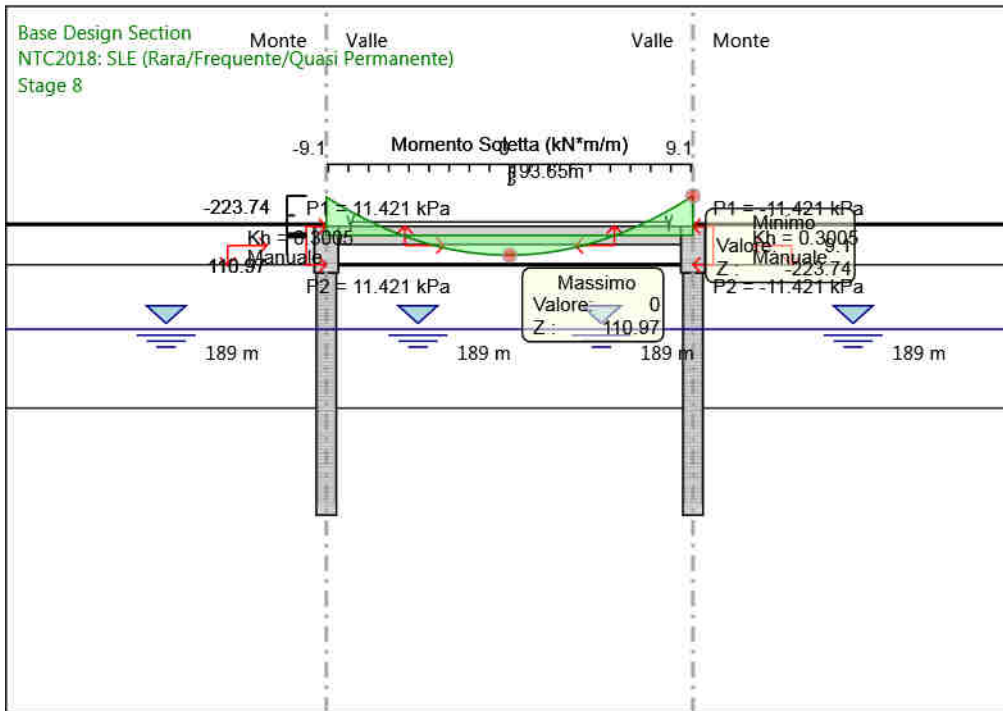
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 6  
 Momento

**4.1.63. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 7**



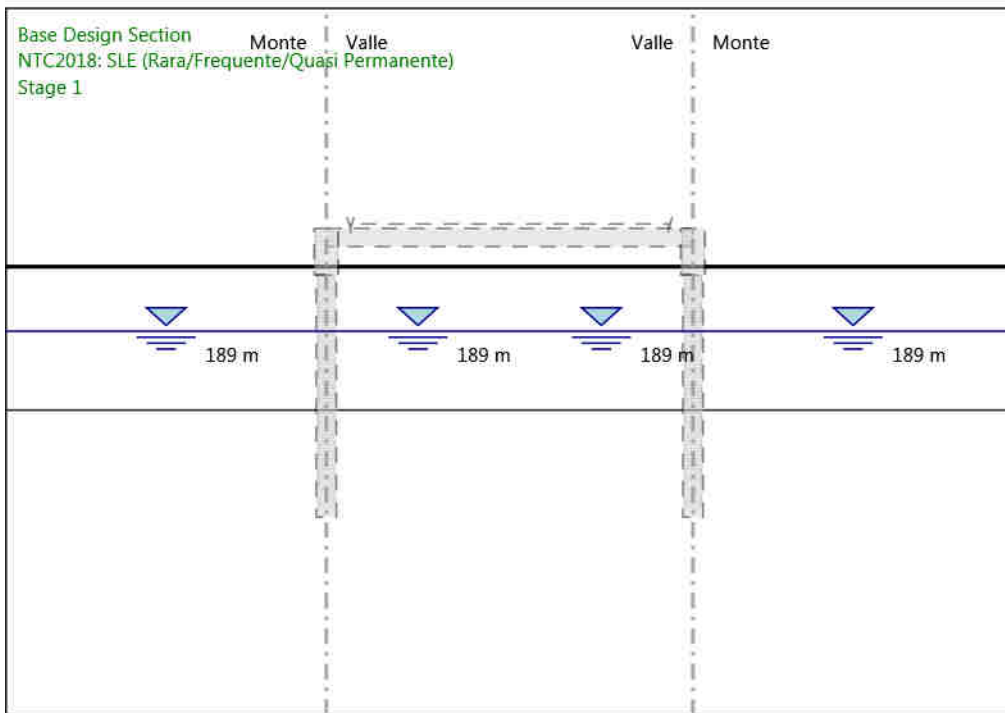
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 7  
Momento

**4.1.64. Grafico Risultati Momento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 8**



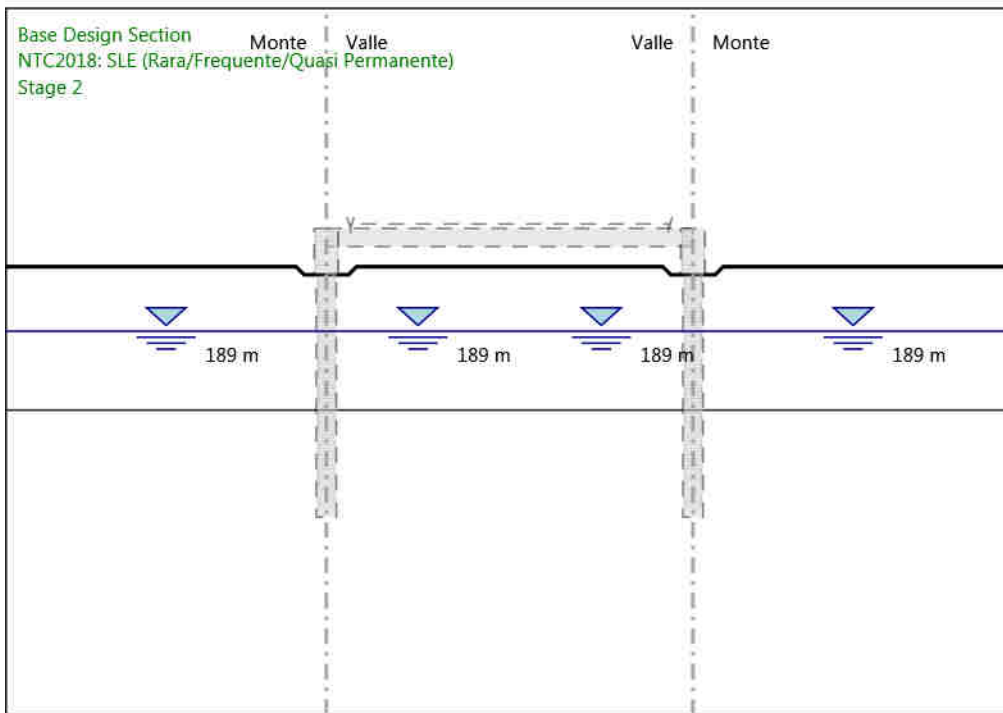
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 8  
 Momento

4.1.65. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 1



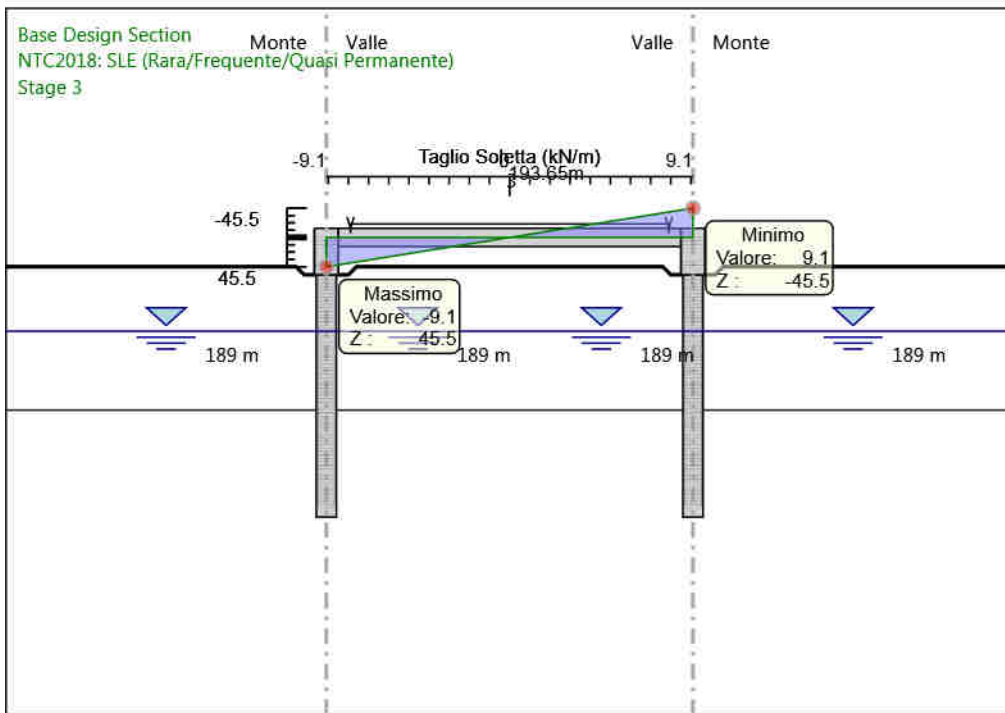
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 1  
Taglio

4.1.66. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 2



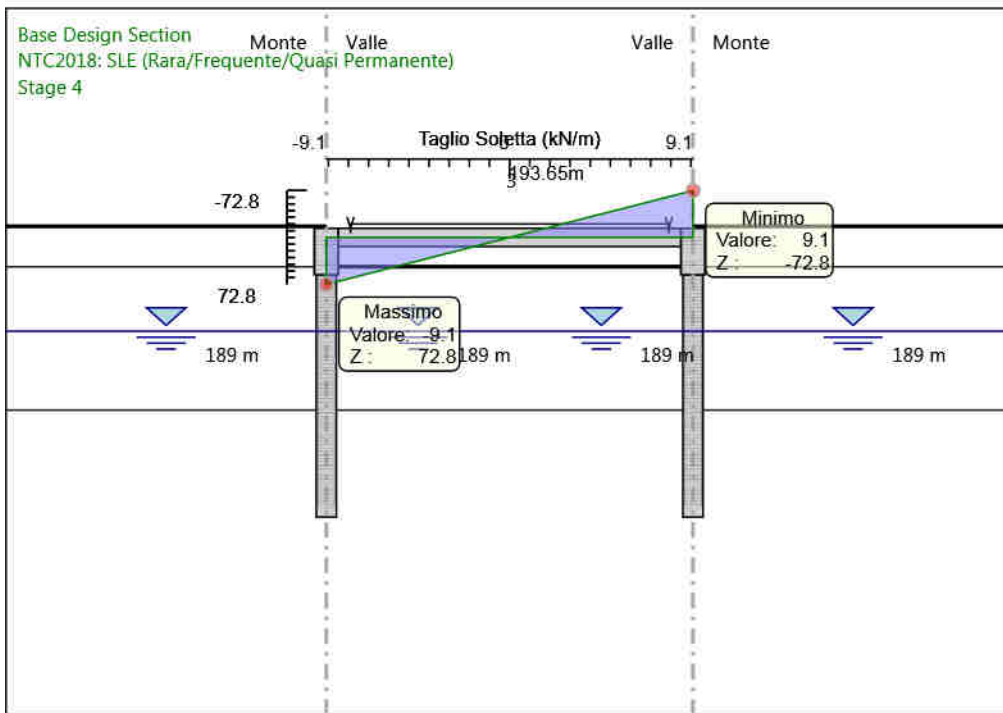
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 2  
Taglio

4.1.67. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 3



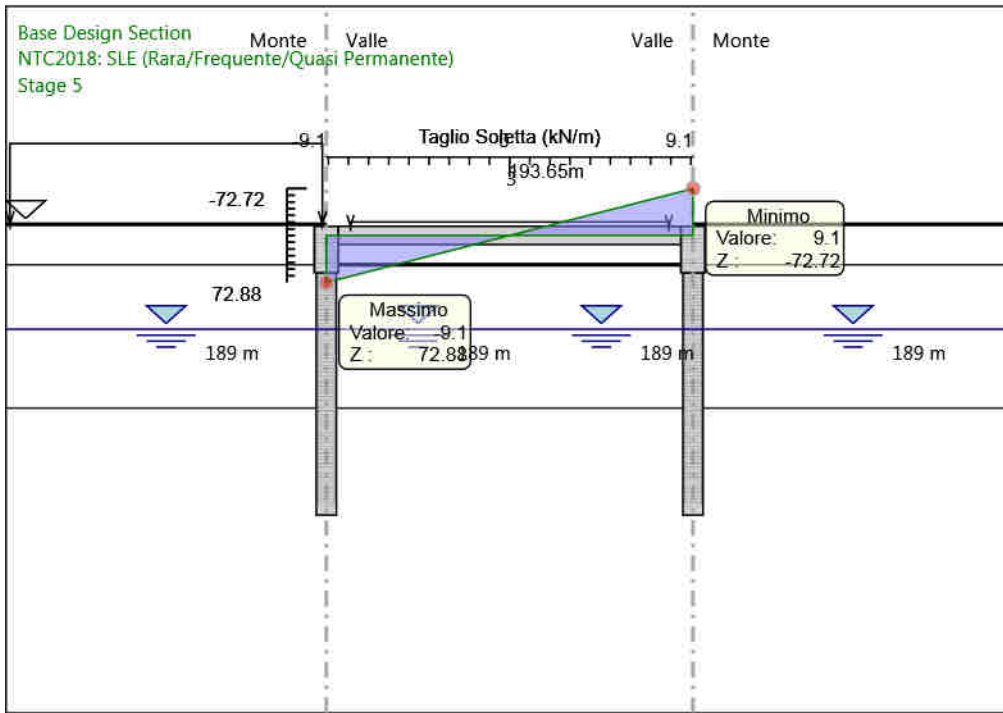
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 3  
Taglio

4.1.68. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 4



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 4  
Taglio

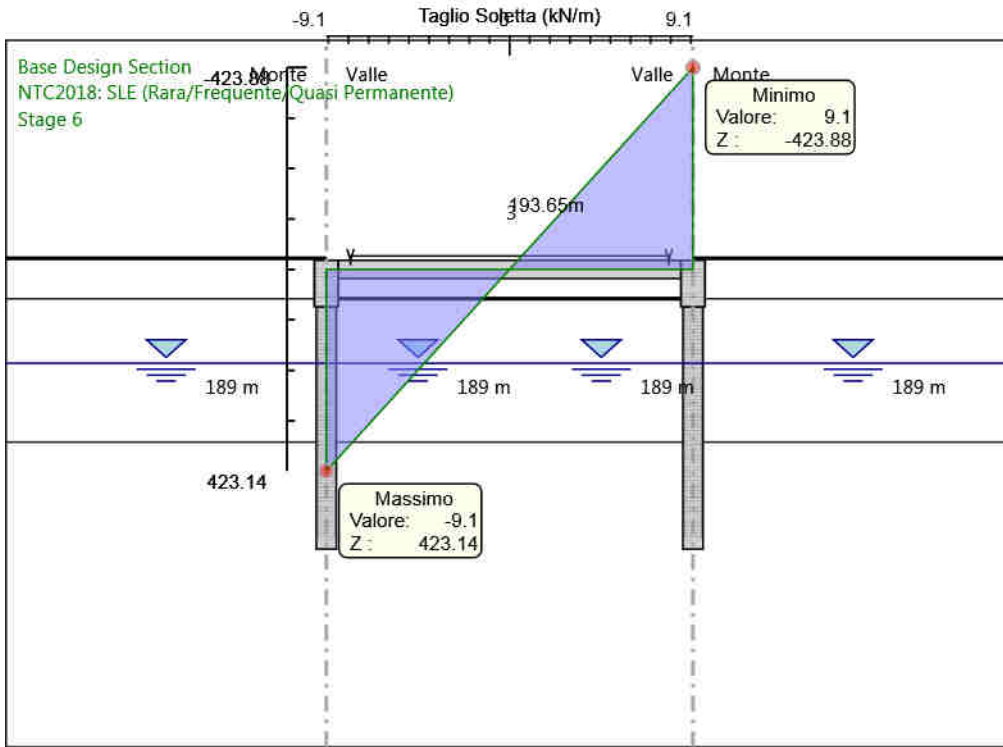
4.1.69. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 5



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 5  
 Taglio

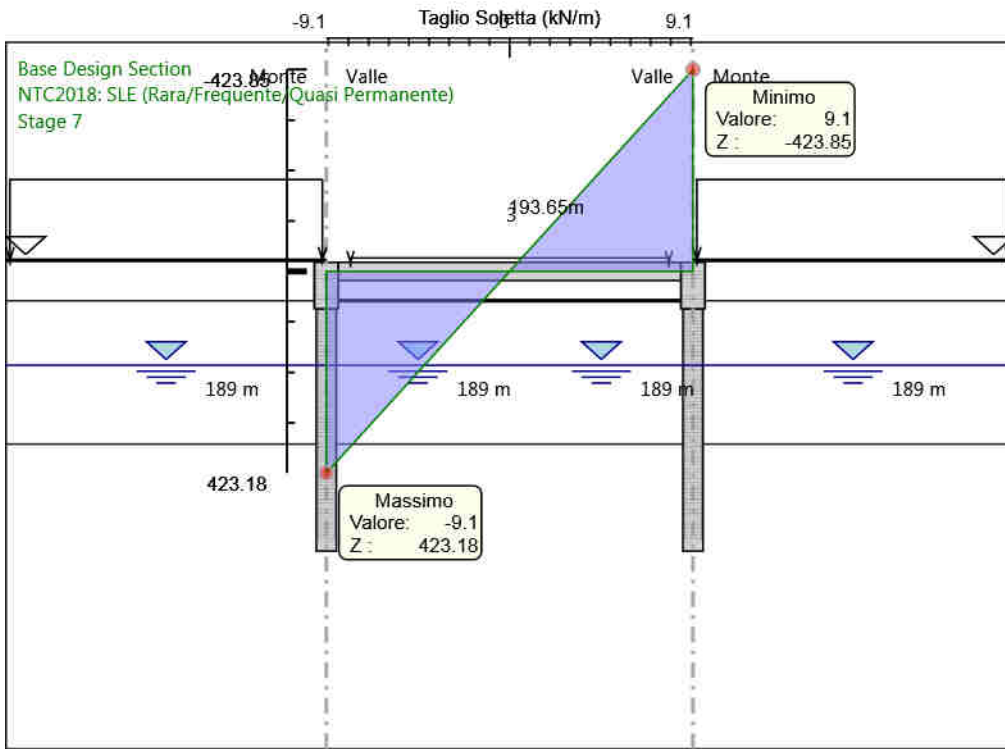


4.1.70. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 6



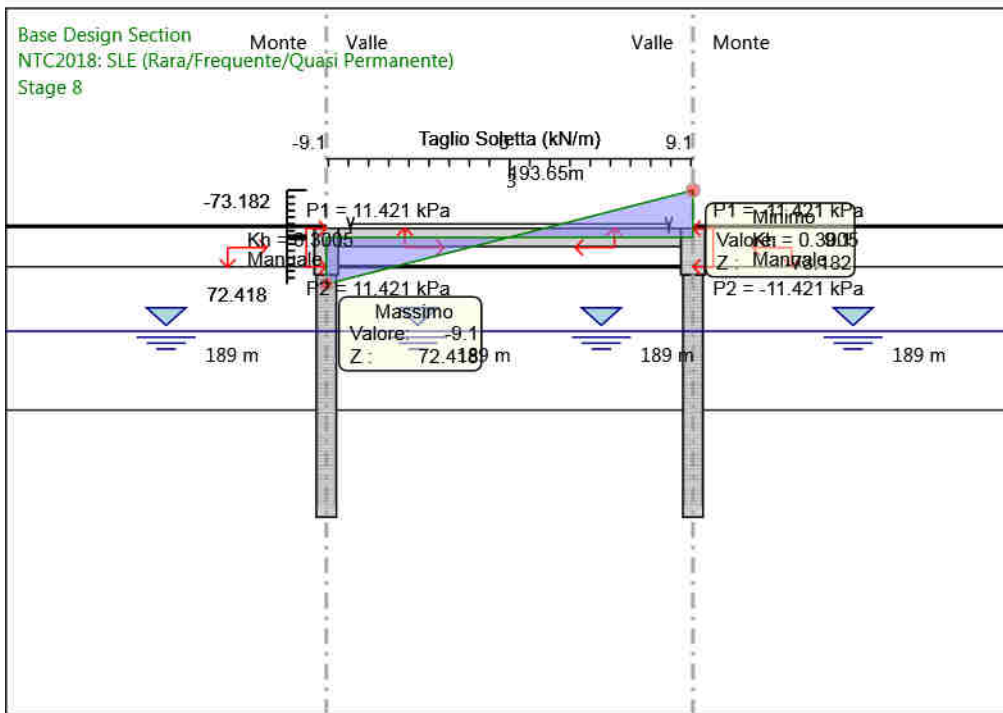
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
Stage: Stage 6  
Taglio

4.1.71. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 7



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 7  
 Taglio

4.1.72. Grafico Risultati Taglio NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Stage: Stage 8



Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)  
 Stage: Stage 8  
 Taglio

#### 4.1.73. Risultati Elementi strutturali - NTC2018: SLE (Rara/Frequente/Quasi Permanente)

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)		Tipo Risultato: soletta				
Stage	Soletta Taglio-a (kN/m)	Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)	Surcharge (kPa)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	45.5	45.5	118.0405	-118.0405	-27.3682	5
Stage 4	72.8	72.8	222.9081	-222.9081	-81.35649	8
Stage 5	72.87991	72.72009	233.2031	-231.7488	-98.27435	8
Stage 6	423.144	423.884	1117.076	-1123.81	-293.8333	46.54
Stage 7	423.1808	423.8472	1131.291	-1137.355	-317.9001	46.54
Stage 8	72.41848	73.18152	216.8004	-223.7441	-77.46294	8

## 4.2. Risultati NTC2018: A1+M1+R1 (R3 per tiranti)

### 4.2.1. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 1

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

#### 4.2.2. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 1

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0



#### 4.2.3. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 2

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.2.4. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 2

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.2.5. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 3

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	-85.85	34.92
Stage 3	191.6	-78.87	34.92
Stage 3	191.4	-72.16	33.54
Stage 3	191.2	-65.73	32.14
Stage 3	191	-59.59	30.72
Stage 3	190.8	-53.74	29.27
Stage 3	190.6	-48.17	27.81
Stage 3	190.4	-42.9	26.35
Stage 3	190.2	-37.93	24.89
Stage 3	190	-33.24	23.44
Stage 3	189.8	-28.84	22
Stage 3	189.6	-24.72	20.59
Stage 3	189.4	-20.88	19.2
Stage 3	189.2	-17.31	17.84
Stage 3	189	-14.01	16.52
Stage 3	188.8	-10.96	15.24
Stage 3	188.6	-8.16	13.99
Stage 3	188.4	-5.61	12.79
Stage 3	188.2	-3.28	11.62
Stage 3	188	-1.18	10.5
Stage 3	187.8	0.7	9.43
Stage 3	187.6	2.38	8.4
Stage 3	187.4	3.87	7.42
Stage 3	187.2	5.16	6.47
Stage 3	187	6.27	5.55
Stage 3	186.8	7.21	4.7
Stage 3	186.6	8	3.92
Stage 3	186.4	8.64	3.21
Stage 3	186.2	9.15	2.55
Stage 3	186	9.54	1.96
Stage 3	185.8	9.83	1.43
Stage 3	185.6	10.02	0.95
Stage 3	185.4	10.13	0.53
Stage 3	185.2	10.16	0.15
Stage 3	185	10.12	-0.17
Stage 3	184.8	9.97	-0.74
Stage 3	184.6	9.73	-1.22
Stage 3	184.4	9.4	-1.63
Stage 3	184.2	9.01	-1.98
Stage 3	184	8.56	-2.25
Stage 3	183.8	8.06	-2.47
Stage 3	183.6	7.53	-2.64
Stage 3	183.4	6.98	-2.76
Stage 3	183.2	6.42	-2.83
Stage 3	183	5.84	-2.87
Stage 3	182.8	5.27	-2.87
Stage 3	182.6	4.7	-2.83
Stage 3	182.4	4.15	-2.77
Stage 3	182.2	3.61	-2.68
Stage 3	182	3.1	-2.57
Stage 3	181.8	2.61	-2.43
Stage 3	181.6	2.16	-2.28
Stage 3	181.4	1.73	-2.1
Stage 3	181.2	1.35	-1.91
Stage 3	181	1.01	-1.71
Stage 3	180.8	0.71	-1.48
Stage 3	180.6	0.46	-1.25
Stage 3	180.4	0.27	-0.99
Stage 3	180.2	0.12	-0.73
Stage 3	180	0.03	-0.45
Stage 3	179.8	0	-0.15

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	-153.45	0
Stage 3	193.5	-146.34	35.58
Stage 3	193.3	-139.22	35.58
Stage 3	193.1	-132.11	35.58
Stage 3	192.9	-124.99	35.58
Stage 3	192.7	-117.87	35.58
Stage 3	192.5	-110.76	35.58
Stage 3	192.3	-103.64	35.58
Stage 3	192.1	-96.53	35.58
Stage 3	191.9	-89.41	35.58
Stage 3	191.8	-85.85	35.58

#### 4.2.6. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 3

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	85.85	-34.92
Stage 3	191.6	78.87	-34.92
Stage 3	191.4	72.16	-33.54
Stage 3	191.2	65.73	-32.14
Stage 3	191	59.59	-30.72
Stage 3	190.8	53.74	-29.27
Stage 3	190.6	48.17	-27.81
Stage 3	190.4	42.9	-26.35
Stage 3	190.2	37.93	-24.89
Stage 3	190	33.24	-23.44
Stage 3	189.8	28.84	-22
Stage 3	189.6	24.72	-20.59
Stage 3	189.4	20.88	-19.2
Stage 3	189.2	17.31	-17.84
Stage 3	189	14.01	-16.52
Stage 3	188.8	10.96	-15.24
Stage 3	188.6	8.16	-13.99
Stage 3	188.4	5.61	-12.79
Stage 3	188.2	3.28	-11.62
Stage 3	188	1.18	-10.5
Stage 3	187.8	-0.7	-9.43
Stage 3	187.6	-2.38	-8.4
Stage 3	187.4	-3.87	-7.42
Stage 3	187.2	-5.16	-6.47
Stage 3	187	-6.27	-5.55
Stage 3	186.8	-7.21	-4.7
Stage 3	186.6	-8	-3.92
Stage 3	186.4	-8.64	-3.21
Stage 3	186.2	-9.15	-2.55
Stage 3	186	-9.54	-1.96
Stage 3	185.8	-9.83	-1.43
Stage 3	185.6	-10.02	-0.95
Stage 3	185.4	-10.13	-0.53
Stage 3	185.2	-10.16	-0.15
Stage 3	185	-10.12	0.17
Stage 3	184.8	-9.97	0.74
Stage 3	184.6	-9.73	1.22
Stage 3	184.4	-9.4	1.63
Stage 3	184.2	-9.01	1.98
Stage 3	184	-8.56	2.25
Stage 3	183.8	-8.06	2.47
Stage 3	183.6	-7.53	2.64
Stage 3	183.4	-6.98	2.76
Stage 3	183.2	-6.42	2.83
Stage 3	183	-5.84	2.87
Stage 3	182.8	-5.27	2.87
Stage 3	182.6	-4.7	2.83
Stage 3	182.4	-4.15	2.77
Stage 3	182.2	-3.61	2.68
Stage 3	182	-3.1	2.57
Stage 3	181.8	-2.61	2.43
Stage 3	181.6	-2.16	2.28
Stage 3	181.4	-1.73	2.1
Stage 3	181.2	-1.35	1.91
Stage 3	181	-1.01	1.71
Stage 3	180.8	-0.71	1.48
Stage 3	180.6	-0.46	1.25
Stage 3	180.4	-0.27	0.99
Stage 3	180.2	-0.12	0.73
Stage 3	180	-0.03	0.45
Stage 3	179.8	0	0.15

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	153.45	0
Stage 3	193.5	146.34	-35.58
Stage 3	193.3	139.22	-35.58
Stage 3	193.1	132.11	-35.58
Stage 3	192.9	124.99	-35.58
Stage 3	192.7	117.87	-35.58
Stage 3	192.5	110.76	-35.58
Stage 3	192.3	103.64	-35.58
Stage 3	192.1	96.53	-35.58
Stage 3	191.9	89.41	-35.58
Stage 3	191.8	85.85	-35.58



#### 4.2.7. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 4

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	-115.47	83.03
Stage 4	191.6	-98.87	83.03
Stage 4	191.4	-83.26	78
Stage 4	191.2	-68.65	73.08
Stage 4	191	-54.99	68.28
Stage 4	190.8	-42.27	63.6
Stage 4	190.6	-30.46	59.07
Stage 4	190.4	-19.53	54.67
Stage 4	190.2	-9.44	50.42
Stage 4	190	-0.18	46.32
Stage 4	189.8	8.29	42.36
Stage 4	189.6	16	38.54
Stage 4	189.4	22.97	34.86
Stage 4	189.2	29.24	31.32
Stage 4	189	34.82	27.91
Stage 4	188.8	39.74	24.63
Stage 4	188.6	44.04	21.47
Stage 4	188.4	47.72	18.42
Stage 4	188.2	50.82	15.48
Stage 4	188	53.34	12.64
Stage 4	187.8	55.32	9.88
Stage 4	187.6	56.76	7.21
Stage 4	187.4	57.69	4.62
Stage 4	187.2	58.11	2.09
Stage 4	187	58.03	-0.39
Stage 4	186.8	57.47	-2.8
Stage 4	186.6	56.44	-5.12
Stage 4	186.4	54.98	-7.33
Stage 4	186.2	53.08	-9.47
Stage 4	186	50.77	-11.53
Stage 4	185.8	48.07	-13.54
Stage 4	185.6	44.97	-15.49
Stage 4	185.4	41.49	-17.39
Stage 4	185.2	37.64	-19.27
Stage 4	185	33.41	-21.12
Stage 4	184.8	29.47	-19.74
Stage 4	184.6	25.8	-18.34
Stage 4	184.4	22.41	-16.94
Stage 4	184.2	19.3	-15.55
Stage 4	184	16.47	-14.18
Stage 4	183.8	13.9	-12.84
Stage 4	183.6	11.59	-11.53
Stage 4	183.4	9.54	-10.27
Stage 4	183.2	7.72	-9.07
Stage 4	183	6.14	-7.92
Stage 4	182.8	4.77	-6.84
Stage 4	182.6	3.61	-5.82
Stage 4	182.4	2.63	-4.88
Stage 4	182.2	1.83	-4
Stage 4	182	1.19	-3.2
Stage 4	181.8	0.69	-2.48
Stage 4	181.6	0.32	-1.84
Stage 4	181.4	0.07	-1.28
Stage 4	181.2	-0.09	-0.81
Stage 4	181	-0.18	-0.42
Stage 4	180.8	-0.2	-0.11
Stage 4	180.6	-0.18	0.11
Stage 4	180.4	-0.13	0.24
Stage 4	180.2	-0.07	0.29
Stage 4	180	-0.02	0.25
Stage 4	179.8	0	0.12

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	-0.18
Stage 4	193.9	-0.04	-0.18
Stage 4	193.7	-0.23	-0.97
Stage 4	193.7	-303.89	-0.97
Stage 4	193.5	-282.51	106.92
Stage 4	193.3	-261.37	105.7
Stage 4	193.1	-240.51	104.28
Stage 4	192.9	-219.98	102.68
Stage 4	192.7	-199.81	100.85
Stage 4	192.5	-180.06	98.74
Stage 4	192.3	-160.79	96.34
Stage 4	192.1	-142.06	93.66
Stage 4	191.9	-124.14	89.6
Stage 4	191.8	-115.47	86.66

#### 4.2.8. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 4

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	115.47	-83.03
Stage 4	191.6	98.87	-83.03
Stage 4	191.4	83.26	-78
Stage 4	191.2	68.65	-73.08
Stage 4	191	54.99	-68.28
Stage 4	190.8	42.27	-63.6
Stage 4	190.6	30.46	-59.07
Stage 4	190.4	19.53	-54.67
Stage 4	190.2	9.44	-50.42
Stage 4	190	0.18	-46.32
Stage 4	189.8	-8.29	-42.36
Stage 4	189.6	-16	-38.54
Stage 4	189.4	-22.97	-34.86
Stage 4	189.2	-29.24	-31.32
Stage 4	189	-34.82	-27.91
Stage 4	188.8	-39.74	-24.63
Stage 4	188.6	-44.04	-21.47
Stage 4	188.4	-47.72	-18.42
Stage 4	188.2	-50.82	-15.48
Stage 4	188	-53.34	-12.64
Stage 4	187.8	-55.32	-9.88
Stage 4	187.6	-56.76	-7.21
Stage 4	187.4	-57.69	-4.62
Stage 4	187.2	-58.11	-2.09
Stage 4	187	-58.03	0.39
Stage 4	186.8	-57.47	2.8
Stage 4	186.6	-56.44	5.12
Stage 4	186.4	-54.98	7.33
Stage 4	186.2	-53.08	9.47
Stage 4	186	-50.77	11.53
Stage 4	185.8	-48.07	13.54
Stage 4	185.6	-44.97	15.49
Stage 4	185.4	-41.49	17.39
Stage 4	185.2	-37.64	19.27
Stage 4	185	-33.41	21.12
Stage 4	184.8	-29.47	19.74
Stage 4	184.6	-25.8	18.34
Stage 4	184.4	-22.41	16.94
Stage 4	184.2	-19.3	15.55
Stage 4	184	-16.47	14.18
Stage 4	183.8	-13.9	12.84
Stage 4	183.6	-11.59	11.53
Stage 4	183.4	-9.54	10.27
Stage 4	183.2	-7.72	9.07
Stage 4	183	-6.14	7.92
Stage 4	182.8	-4.77	6.84
Stage 4	182.6	-3.61	5.82
Stage 4	182.4	-2.63	4.88
Stage 4	182.2	-1.83	4
Stage 4	182	-1.19	3.2
Stage 4	181.8	-0.69	2.48
Stage 4	181.6	-0.32	1.84
Stage 4	181.4	-0.07	1.28
Stage 4	181.2	0.09	0.81
Stage 4	181	0.18	0.42
Stage 4	180.8	0.2	0.11
Stage 4	180.6	0.18	-0.11
Stage 4	180.4	0.13	-0.24
Stage 4	180.2	0.07	-0.29
Stage 4	180	0.02	-0.25
Stage 4	179.8	0	-0.12

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	0.18
Stage 4	193.9	0.04	0.18
Stage 4	193.7	0.23	0.97
Stage 4	193.7	303.89	0.97
Stage 4	193.5	282.51	-106.92
Stage 4	193.3	261.37	-105.7
Stage 4	193.1	240.51	-104.28
Stage 4	192.9	219.98	-102.68
Stage 4	192.7	199.81	-100.85
Stage 4	192.5	180.06	-98.74
Stage 4	192.3	160.79	-96.34
Stage 4	192.1	142.06	-93.66
Stage 4	191.9	124.14	-89.6
Stage 4	191.8	115.47	-86.66

#### 4.2.9. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 5

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	-103.36	90.48
Stage 5	191.6	-85.26	90.48
Stage 5	191.4	-68.34	84.62
Stage 5	191.2	-52.55	78.92
Stage 5	191	-37.88	73.39
Stage 5	190.8	-24.27	68.03
Stage 5	190.6	-11.7	62.85
Stage 5	190.4	-0.13	57.86
Stage 5	190.2	10.48	53.05
Stage 5	190	20.17	48.42
Stage 5	189.8	28.96	43.96
Stage 5	189.6	36.89	39.68
Stage 5	189.4	44	35.56
Stage 5	189.2	50.32	31.6
Stage 5	189	55.88	27.79
Stage 5	188.8	60.71	24.12
Stage 5	188.6	64.82	20.59
Stage 5	188.4	68.26	17.18
Stage 5	188.2	71.03	13.88
Stage 5	188	73.17	10.68
Stage 5	187.8	74.68	7.57
Stage 5	187.6	75.59	4.54
Stage 5	187.4	75.91	1.57
Stage 5	187.2	75.64	-1.34
Stage 5	187	74.8	-4.2
Stage 5	186.8	73.39	-7.02
Stage 5	186.6	71.44	-9.76
Stage 5	186.4	68.96	-12.42
Stage 5	186.2	65.95	-15.02
Stage 5	186	62.44	-17.58
Stage 5	185.8	58.42	-20.1
Stage 5	185.6	53.9	-22.6
Stage 5	185.4	48.88	-25.08
Stage 5	185.2	43.37	-27.57
Stage 5	185	37.36	-30.06
Stage 5	184.8	31.85	-27.53
Stage 5	184.6	26.84	-25.05
Stage 5	184.4	22.32	-22.63
Stage 5	184.2	18.26	-20.29
Stage 5	184	14.65	-18.04
Stage 5	183.8	11.47	-15.89
Stage 5	183.6	8.7	-13.84
Stage 5	183.4	6.32	-11.9
Stage 5	183.2	4.31	-10.09
Stage 5	183	2.63	-8.4
Stage 5	182.8	1.26	-6.83
Stage 5	182.6	0.18	-5.39
Stage 5	182.4	-0.64	-4.09
Stage 5	182.2	-1.22	-2.92
Stage 5	182	-1.59	-1.88
Stage 5	181.8	-1.79	-0.98
Stage 5	181.6	-1.83	-0.22
Stage 5	181.4	-1.75	0.4
Stage 5	181.2	-1.58	0.88
Stage 5	181	-1.33	1.23
Stage 5	180.8	-1.05	1.43
Stage 5	180.6	-0.75	1.49
Stage 5	180.4	-0.47	1.41
Stage 5	180.2	-0.23	1.19
Stage 5	180	-0.06	0.82
Stage 5	179.8	0	0.32

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	-0.78
Stage 5	193.9	-0.16	-0.78
Stage 5	193.7	-0.68	-2.61
Stage 5	193.7	-317.71	-2.61
Stage 5	193.5	-292.49	126.11
Stage 5	193.3	-267.75	123.71
Stage 5	193.1	-243.54	121.03
Stage 5	192.9	-219.93	118.08
Stage 5	192.7	-196.96	114.83
Stage 5	192.5	-174.7	111.31
Stage 5	192.3	-153.2	107.51
Stage 5	192.1	-132.51	103.42
Stage 5	191.9	-112.84	98.4
Stage 5	191.8	-103.36	94.77

#### 4.2.10. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 5

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	104.74	-87.15
Stage 5	191.6	87.31	-87.15
Stage 5	191.4	71.05	-81.33
Stage 5	191.2	55.91	-75.67
Stage 5	191	41.87	-70.2
Stage 5	190.8	28.89	-64.92
Stage 5	190.6	16.92	-59.84
Stage 5	190.4	5.93	-54.95
Stage 5	190.2	-4.12	-50.26
Stage 5	190	-13.27	-45.76
Stage 5	189.8	-21.56	-41.45
Stage 5	189.6	-29.03	-37.33
Stage 5	189.4	-35.71	-33.4
Stage 5	189.2	-41.63	-29.63
Stage 5	189	-46.84	-26.04
Stage 5	188.8	-51.36	-22.6
Stage 5	188.6	-55.22	-19.31
Stage 5	188.4	-58.45	-16.17
Stage 5	188.2	-61.08	-13.15
Stage 5	188	-63.13	-10.26
Stage 5	187.8	-64.63	-7.47
Stage 5	187.6	-65.58	-4.78
Stage 5	187.4	-66.02	-2.18
Stage 5	187.2	-65.95	0.35
Stage 5	187	-65.39	2.8
Stage 5	186.8	-64.35	5.19
Stage 5	186.6	-62.86	7.46
Stage 5	186.4	-60.94	9.63
Stage 5	186.2	-58.59	11.71
Stage 5	186	-55.85	13.72
Stage 5	185.8	-52.72	15.67
Stage 5	185.6	-49.2	17.55
Stage 5	185.4	-45.33	19.4
Stage 5	185.2	-41.08	21.21
Stage 5	185	-36.49	22.99
Stage 5	184.8	-32.19	21.48
Stage 5	184.6	-28.2	19.96
Stage 5	184.4	-24.51	18.43
Stage 5	184.2	-21.13	16.92
Stage 5	184	-18.04	15.43
Stage 5	183.8	-15.25	13.97
Stage 5	183.6	-12.73	12.56
Stage 5	183.4	-10.5	11.19
Stage 5	183.2	-8.52	9.89
Stage 5	183	-6.79	8.64
Stage 5	182.8	-5.29	7.47
Stage 5	182.6	-4.02	6.37
Stage 5	182.4	-2.95	5.34
Stage 5	182.2	-2.07	4.39
Stage 5	182	-1.37	3.53
Stage 5	181.8	-0.82	2.75
Stage 5	181.6	-0.41	2.05
Stage 5	181.4	-0.12	1.44
Stage 5	181.2	0.06	0.93
Stage 5	181	0.16	0.5
Stage 5	180.8	0.2	0.16
Stage 5	180.6	0.18	-0.08
Stage 5	180.4	0.13	-0.23
Stage 5	180.2	0.08	-0.29
Stage 5	180	0.03	-0.26
Stage 5	179.8	0	-0.13

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	0.74
Stage 5	193.9	0.15	0.74
Stage 5	193.7	0.67	2.6
Stage 5	193.7	315.82	2.6
Stage 5	193.5	290.62	-126
Stage 5	193.3	265.94	-123.4
Stage 5	193.1	241.85	-120.44
Stage 5	192.9	218.43	-117.11
Stage 5	192.7	195.75	-113.41
Stage 5	192.5	173.88	-109.32
Stage 5	192.3	152.91	-104.84
Stage 5	192.1	132.9	-100.08
Stage 5	191.9	113.89	-95.05
Stage 5	191.8	104.74	-91.44



#### 4.2.11. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 6

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	-892.45	349.01
Stage 6	191.6	-822.65	349.01
Stage 6	191.4	-755	338.26
Stage 6	191.2	-689.61	326.94
Stage 6	191	-626.59	315.1
Stage 6	190.8	-566.04	302.77
Stage 6	190.6	-508.04	289.98
Stage 6	190.4	-452.69	276.76
Stage 6	190.2	-400.06	263.13
Stage 6	190	-350.24	249.1
Stage 6	189.8	-303.28	234.79
Stage 6	189.6	-259.15	220.69
Stage 6	189.4	-217.78	206.84
Stage 6	189.2	-179.12	193.29
Stage 6	189	-143.11	180.04
Stage 6	188.8	-109.7	167.08
Stage 6	188.6	-78.83	154.42
Stage 6	188.4	-50.41	142.07
Stage 6	188.2	-24.4	130.06
Stage 6	188	-0.72	118.39
Stage 6	187.8	20.69	107.07
Stage 6	187.6	39.91	96.1
Stage 6	187.4	57.01	85.49
Stage 6	187.2	72.05	75.23
Stage 6	187	85.12	65.33
Stage 6	186.8	96.27	55.78
Stage 6	186.6	105.6	46.65
Stage 6	186.4	113.18	37.9
Stage 6	186.2	119.09	29.54
Stage 6	186	123.4	21.55
Stage 6	185.8	126.19	13.92
Stage 6	185.6	127.51	6.62
Stage 6	185.4	127.46	-0.28
Stage 6	185.2	126.11	-6.73
Stage 6	185	123.56	-12.75
Stage 6	184.8	120.02	-17.71
Stage 6	184.6	115.63	-21.92
Stage 6	184.4	110.54	-25.44
Stage 6	184.2	104.88	-28.31
Stage 6	184	98.77	-30.57
Stage 6	183.8	92.31	-32.29
Stage 6	183.6	85.61	-33.49
Stage 6	183.4	78.77	-34.22
Stage 6	183.2	71.86	-34.53
Stage 6	183	64.98	-34.44
Stage 6	182.8	58.18	-33.99
Stage 6	182.6	51.54	-33.2
Stage 6	182.4	45.12	-32.1
Stage 6	182.2	38.98	-30.72
Stage 6	182	33.16	-29.08
Stage 6	181.8	27.73	-27.19
Stage 6	181.6	22.71	-25.08
Stage 6	181.4	18.14	-22.85
Stage 6	181.2	14.04	-20.51
Stage 6	181	10.42	-18.08
Stage 6	180.8	7.31	-15.54
Stage 6	180.6	4.73	-12.92
Stage 6	180.4	2.69	-10.2
Stage 6	180.2	1.21	-7.4
Stage 6	180	0.31	-4.51
Stage 6	179.8	0	-1.53

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	-0.07
Stage 6	193.9	-0.01	-0.07
Stage 6	193.7	-0.11	-0.5
Stage 6	193.7	-1639.91	-0.5
Stage 6	193.5	-1556.07	419.21
Stage 6	193.3	-1472.79	416.4
Stage 6	193.1	-1390.44	411.72
Stage 6	192.9	-1309.27	405.88
Stage 6	192.7	-1229.48	398.91
Stage 6	192.5	-1151.32	390.8
Stage 6	192.3	-1075	381.6
Stage 6	192.1	-1000.74	371.33
Stage 6	191.9	-928.11	363.15
Stage 6	191.8	-892.45	356.56

#### 4.2.12. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 6

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	903.33	-349.46
Stage 6	191.6	833.44	-349.46
Stage 6	191.4	765.56	-339.41
Stage 6	191.2	699.81	-328.72
Stage 6	191	636.32	-317.44
Stage 6	190.8	575.21	-305.59
Stage 6	190.6	516.56	-293.21
Stage 6	190.4	460.5	-280.32
Stage 6	190.2	407.11	-266.95
Stage 6	190	356.49	-253.12
Stage 6	189.8	308.72	-238.84
Stage 6	189.6	263.82	-224.49
Stage 6	189.4	221.75	-210.36
Stage 6	189.2	182.45	-196.49
Stage 6	189	145.87	-182.91
Stage 6	188.8	111.94	-169.63
Stage 6	188.6	80.62	-156.69
Stage 6	188.4	51.8	-144.1
Stage 6	188.2	25.43	-131.87
Stage 6	188	1.43	-120
Stage 6	187.8	-20.28	-108.52
Stage 6	187.6	-39.76	-97.41
Stage 6	187.4	-57.09	-86.68
Stage 6	187.2	-72.36	-76.34
Stage 6	187	-85.63	-66.36
Stage 6	186.8	-96.99	-56.77
Stage 6	186.6	-106.51	-47.61
Stage 6	186.4	-114.28	-38.86
Stage 6	186.2	-120.38	-30.51
Stage 6	186	-124.89	-22.55
Stage 6	185.8	-127.89	-14.96
Stage 6	185.6	-129.44	-7.76
Stage 6	185.4	-129.65	-1.07
Stage 6	185.2	-128.63	5.13
Stage 6	185	-126.45	10.86
Stage 6	184.8	-123.18	16.36
Stage 6	184.6	-118.97	21.06
Stage 6	184.4	-113.97	24.99
Stage 6	184.2	-108.33	28.22
Stage 6	184	-102.17	30.78
Stage 6	183.8	-95.62	32.74
Stage 6	183.6	-88.8	34.13
Stage 6	183.4	-81.8	35
Stage 6	183.2	-74.72	35.38
Stage 6	183	-67.66	35.31
Stage 6	182.8	-60.69	34.83
Stage 6	182.6	-53.9	33.96
Stage 6	182.4	-47.34	32.82
Stage 6	182.2	-41.05	31.43
Stage 6	182	-35.09	29.83
Stage 6	181.8	-29.48	28.05
Stage 6	181.6	-24.26	26.09
Stage 6	181.4	-19.47	23.96
Stage 6	181.2	-15.14	21.68
Stage 6	181	-11.29	19.24
Stage 6	180.8	-7.96	16.66
Stage 6	180.6	-5.17	13.94
Stage 6	180.4	-2.95	11.09
Stage 6	180.2	-1.33	8.09
Stage 6	180	-0.34	4.96
Stage 6	179.8	0	1.7

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	0.07
Stage 6	193.9	0.01	0.07
Stage 6	193.7	0.11	0.49
Stage 6	193.7	1649.4	0.49
Stage 6	193.5	1565.59	-419.07
Stage 6	193.3	1482.42	-415.82
Stage 6	193.1	1400.18	-411.23
Stage 6	192.9	1319.1	-405.37
Stage 6	192.7	1239.45	-398.26
Stage 6	192.5	1161.47	-389.92
Stage 6	192.3	1085.39	-380.39
Stage 6	192.1	1011.45	-369.7
Stage 6	191.9	938.97	-362.4
Stage 6	191.8	903.33	-356.42

#### 4.2.13. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 7

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	-875.3	360.37
Stage 7	191.6	-803.23	360.37
Stage 7	191.4	-733.59	348.18
Stage 7	191.2	-666.49	335.52
Stage 7	191	-602	322.44
Stage 7	190.8	-540.21	308.96
Stage 7	190.6	-481.19	295.11
Stage 7	190.4	-425.01	280.9
Stage 7	190.2	-371.74	266.35
Stage 7	190	-321.44	251.48
Stage 7	189.8	-274.16	236.38
Stage 7	189.6	-229.85	221.56
Stage 7	189.4	-188.44	207.04
Stage 7	189.2	-149.87	192.85
Stage 7	189	-114.07	179.02
Stage 7	188.8	-80.97	165.49
Stage 7	188.6	-50.53	152.29
Stage 7	188.4	-22.64	139.43
Stage 7	188.2	2.74	126.91
Stage 7	188	25.69	114.74
Stage 7	187.8	46.27	102.93
Stage 7	187.6	64.56	91.46
Stage 7	187.4	80.63	80.34
Stage 7	187.2	94.54	69.56
Stage 7	187	106.37	59.11
Stage 7	186.8	116.16	49
Stage 7	186.6	124.02	39.26
Stage 7	186.4	129.99	29.88
Stage 7	186.2	134.16	20.85
Stage 7	186	136.6	12.15
Stage 7	185.8	137.35	3.77
Stage 7	185.6	136.48	-4.33
Stage 7	185.4	134.08	-12.01
Stage 7	185.2	130.27	-19.08
Stage 7	185	125.15	-25.59
Stage 7	184.8	119.4	-28.73
Stage 7	184.6	113.16	-31.23
Stage 7	184.4	106.53	-33.14
Stage 7	184.2	99.63	-34.5
Stage 7	184	92.55	-35.37
Stage 7	183.8	85.4	-35.79
Stage 7	183.6	78.24	-35.8
Stage 7	183.4	71.15	-35.43
Stage 7	183.2	64.21	-34.72
Stage 7	183	57.46	-33.71
Stage 7	182.8	50.98	-32.43
Stage 7	182.6	44.8	-30.92
Stage 7	182.4	38.94	-29.28
Stage 7	182.2	33.43	-27.53
Stage 7	182	28.3	-25.68
Stage 7	181.8	23.55	-23.75
Stage 7	181.6	19.2	-21.74
Stage 7	181.4	15.27	-19.66
Stage 7	181.2	11.76	-17.53
Stage 7	181	8.7	-15.34
Stage 7	180.8	6.08	-13.1
Stage 7	180.6	3.91	-10.82
Stage 7	180.4	2.21	-8.49
Stage 7	180.2	0.99	-6.12
Stage 7	180	0.25	-3.7
Stage 7	179.8	0	-1.25

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	-1.25
Stage 7	193.9	-0.25	-1.25
Stage 7	193.7	-0.97	-3.6
Stage 7	193.7	-1659.49	-3.6
Stage 7	193.5	-1570.32	445.85
Stage 7	193.3	-1482.07	441.23
Stage 7	193.1	-1395.19	434.43
Stage 7	192.9	-1309.85	426.7
Stage 7	192.7	-1226.24	418.05
Stage 7	192.5	-1144.54	408.49
Stage 7	192.3	-1064.93	398.04
Stage 7	192.1	-987.58	386.75
Stage 7	191.9	-912.21	376.86
Stage 7	191.8	-875.3	369.08

#### 4.2.14. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 7

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	888.35	-359.48
Stage 7	191.6	816.46	-359.48
Stage 7	191.4	746.85	-348.03
Stage 7	191.2	679.64	-336.04
Stage 7	191	614.93	-323.55
Stage 7	190.8	552.81	-310.59
Stage 7	190.6	493.38	-297.18
Stage 7	190.4	436.71	-283.35
Stage 7	190.2	382.89	-269.11
Stage 7	190	331.99	-254.47
Stage 7	189.8	284.1	-239.46
Stage 7	189.6	239.21	-224.44
Stage 7	189.4	197.27	-209.7
Stage 7	189.2	158.22	-195.26
Stage 7	189	121.99	-181.16
Stage 7	188.8	88.5	-167.4
Stage 7	188.6	57.72	-154.02
Stage 7	188.4	29.52	-141.01
Stage 7	188.2	3.84	-128.39
Stage 7	188	-19.39	-116.16
Stage 7	187.8	-40.26	-104.32
Stage 7	187.6	-58.83	-92.87
Stage 7	187.4	-75.19	-81.81
Stage 7	187.2	-89.42	-71.13
Stage 7	187	-101.58	-60.82
Stage 7	186.8	-111.76	-50.9
Stage 7	186.6	-120.04	-41.39
Stage 7	186.4	-126.5	-32.28
Stage 7	186.2	-131.21	-23.57
Stage 7	186	-134.25	-15.22
Stage 7	185.8	-135.7	-7.23
Stage 7	185.6	-135.62	0.4
Stage 7	185.4	-134.11	7.53
Stage 7	185.2	-131.27	14.2
Stage 7	185	-127.19	20.43
Stage 7	184.8	-122.31	24.4
Stage 7	184.6	-116.79	27.61
Stage 7	184.4	-110.76	30.11
Stage 7	184.2	-104.37	31.96
Stage 7	184	-97.73	33.19
Stage 7	183.8	-90.93	33.99
Stage 7	183.6	-84.05	34.43
Stage 7	183.4	-77.14	34.53
Stage 7	183.2	-70.28	34.33
Stage 7	183	-63.5	33.85
Stage 7	182.8	-56.88	33.12
Stage 7	182.6	-50.45	32.15
Stage 7	182.4	-44.26	30.97
Stage 7	182.2	-38.34	29.59
Stage 7	182	-32.73	28.03
Stage 7	181.8	-27.47	26.31
Stage 7	181.6	-22.59	24.42
Stage 7	181.4	-18.11	22.39
Stage 7	181.2	-14.06	20.23
Stage 7	181	-10.48	17.93
Stage 7	180.8	-7.38	15.5
Stage 7	180.6	-4.79	12.95
Stage 7	180.4	-2.73	10.28
Stage 7	180.2	-1.23	7.5
Stage 7	180	-0.31	4.59
Stage 7	179.8	0	1.57

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	1.41
Stage 7	193.9	0.28	1.41
Stage 7	193.7	1.17	4.45
Stage 7	193.7	1667.95	4.45
Stage 7	193.5	1579.15	-444.02
Stage 7	193.3	1491.44	-438.56
Stage 7	193.1	1405.04	-431.98
Stage 7	192.9	1320.17	-424.34
Stage 7	192.7	1237.04	-415.66
Stage 7	192.5	1155.84	-405.97
Stage 7	192.3	1076.79	-395.29
Stage 7	192.1	1000.05	-383.67
Stage 7	191.9	925.11	-374.71
Stage 7	191.8	888.35	-367.57



#### 4.2.15. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Left Wall - Stage: Stage 8

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	-137.91	68.28
Stage 8	191.6	-124.25	68.28
Stage 8	191.4	-111.13	65.62
Stage 8	191.2	-98.49	63.23
Stage 8	191	-86.27	61.06
Stage 8	190.8	-74.47	59.04
Stage 8	190.6	-63.04	57.13
Stage 8	190.4	-51.98	55.28
Stage 8	190.2	-41.28	53.51
Stage 8	190	-31.01	51.34
Stage 8	189.8	-21.25	48.82
Stage 8	189.6	-11.98	46.36
Stage 8	189.4	-3.19	43.96
Stage 8	189.2	5.13	41.58
Stage 8	189	12.97	39.21
Stage 8	188.8	20.33	36.78
Stage 8	188.6	27.18	34.28
Stage 8	188.4	33.52	31.69
Stage 8	188.2	39.32	29.01
Stage 8	188	44.56	26.23
Stage 8	187.8	49.23	23.34
Stage 8	187.6	53.3	20.34
Stage 8	187.4	56.74	17.23
Stage 8	187.2	59.54	13.99
Stage 8	187	61.67	10.63
Stage 8	186.8	63.1	7.17
Stage 8	186.6	63.83	3.63
Stage 8	186.4	63.84	0.04
Stage 8	186.2	63.11	-3.63
Stage 8	186	61.64	-7.36
Stage 8	185.8	59.41	-11.17
Stage 8	185.6	56.39	-15.05
Stage 8	185.4	52.62	-18.87
Stage 8	185.2	48.14	-22.42
Stage 8	185	42.99	-25.72
Stage 8	184.8	38.11	-24.41
Stage 8	184.6	33.5	-23.03
Stage 8	184.4	29.19	-21.58
Stage 8	184.2	25.17	-20.08
Stage 8	184	21.47	-18.54
Stage 8	183.8	18.07	-16.98
Stage 8	183.6	14.99	-15.41
Stage 8	183.4	12.22	-13.83
Stage 8	183.2	9.77	-12.26
Stage 8	183	7.63	-10.71
Stage 8	182.8	5.79	-9.17
Stage 8	182.6	4.26	-7.69
Stage 8	182.4	2.99	-6.33
Stage 8	182.2	1.97	-5.1
Stage 8	182	1.17	-4
Stage 8	181.8	0.57	-3.01
Stage 8	181.6	0.14	-2.16
Stage 8	181.4	-0.15	-1.42
Stage 8	181.2	-0.31	-0.81
Stage 8	181	-0.37	-0.31
Stage 8	180.8	-0.36	0.06
Stage 8	180.6	-0.3	0.32
Stage 8	180.4	-0.2	0.46
Stage 8	180.2	-0.11	0.48
Stage 8	180	-0.03	0.38
Stage 8	179.8	0	0.17

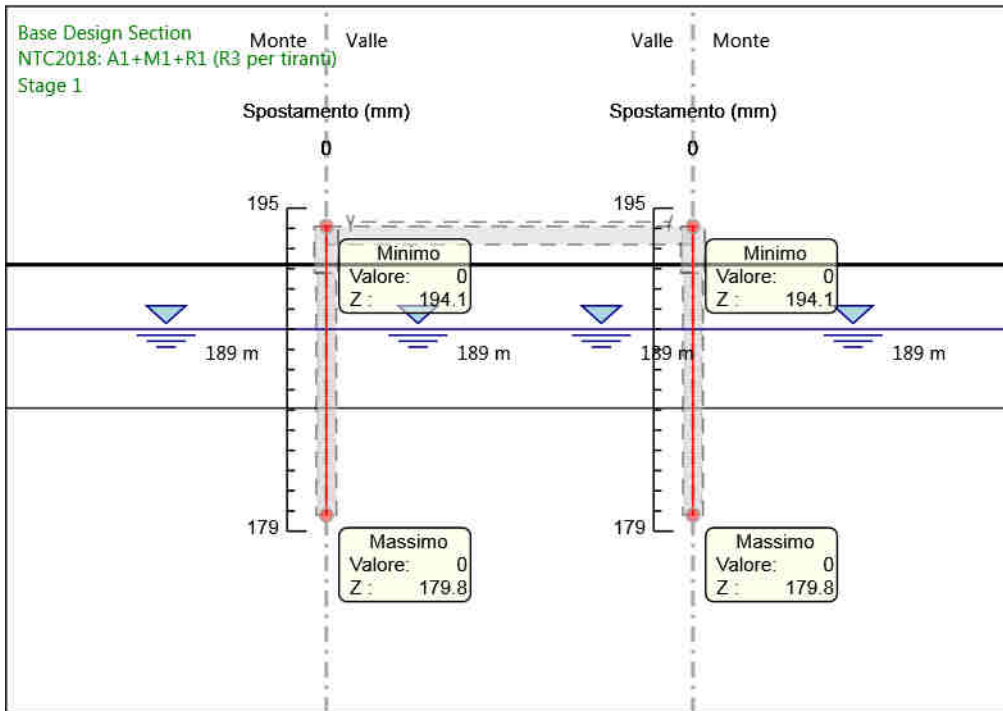
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	-1.53
Stage 8	193.9	-0.31	-1.53
Stage 8	193.7	-1.37	-5.33
Stage 8	193.7	-290.4	-5.33
Stage 8	193.5	-272.71	88.41
Stage 8	193.3	-255.41	86.54
Stage 8	193.1	-238.43	84.89
Stage 8	192.9	-221.76	83.34
Stage 8	192.7	-205.46	81.5
Stage 8	192.5	-189.58	79.39
Stage 8	192.3	-174.18	76.99
Stage 8	192.1	-159.32	74.32
Stage 8	191.9	-144.95	71.87
Stage 8	191.8	-137.91	70.37

#### 4.2.16. Tabella Risultati Paratia NTC2018: A1+M1+R1 (R3 per tiranti) - Right wall - Stage: Stage 8

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	150.25	-68.35
Stage 8	191.6	136.58	-68.35
Stage 8	191.4	123.34	-66.22
Stage 8	191.2	110.48	-64.29
Stage 8	191	97.98	-62.5
Stage 8	190.8	85.82	-60.79
Stage 8	190.6	74	-59.1
Stage 8	190.4	62.52	-57.4
Stage 8	190.2	51.4	-55.63
Stage 8	190	40.65	-53.74
Stage 8	189.8	30.38	-51.33
Stage 8	189.6	20.64	-48.72
Stage 8	189.4	11.41	-46.13
Stage 8	189.2	2.71	-43.54
Stage 8	189	-5.48	-40.94
Stage 8	188.8	-13.15	-38.32
Stage 8	188.6	-20.28	-35.67
Stage 8	188.4	-26.87	-32.98
Stage 8	188.2	-32.92	-30.24
Stage 8	188	-38.41	-27.43
Stage 8	187.8	-43.32	-24.56
Stage 8	187.6	-47.64	-21.62
Stage 8	187.4	-51.36	-18.61
Stage 8	187.2	-54.47	-15.51
Stage 8	187	-56.93	-12.33
Stage 8	186.8	-58.75	-9.09
Stage 8	186.6	-59.92	-5.82
Stage 8	186.4	-60.42	-2.54
Stage 8	186.2	-60.27	0.78
Stage 8	186	-59.44	4.12
Stage 8	185.8	-57.94	7.5
Stage 8	185.6	-55.77	10.88
Stage 8	185.4	-52.94	14.12
Stage 8	185.2	-49.5	17.23
Stage 8	185	-45.46	20.21
Stage 8	184.8	-41.5	19.75
Stage 8	184.6	-37.67	19.15
Stage 8	184.4	-33.99	18.41
Stage 8	184.2	-30.48	17.56
Stage 8	184	-27.16	16.61
Stage 8	183.8	-24.05	15.57
Stage 8	183.6	-21.15	14.45
Stage 8	183.4	-18.49	13.3
Stage 8	183.2	-16.06	12.19
Stage 8	183	-13.83	11.12
Stage 8	182.8	-11.82	10.09
Stage 8	182.6	-9.99	9.11
Stage 8	182.4	-8.36	8.18
Stage 8	182.2	-6.9	7.28
Stage 8	182	-5.61	6.44
Stage 8	181.8	-4.49	5.64
Stage 8	181.6	-3.51	4.88
Stage 8	181.4	-2.67	4.18
Stage 8	181.2	-1.97	3.51
Stage 8	181	-1.39	2.9
Stage 8	180.8	-0.93	2.32
Stage 8	180.6	-0.57	1.8
Stage 8	180.4	-0.31	1.32
Stage 8	180.2	-0.13	0.88
Stage 8	180	-0.03	0.49
Stage 8	179.8	0	0.15

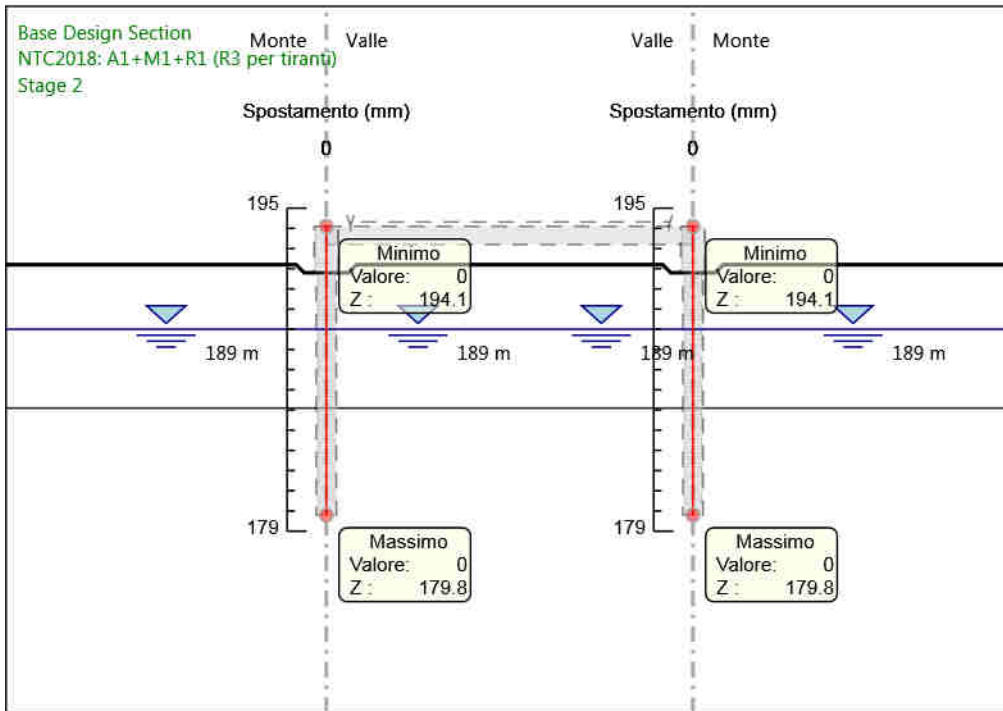
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti) Risultati Paratia			
		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	1.53
Stage 8	193.9	0.31	1.53
Stage 8	193.7	1.37	5.33
Stage 8	193.7	300.02	5.33
Stage 8	193.5	282.54	-87.42
Stage 8	193.3	265.6	-84.71
Stage 8	193.1	248.94	-83.28
Stage 8	192.9	232.6	-81.73
Stage 8	192.7	216.62	-79.89
Stage 8	192.5	201.06	-77.78
Stage 8	192.3	185.99	-75.38
Stage 8	192.1	171.45	-72.71
Stage 8	191.9	157.25	-70.99
Stage 8	191.8	150.25	-69.97

#### 4.2.17. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 1



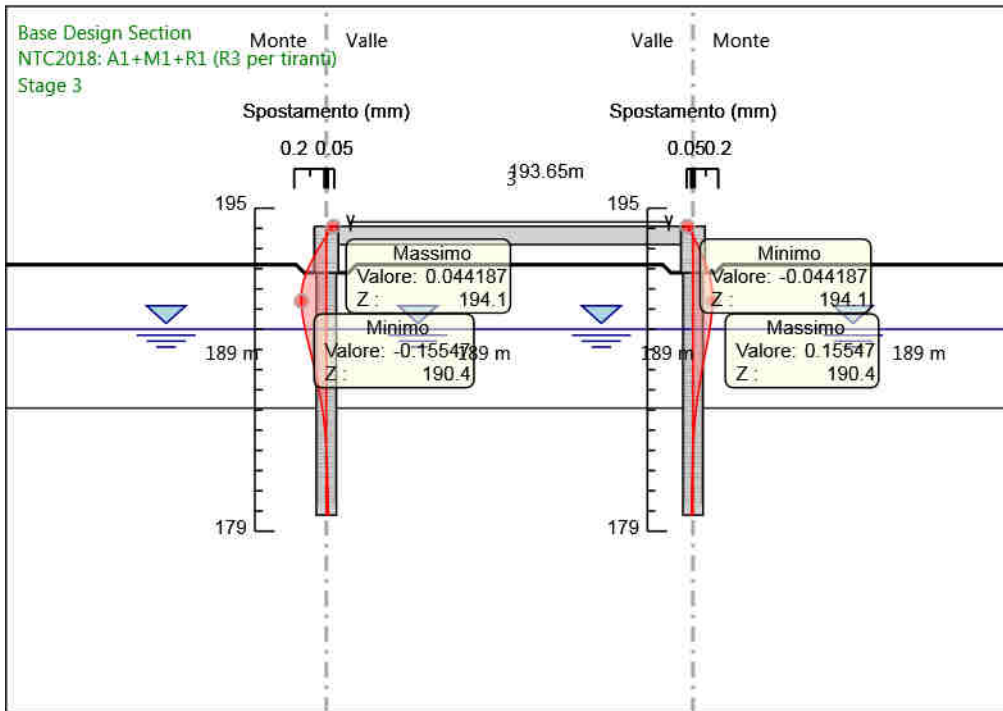
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 1  
 Spostamento

#### 4.2.18. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 2



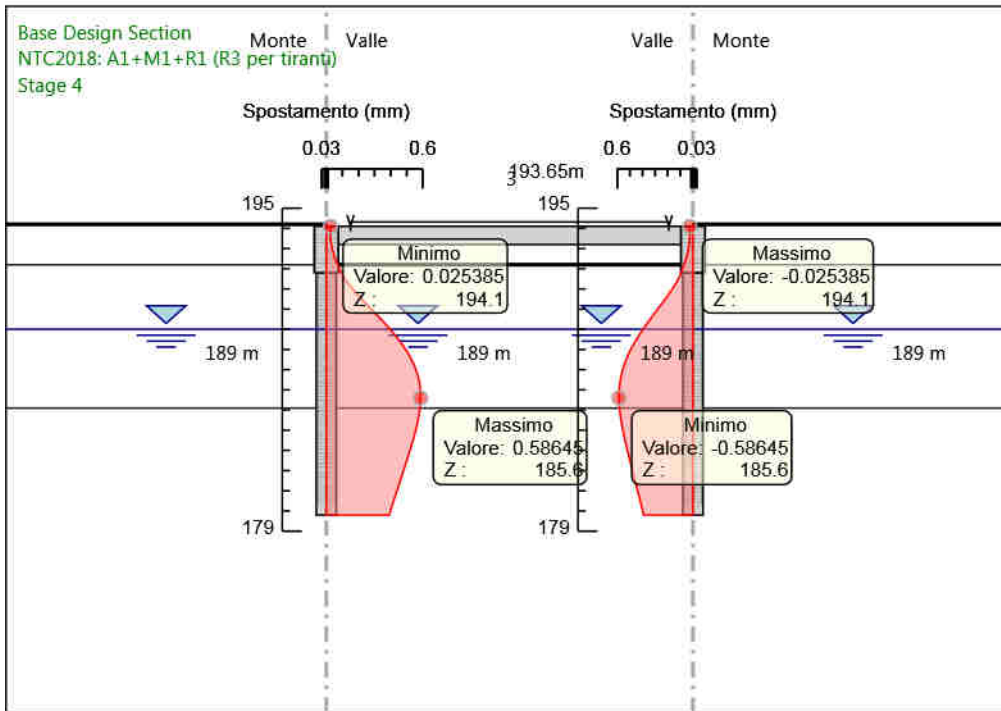
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 2  
Spostamento

#### 4.2.19. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 3



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 3  
Spostamento

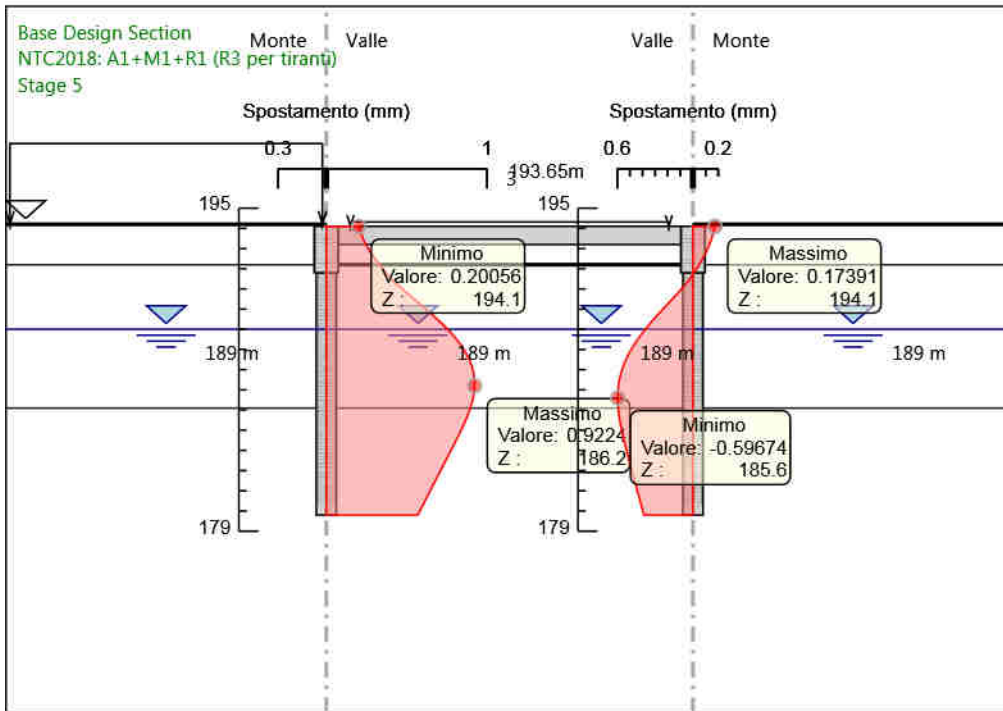
#### 4.2.20. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 4



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 4  
Spostamento

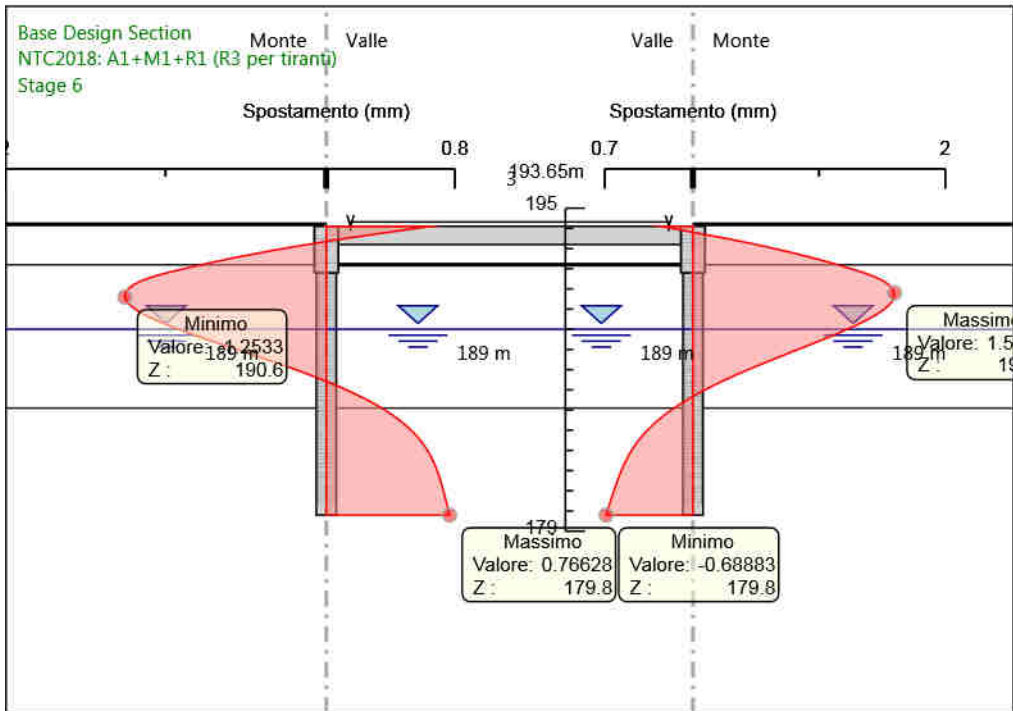


#### 4.2.21. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 5



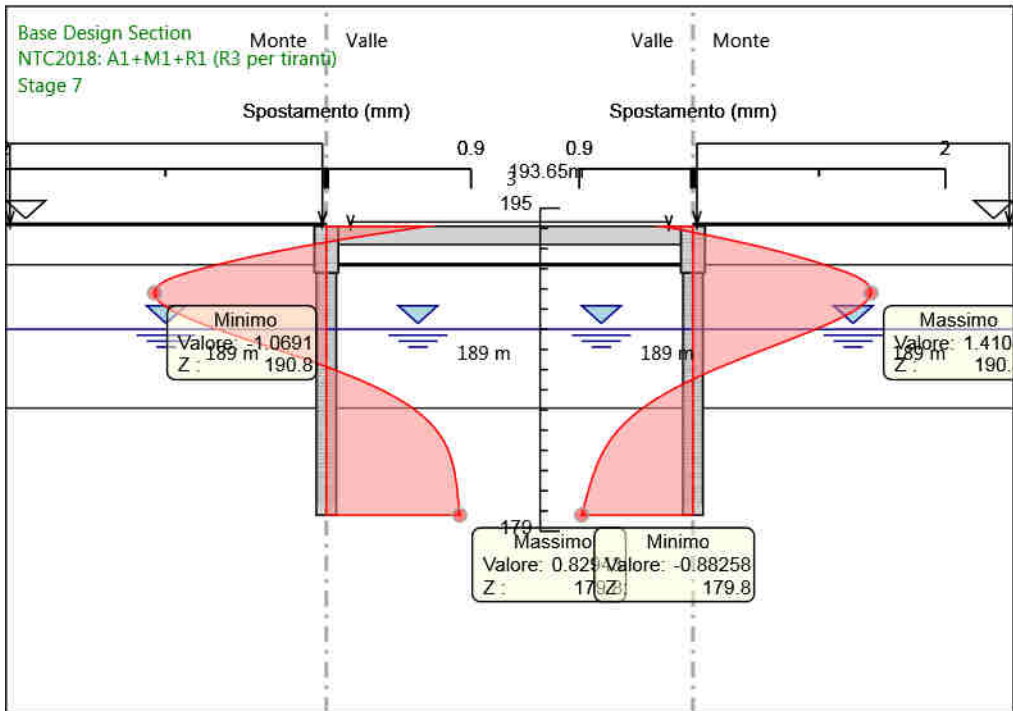
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 5  
 Spostamento

#### 4.2.22. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 6



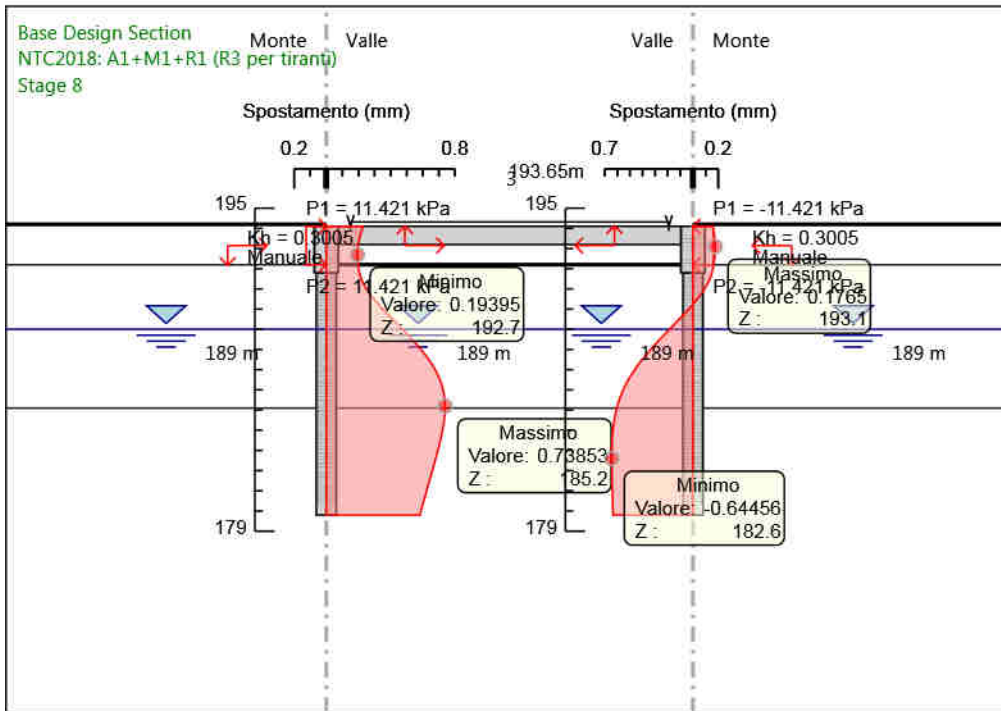
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 6  
 Spostamento

### 4.2.23. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 7



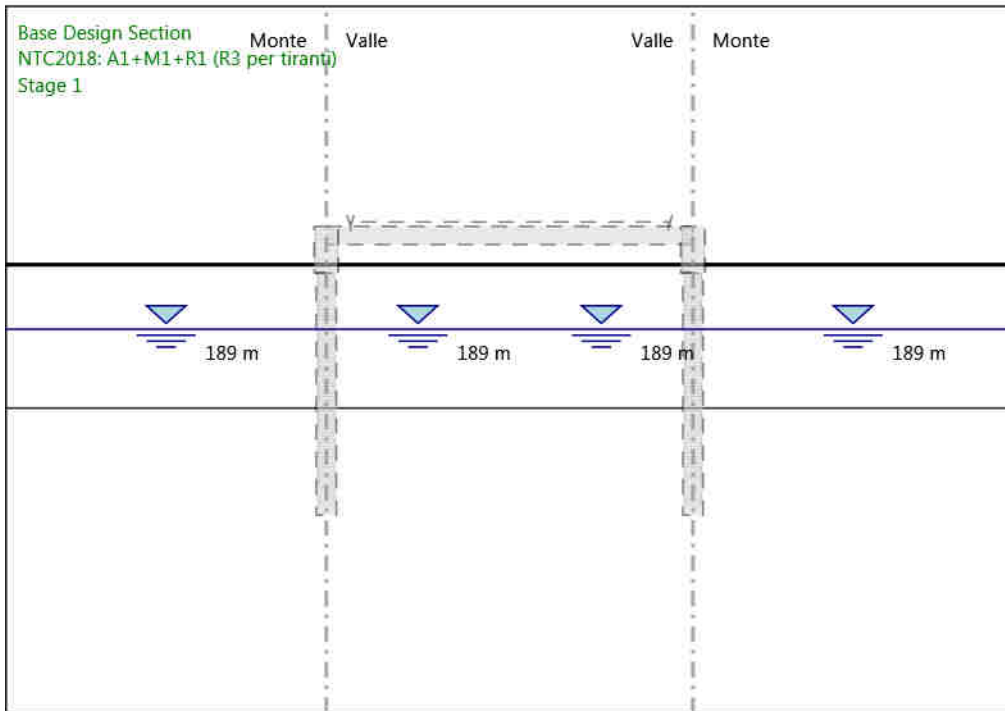
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 7  
 Spostamento

#### 4.2.24. Grafico Spostamento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 8



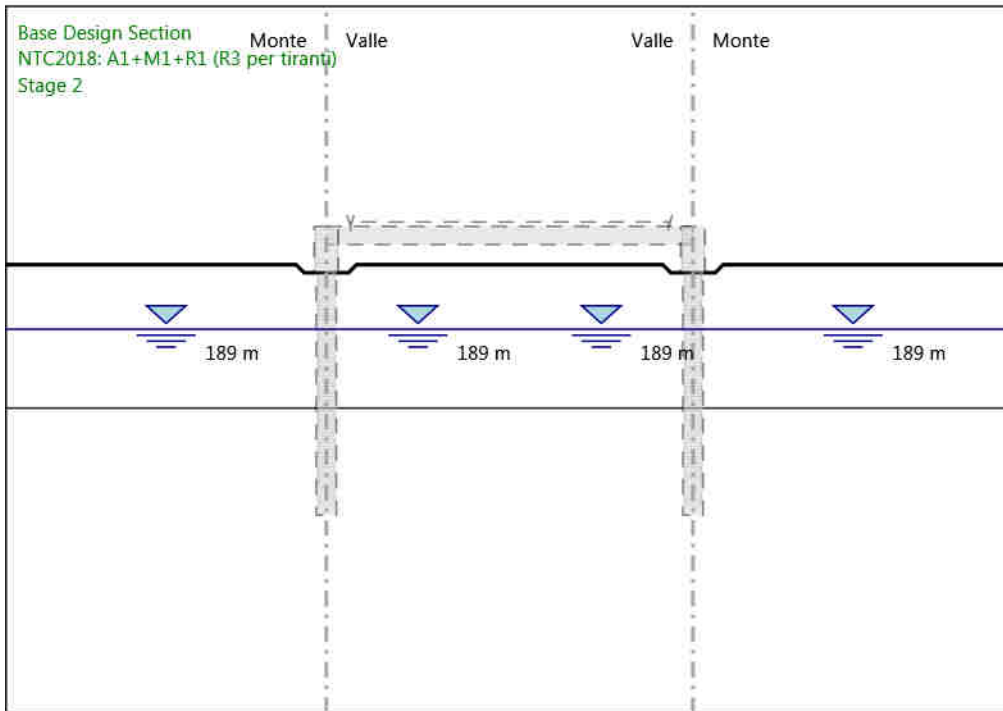
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 8  
 Spostamento

4.2.25. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 1



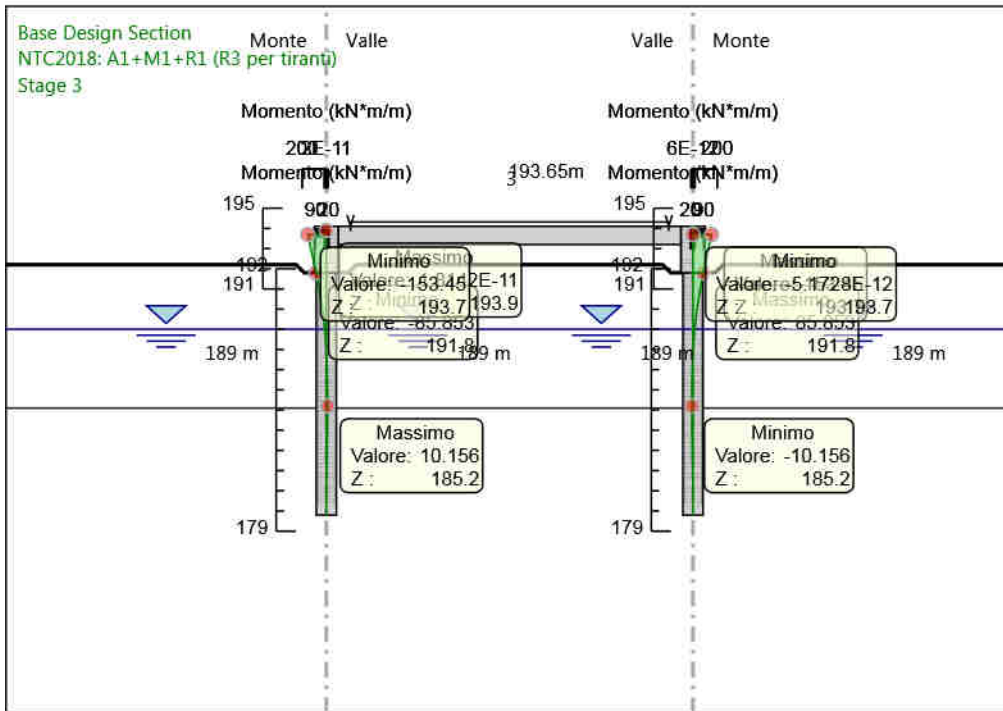
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 1  
Momento

#### 4.2.26. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 2



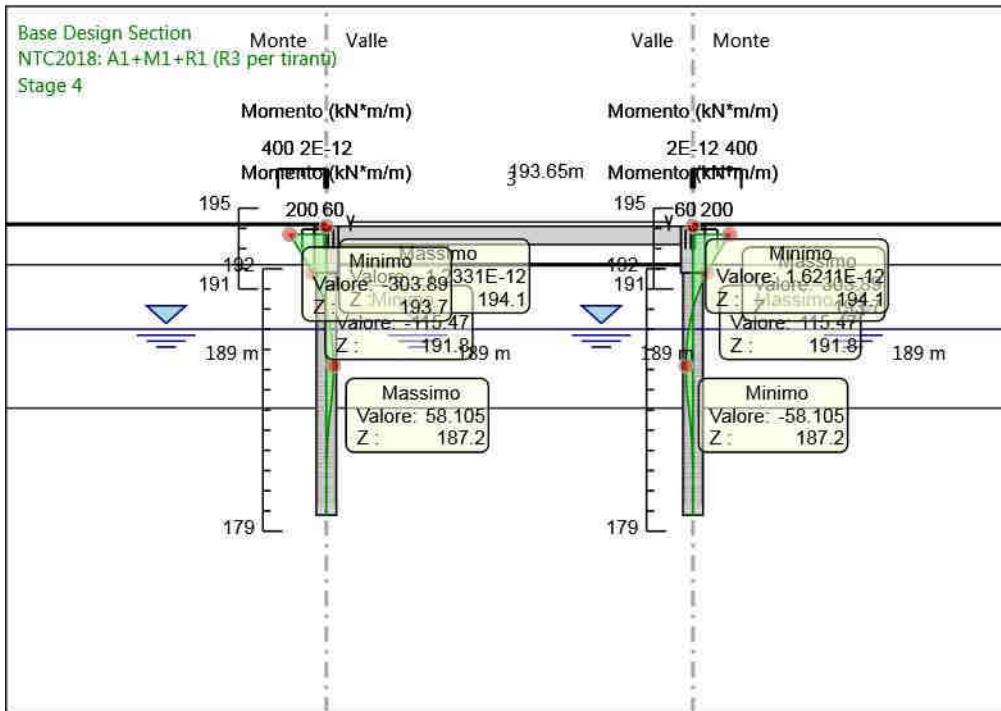
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 2  
Momento

4.2.27. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 3



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 3  
 Momento

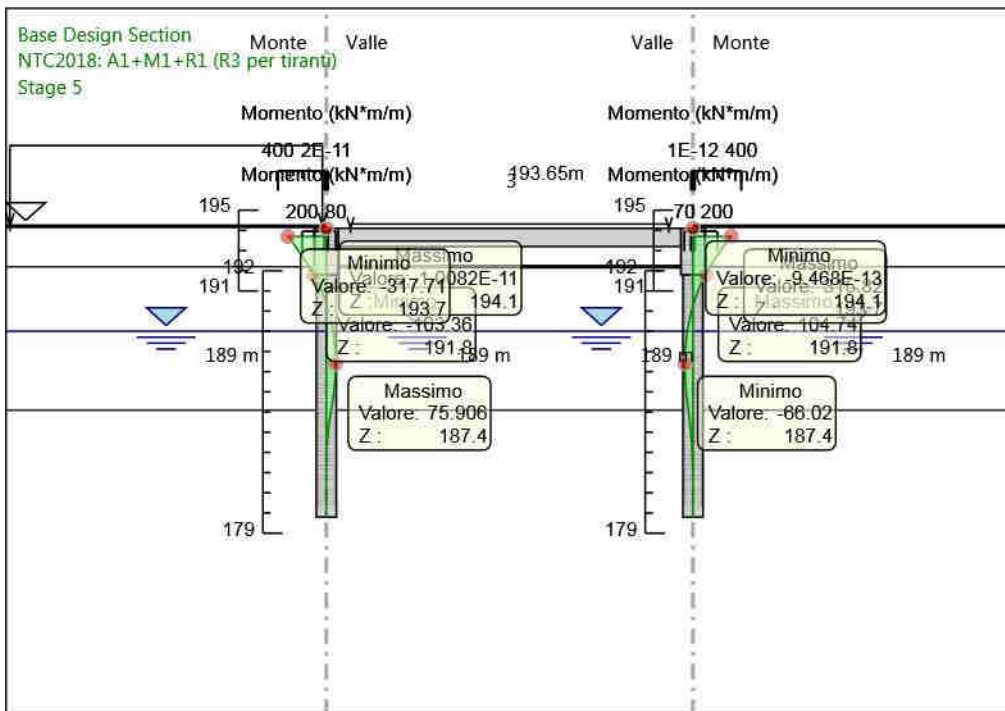
#### 4.2.28. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 4



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 4  
 Momento

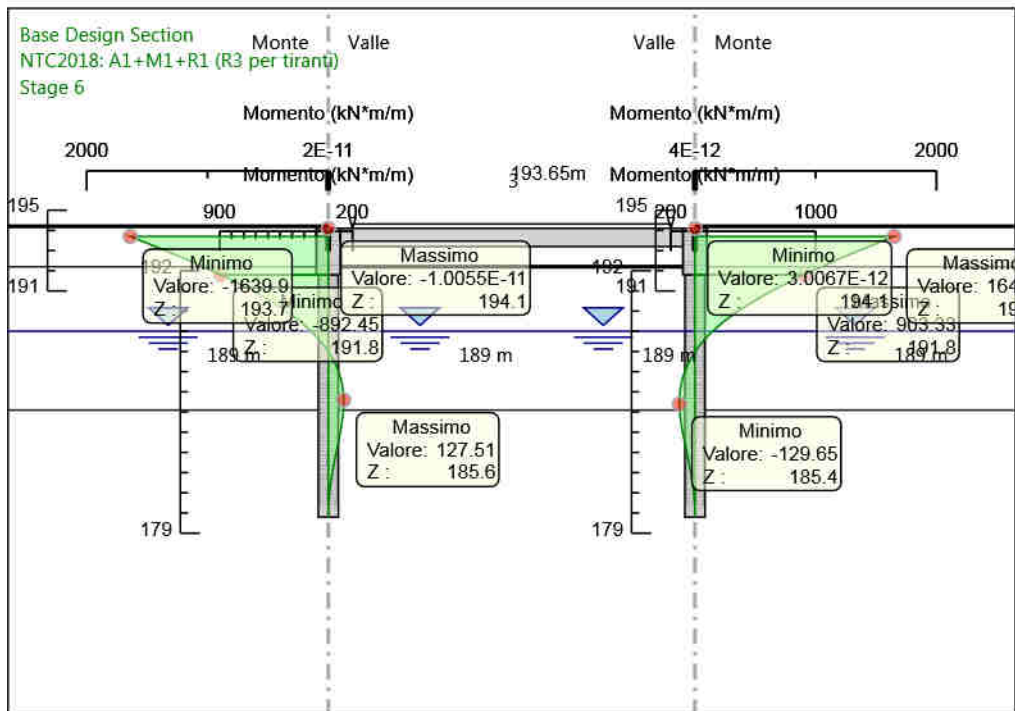


#### 4.2.29. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 5



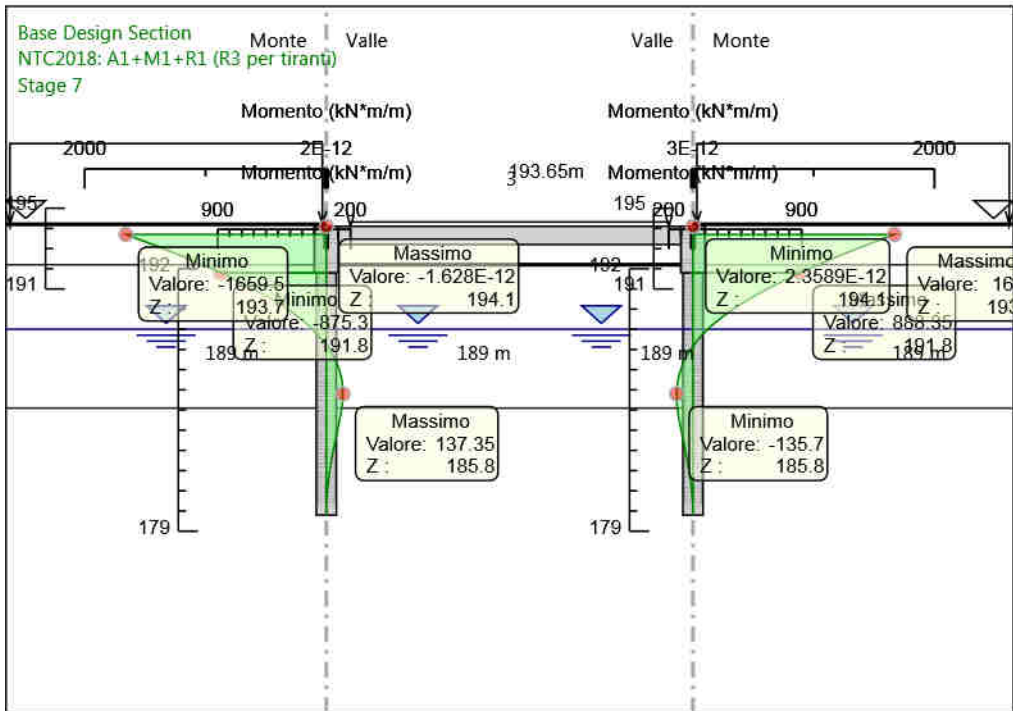
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 5  
 Momento

#### 4.2.30. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 6



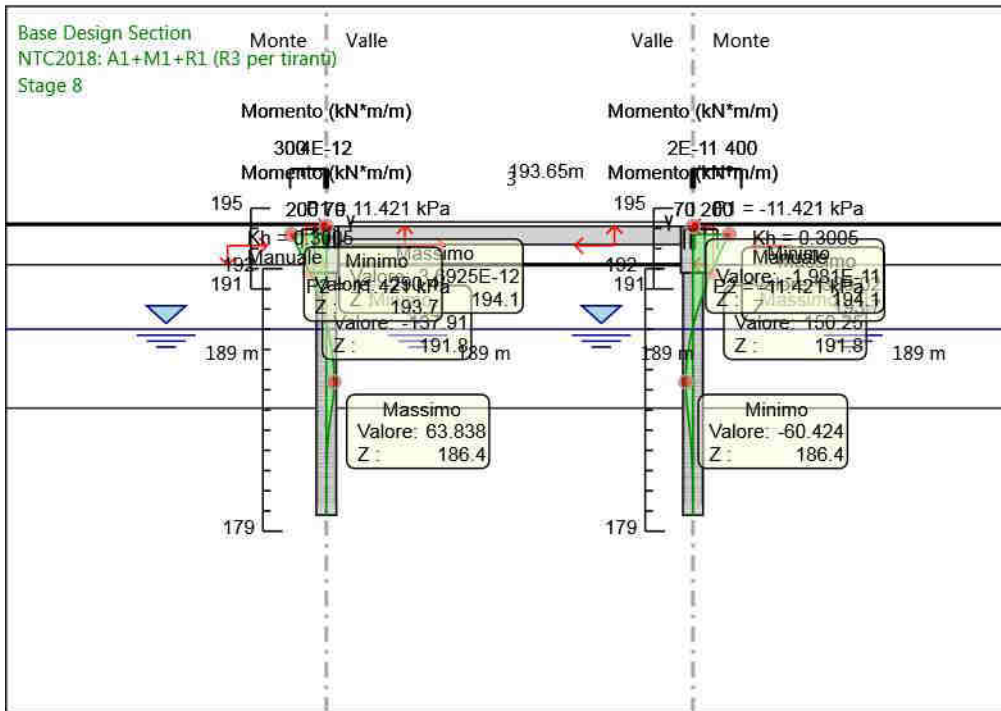
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 6  
 Momento

4.2.31. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 7



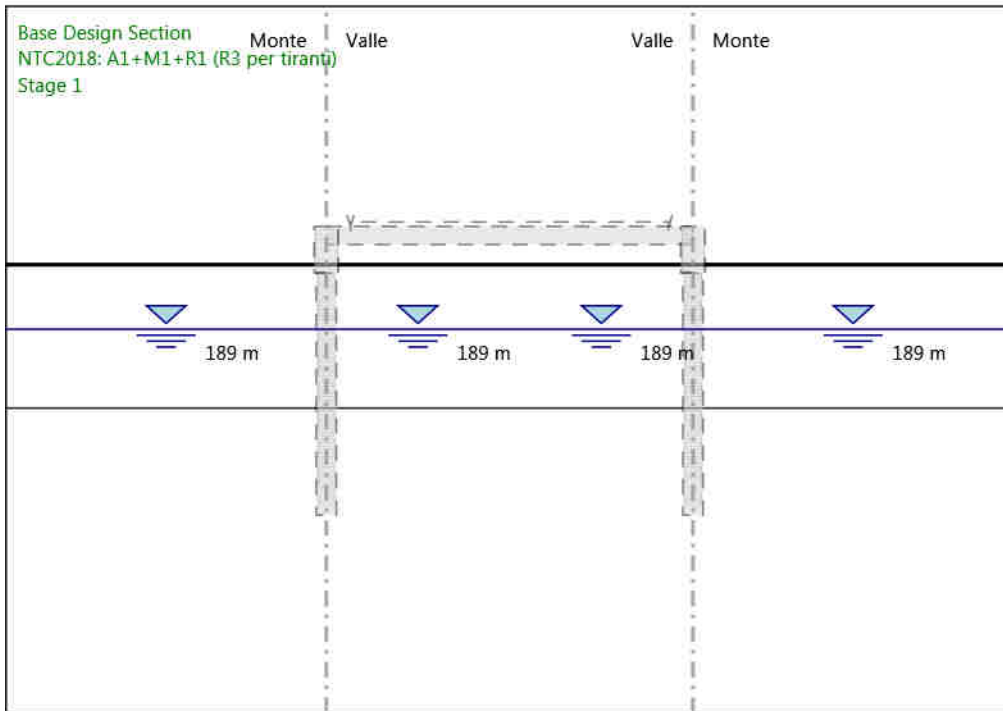
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 7  
 Momento

#### 4.2.32. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 8



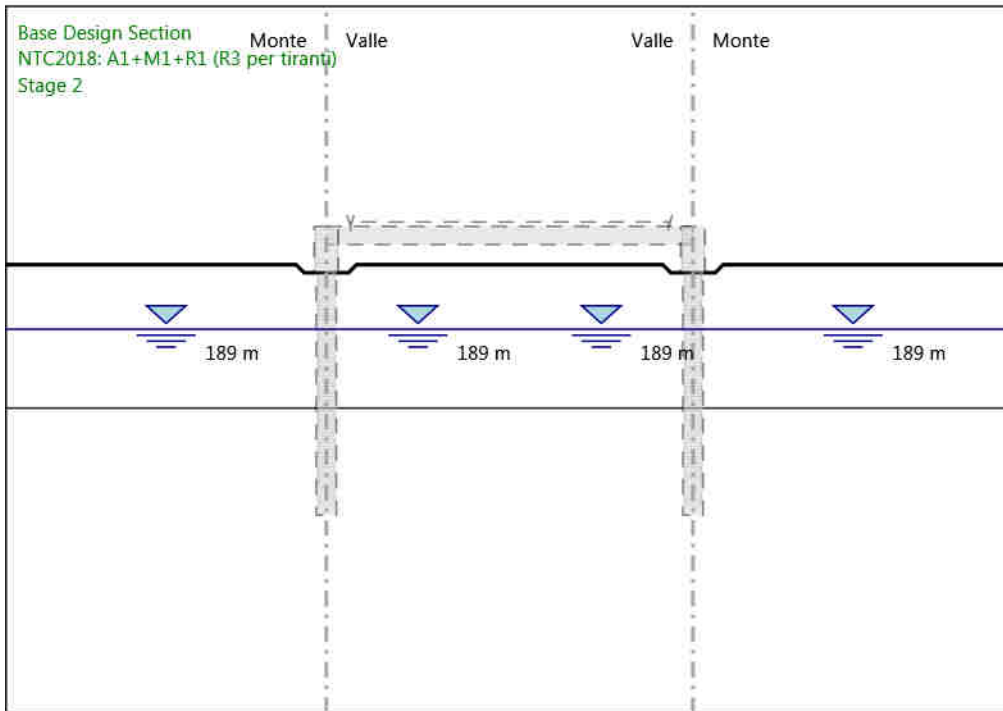
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 8  
 Momento

#### 4.2.33. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 1



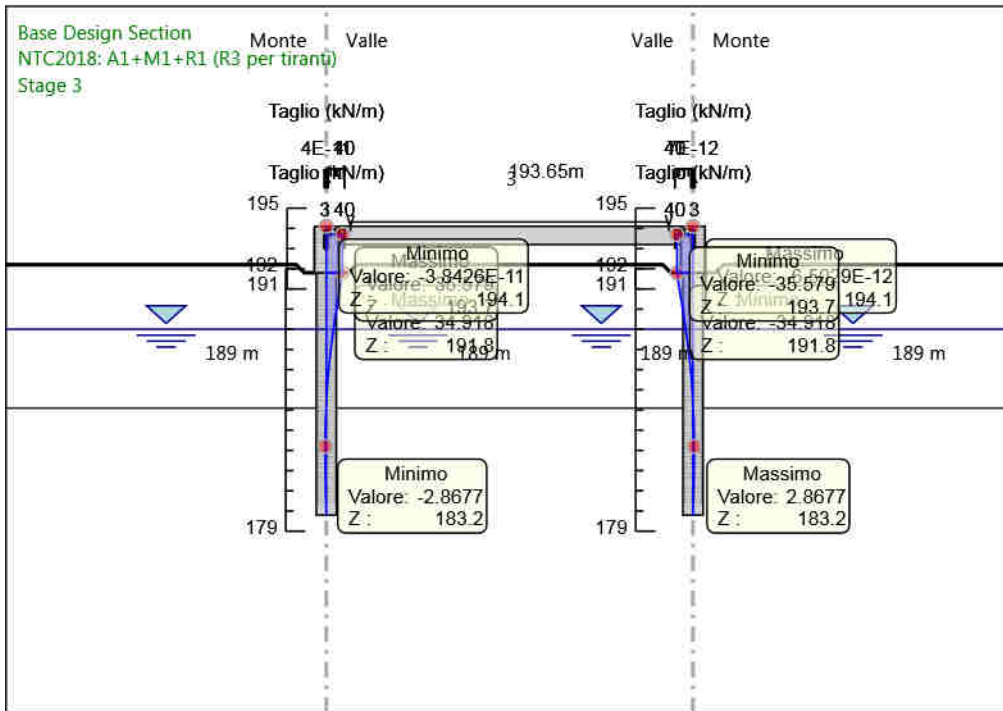
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 1  
Taglio

#### 4.2.34. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 2



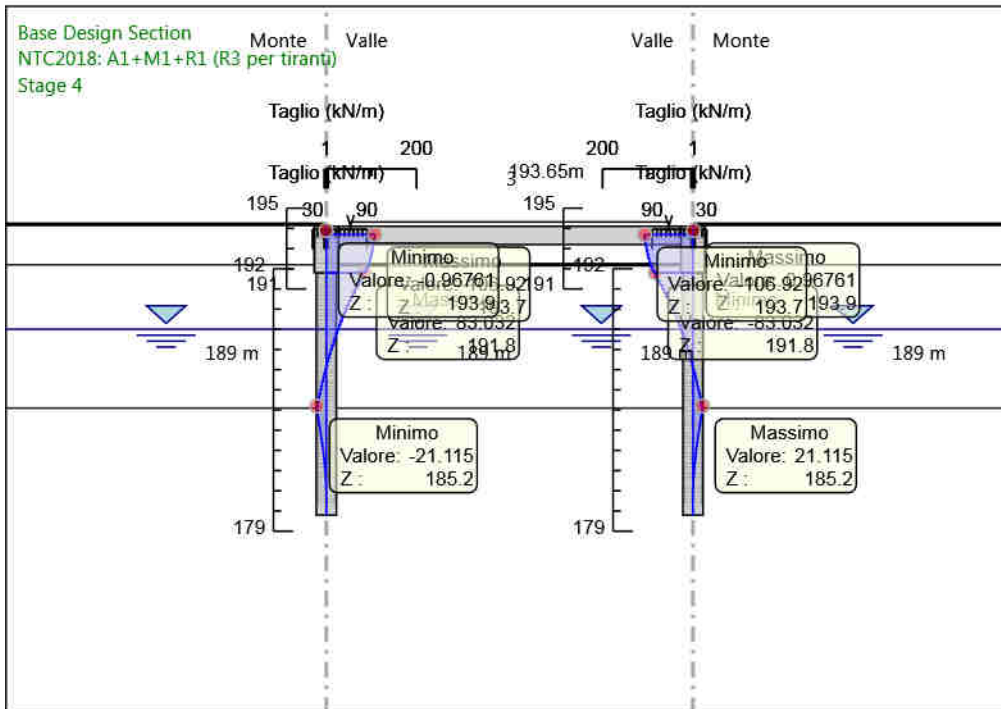
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 2  
Taglio

#### 4.2.35. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 3



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 3  
Taglio

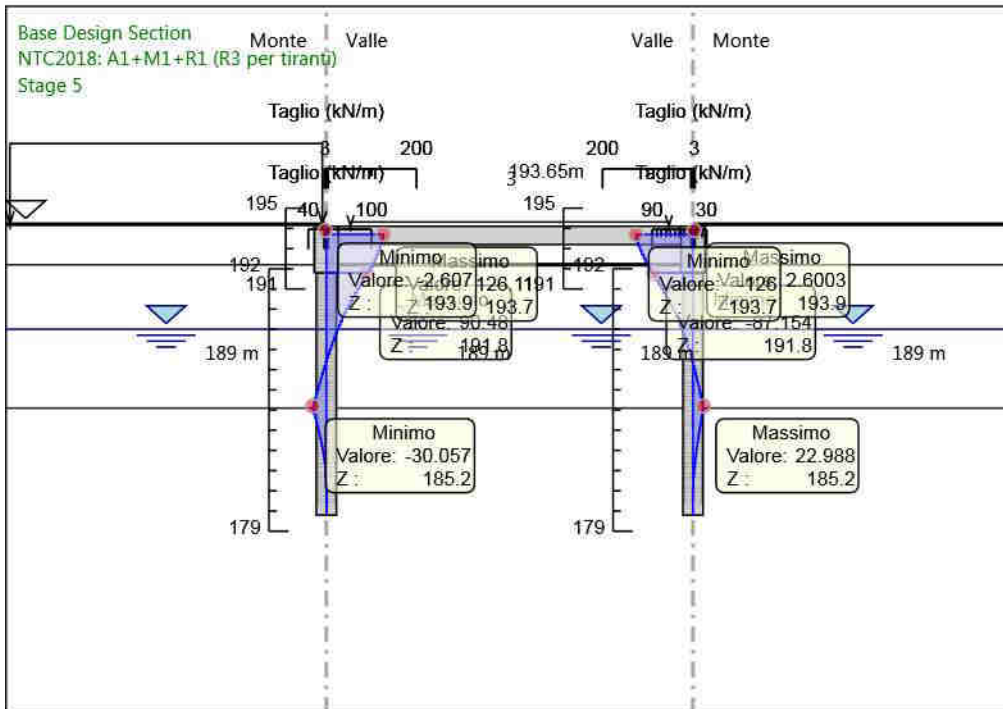
#### 4.2.36. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 4



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 4  
 Taglio



#### 4.2.37. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 5

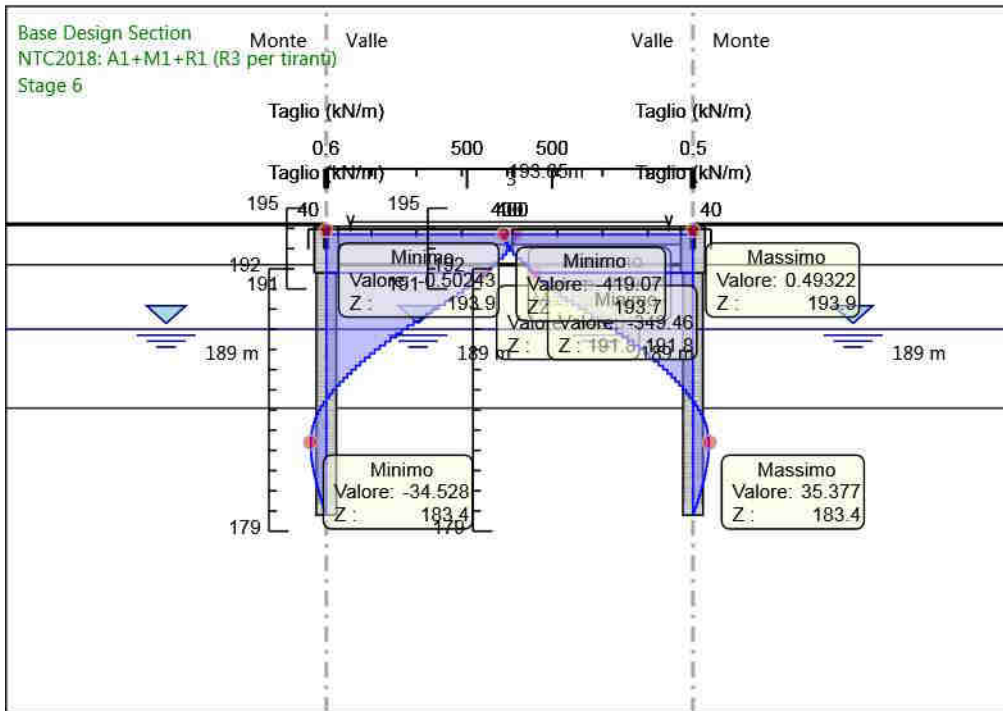


Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)

Stage: Stage 5

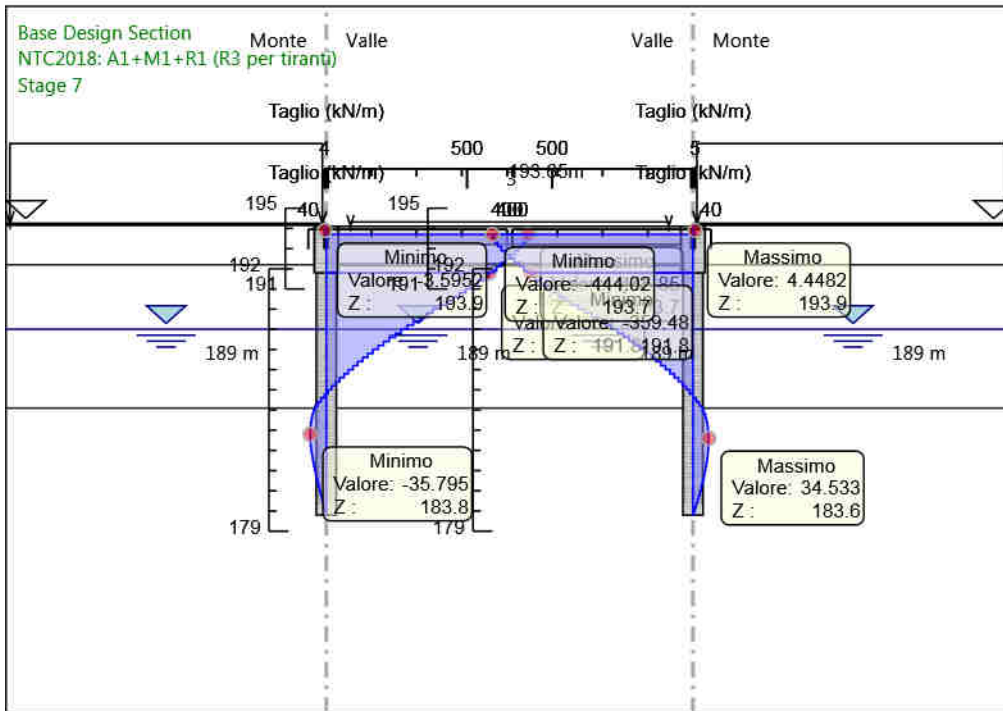
Taglio

#### 4.2.38. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 6



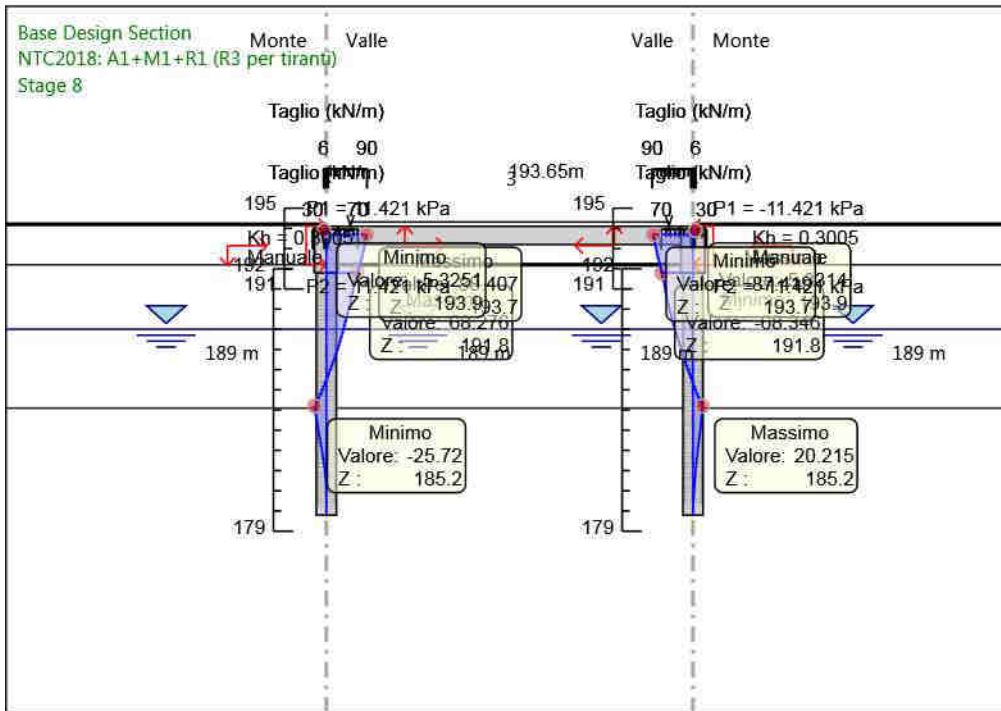
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 6  
 Taglio

#### 4.2.39. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 7



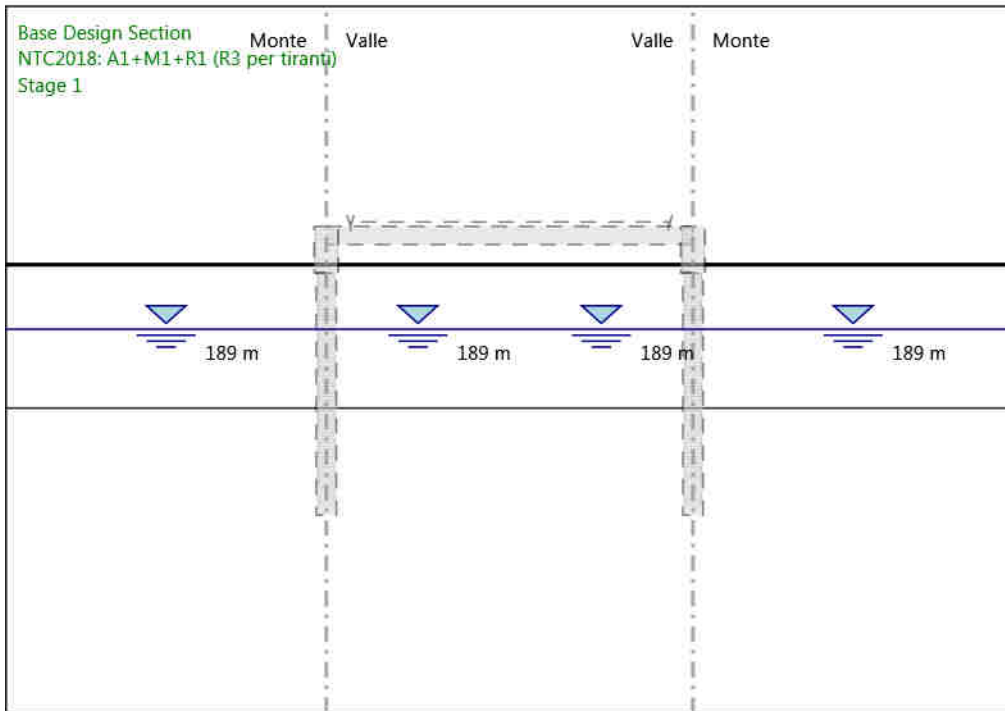
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 7  
Taglio

#### 4.2.40. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 8



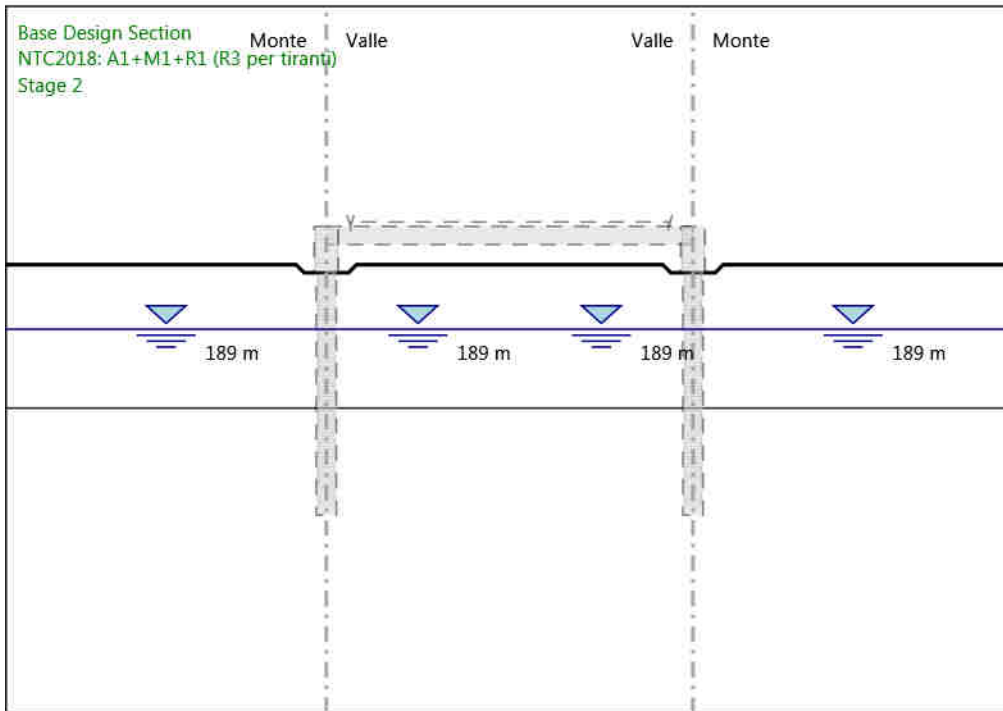
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 8  
 Taglio

#### 4.2.41. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 1



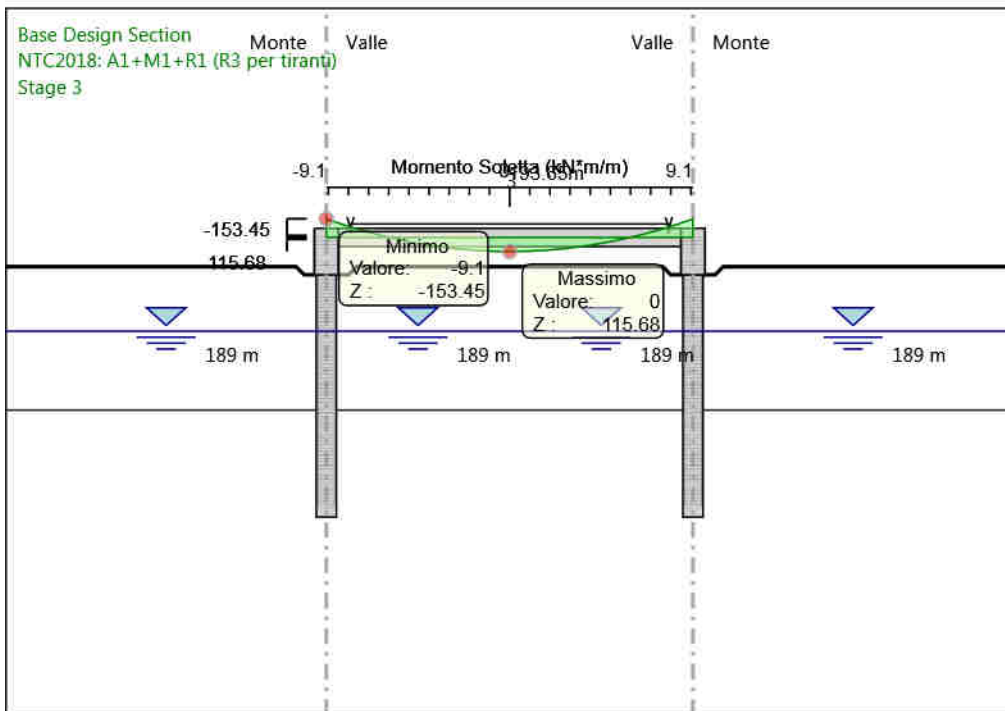
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 1  
Momento

#### 4.2.42. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 2



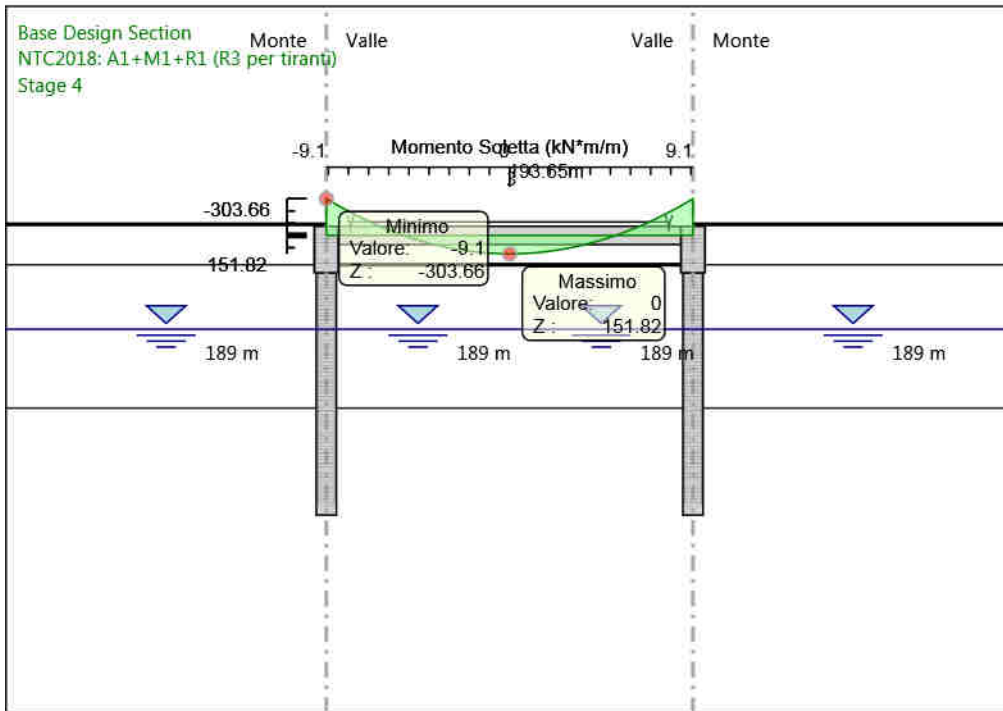
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 2  
Momento

#### 4.2.43. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 3



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 3  
Momento

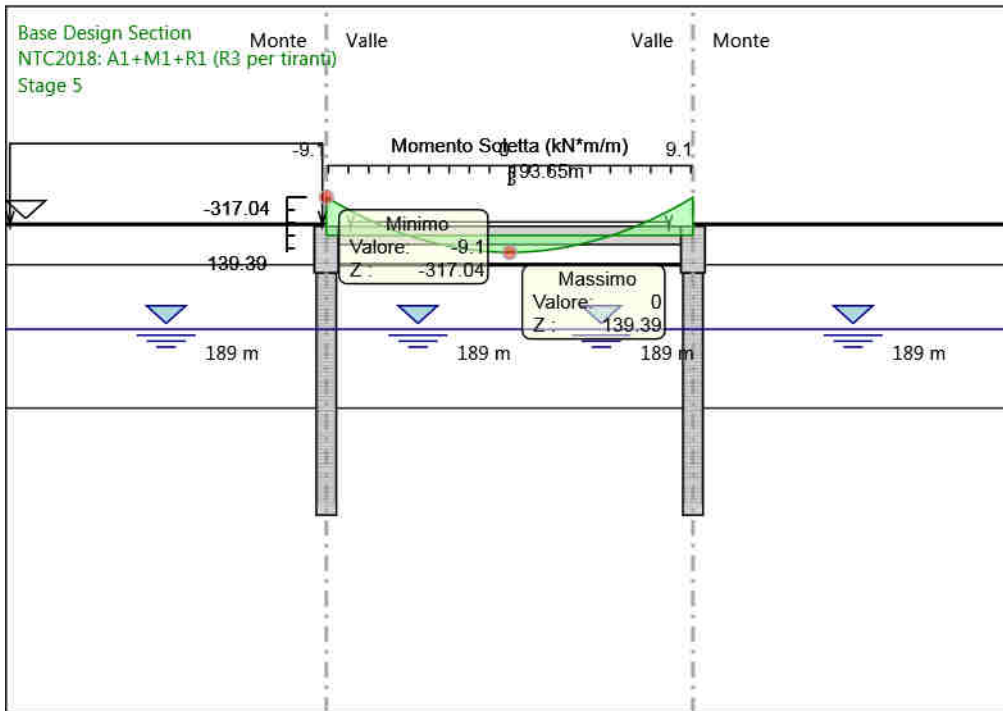
#### 4.2.44. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 4



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 4  
Momento

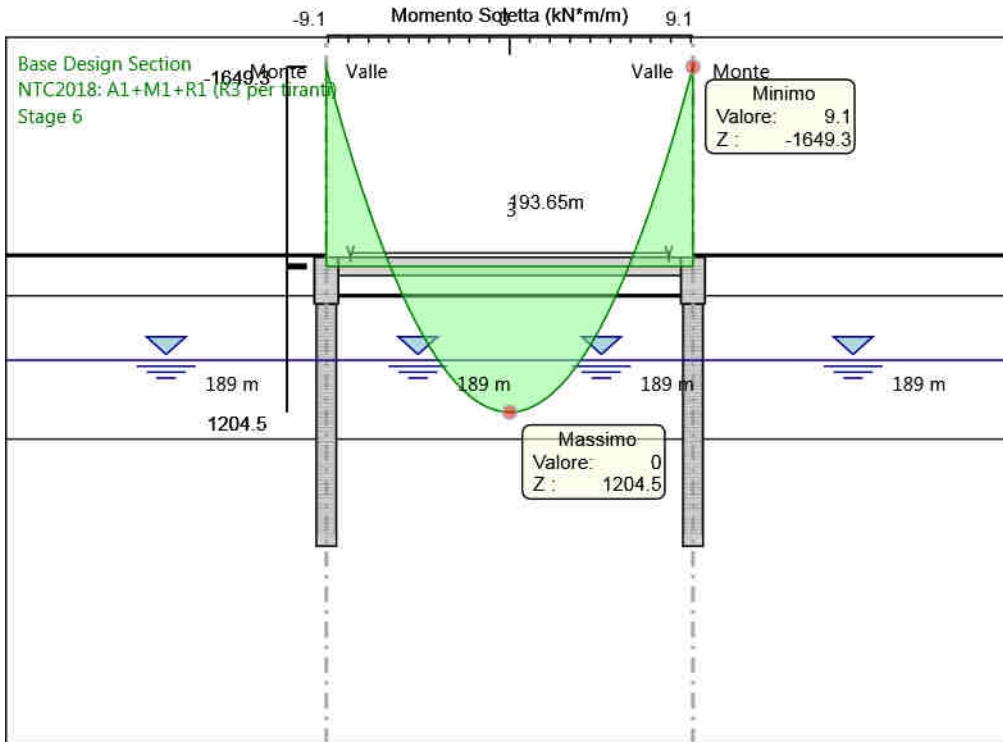


#### 4.2.45. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 5



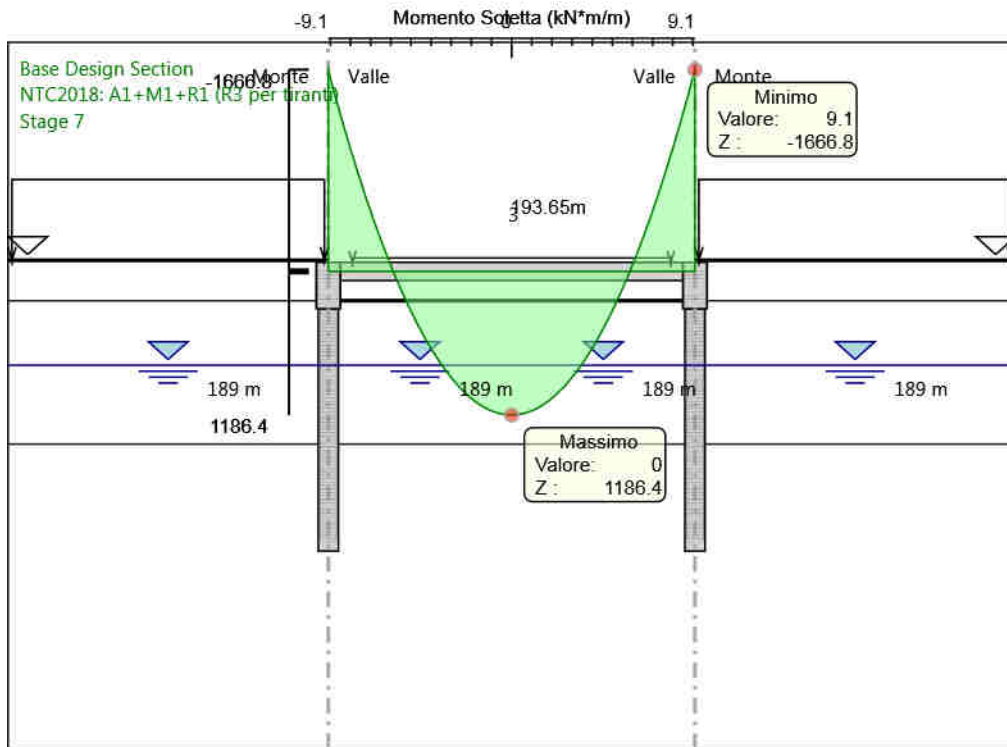
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 5  
Momento

4.2.46. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 6



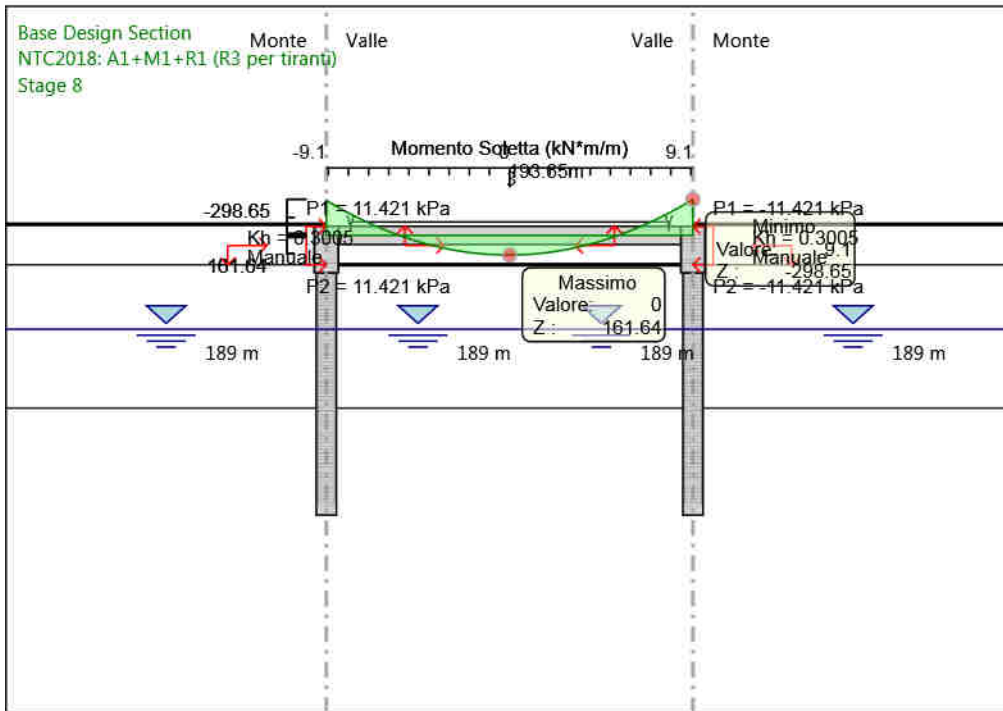
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 6  
Momento

4.2.47. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 7



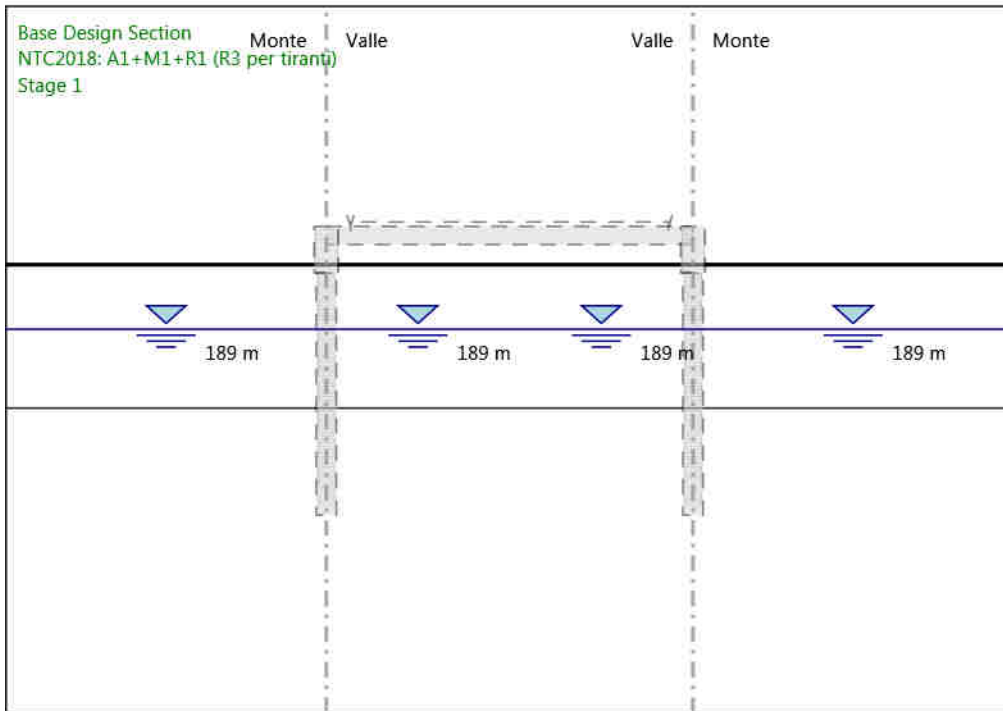
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 7  
 Momento

#### 4.2.48. Grafico Risultati Momento NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 8



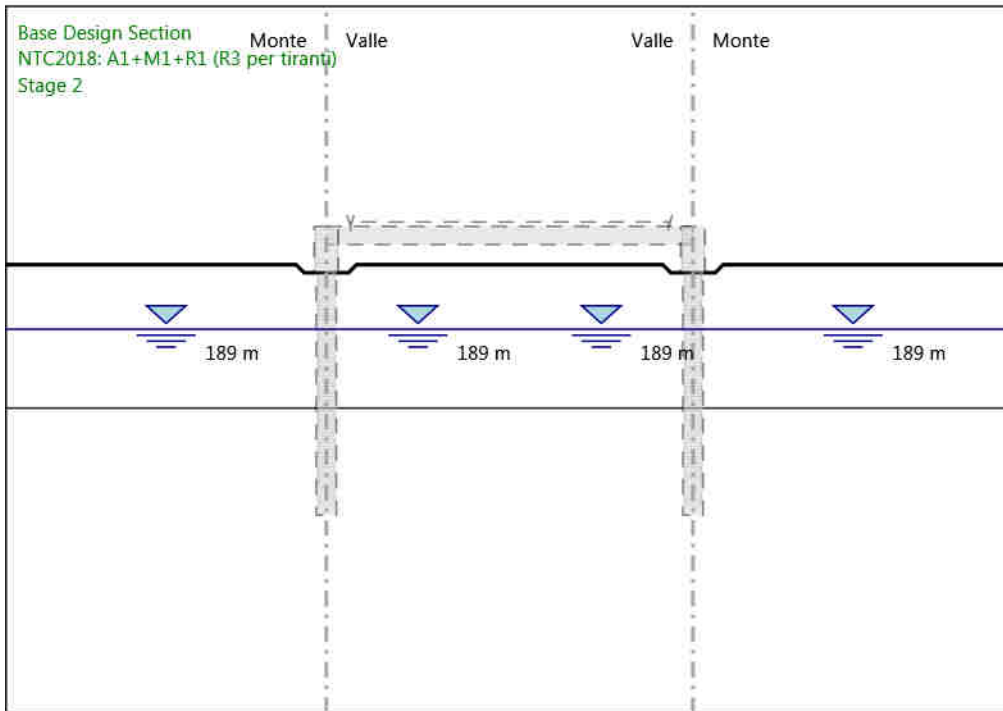
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 8  
Momento

#### 4.2.49. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 1



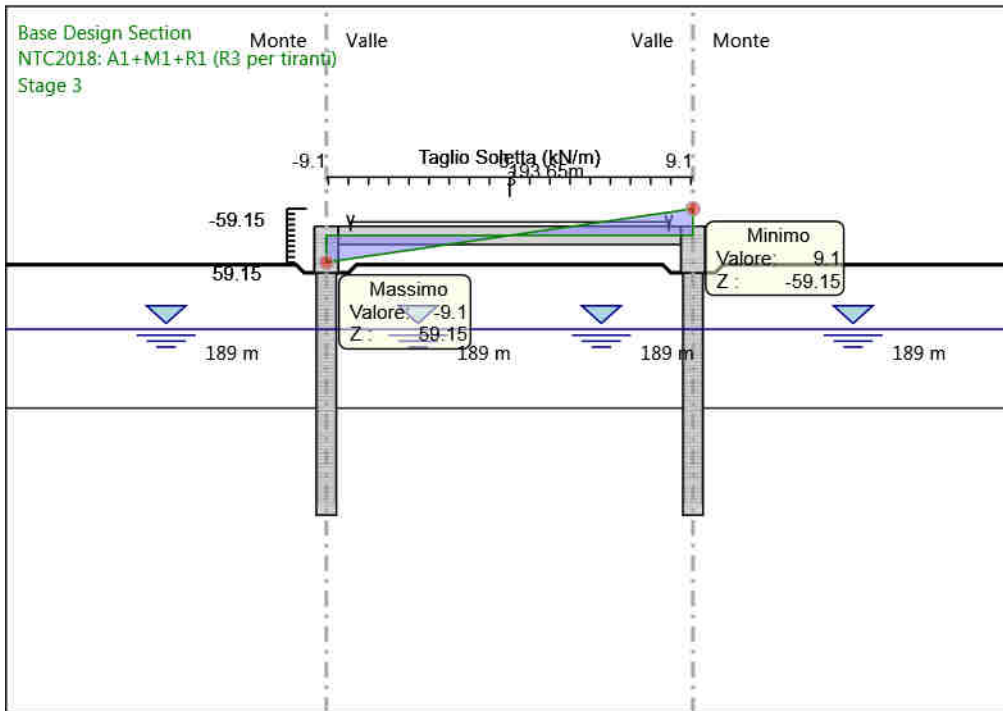
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 1  
Taglio

#### 4.2.50. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 2



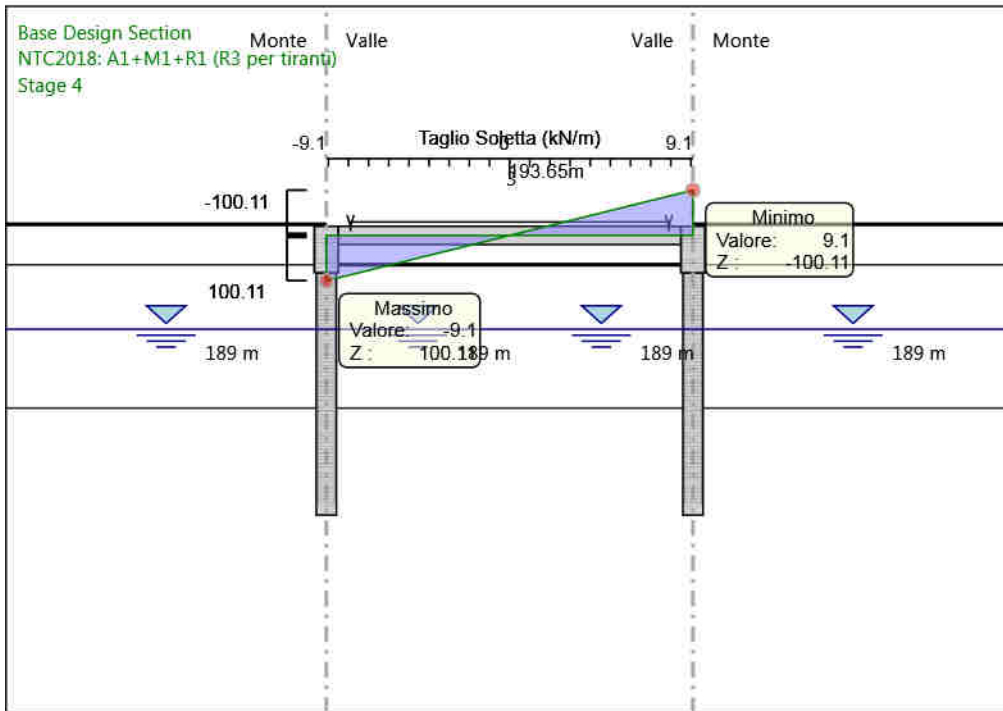
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 2  
Taglio

#### 4.2.51. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 3



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 3  
Taglio

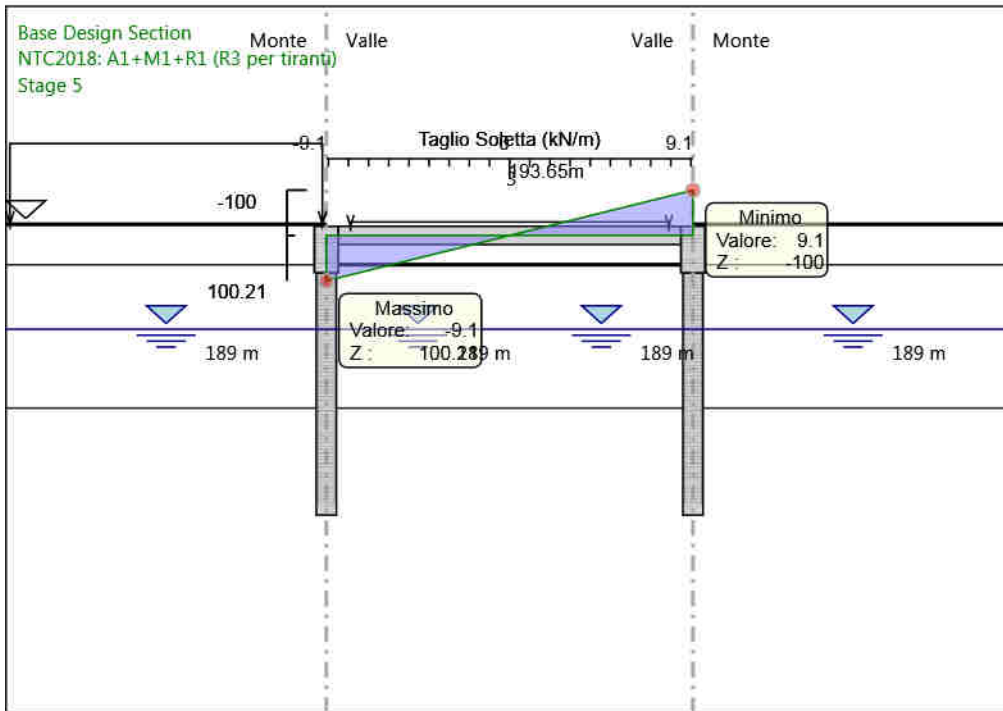
4.2.52. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 4



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 4  
 Taglio

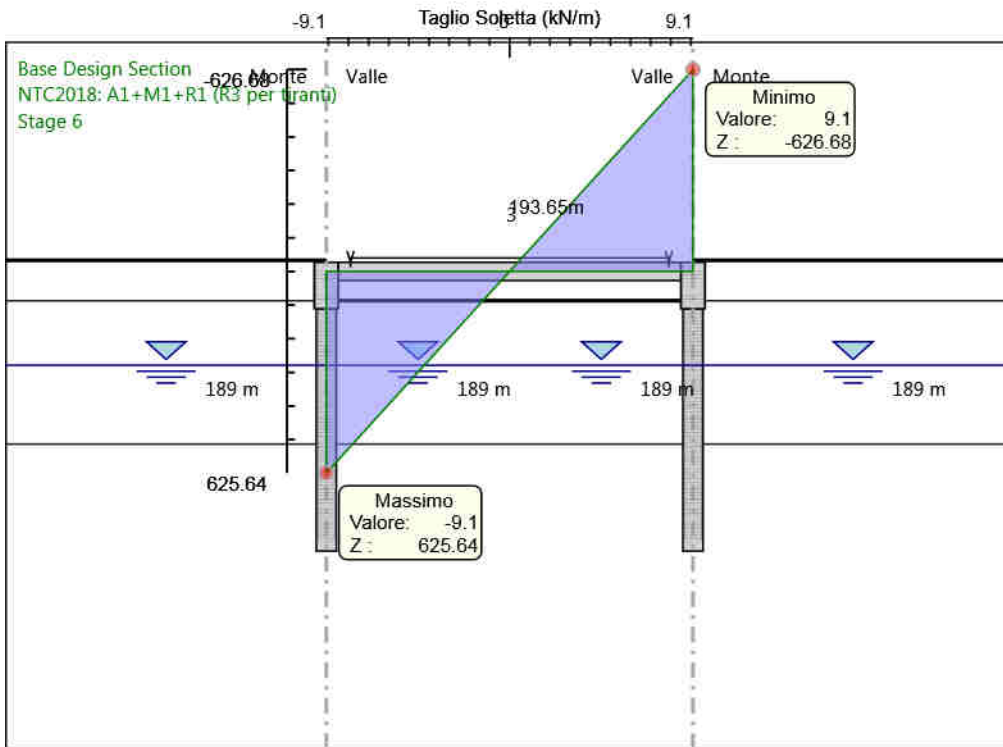


4.2.53. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 5



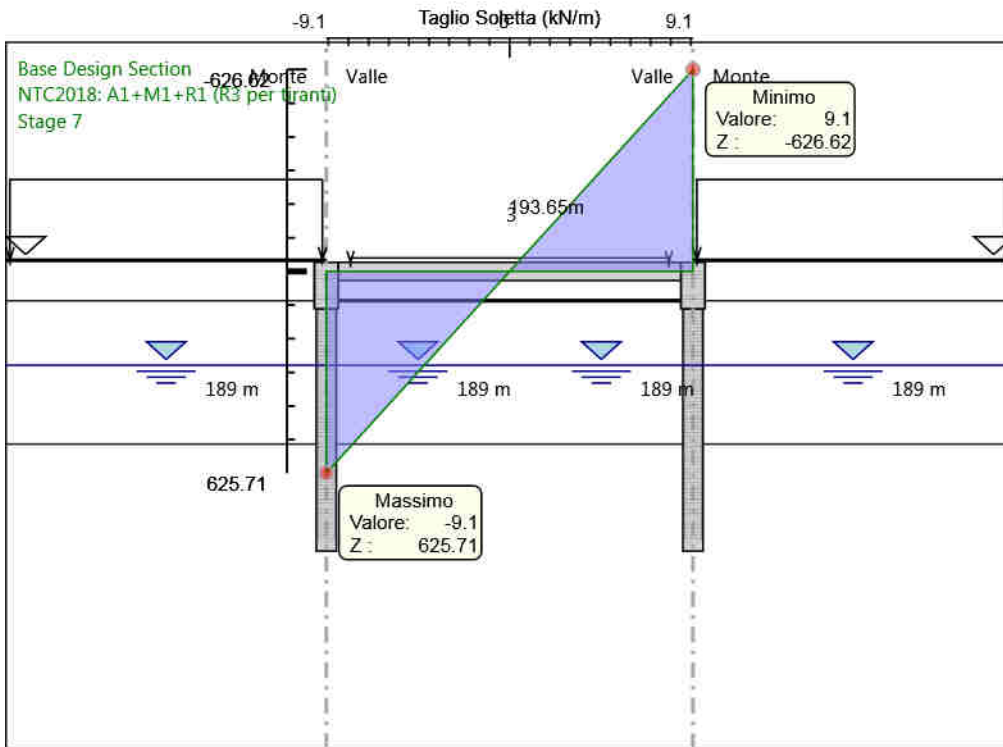
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 5  
 Taglio

4.2.54. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 6



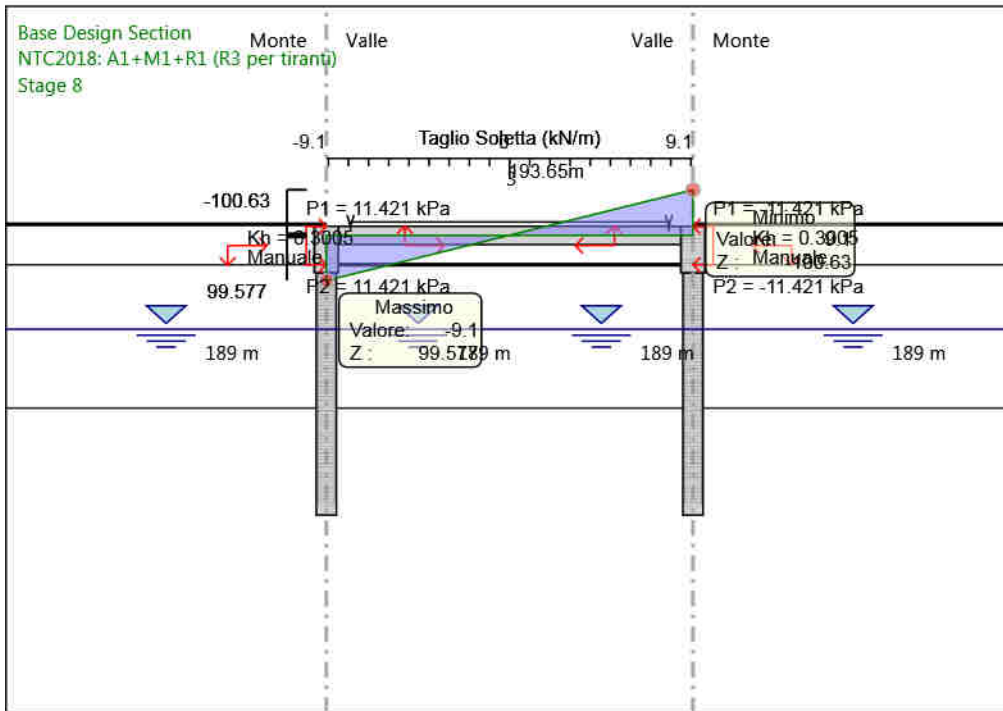
Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
Stage: Stage 6  
Taglio

4.2.55. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 7



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 7  
 Taglio

#### 4.2.56. Grafico Risultati Taglio NTC2018: A1+M1+R1 (R3 per tiranti) - Stage: Stage 8



Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)  
 Stage: Stage 8  
 Taglio

#### 4.2.57. Risultati Elementi strutturali - NTC2018: A1+M1+R1 (R3 per tiranti)

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)		Tipo Risultato: Soletta				
Stage	Taglio-a (kN/m)	Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)	Surcharge (kPa)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	59.15	59.15	153.45265	-153.45265	-35.57866	6.5
Stage 4	100.10546	100.10546	303.66232	-303.66232	-108.896944	11.0006
Stage 5	100.209187	100.001733	317.03828	-315.15042	-130.82875	11.0006
Stage 6	625.64021	626.68359	1639.794	-1649.2892	-420.75696	68.809
Stage 7	625.70794	626.61573	1658.5192	-1666.7807	-452.0737	68.809
Stage 8	99.576503	100.634417	289.02536	-298.65225	-96.108649	11.0006

### 4.3. Risultati NTC2018: A2+M2+R1

#### 4.3.1. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 1

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

### 4.3.2. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 1

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0



Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

### 4.3.3. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 2

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.3.4. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 2

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia Muro: RIGHT			
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.3.5. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 3

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	-65.88	27.07
Stage 3	191.6	-60.47	27.07
Stage 3	191.4	-55.27	25.99
Stage 3	191.2	-50.3	24.89
Stage 3	191	-45.54	23.77
Stage 3	190.8	-41.02	22.63
Stage 3	190.6	-36.72	21.49
Stage 3	190.4	-32.65	20.34
Stage 3	190.2	-28.81	19.19
Stage 3	190	-25.2	18.05
Stage 3	189.8	-21.82	16.93
Stage 3	189.6	-18.65	15.82
Stage 3	189.4	-15.71	14.73
Stage 3	189.2	-12.97	13.67
Stage 3	189	-10.45	12.63
Stage 3	188.8	-8.12	11.63
Stage 3	188.6	-5.99	10.65
Stage 3	188.4	-4.05	9.71
Stage 3	188.2	-2.29	8.8
Stage 3	188	-0.7	7.93
Stage 3	187.8	0.72	7.09
Stage 3	187.6	1.97	6.29
Stage 3	187.4	3.08	5.52
Stage 3	187.2	4.03	4.78
Stage 3	187	4.85	4.1
Stage 3	186.8	5.54	3.47
Stage 3	186.6	6.12	2.88
Stage 3	186.4	6.59	2.35
Stage 3	186.2	6.97	1.87
Stage 3	186	7.25	1.43
Stage 3	185.8	7.46	1.03
Stage 3	185.6	7.59	0.68
Stage 3	185.4	7.67	0.36
Stage 3	185.2	7.68	0.08
Stage 3	185	7.65	-0.16
Stage 3	184.8	7.53	-0.58
Stage 3	184.6	7.35	-0.94
Stage 3	184.4	7.1	-1.25
Stage 3	184.2	6.8	-1.5
Stage 3	184	6.45	-1.71
Stage 3	183.8	6.08	-1.87
Stage 3	183.6	5.68	-2
Stage 3	183.4	5.26	-2.08
Stage 3	183.2	4.84	-2.14
Stage 3	183	4.4	-2.16
Stage 3	182.8	3.97	-2.16
Stage 3	182.6	3.54	-2.14
Stage 3	182.4	3.13	-2.09
Stage 3	182.2	2.72	-2.02
Stage 3	182	2.33	-1.94
Stage 3	181.8	1.97	-1.83
Stage 3	181.6	1.62	-1.72
Stage 3	181.4	1.31	-1.59
Stage 3	181.2	1.02	-1.44
Stage 3	181	0.76	-1.29
Stage 3	180.8	0.54	-1.12
Stage 3	180.6	0.35	-0.94
Stage 3	180.4	0.2	-0.75
Stage 3	180.2	0.09	-0.55
Stage 3	180	0.02	-0.34
Stage 3	179.8	0	-0.12

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	-118.17	0
Stage 3	193.5	-112.67	27.52
Stage 3	193.3	-107.17	27.52
Stage 3	193.1	-101.66	27.52
Stage 3	192.9	-96.16	27.52
Stage 3	192.7	-90.65	27.52
Stage 3	192.5	-85.15	27.52
Stage 3	192.3	-79.64	27.52
Stage 3	192.1	-74.14	27.52
Stage 3	191.9	-68.64	27.52
Stage 3	191.8	-65.88	27.52

#### 4.3.6. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 3

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	65.88	-27.07
Stage 3	191.6	60.47	-27.07
Stage 3	191.4	55.27	-25.99
Stage 3	191.2	50.3	-24.89
Stage 3	191	45.54	-23.77
Stage 3	190.8	41.02	-22.63
Stage 3	190.6	36.72	-21.49
Stage 3	190.4	32.65	-20.34
Stage 3	190.2	28.81	-19.19
Stage 3	190	25.2	-18.05
Stage 3	189.8	21.82	-16.93
Stage 3	189.6	18.65	-15.82
Stage 3	189.4	15.71	-14.73
Stage 3	189.2	12.97	-13.67
Stage 3	189	10.45	-12.63
Stage 3	188.8	8.12	-11.63
Stage 3	188.6	5.99	-10.65
Stage 3	188.4	4.05	-9.71
Stage 3	188.2	2.29	-8.8
Stage 3	188	0.7	-7.93
Stage 3	187.8	-0.72	-7.09
Stage 3	187.6	-1.97	-6.29
Stage 3	187.4	-3.08	-5.52
Stage 3	187.2	-4.03	-4.78
Stage 3	187	-4.85	-4.1
Stage 3	186.8	-5.54	-3.47
Stage 3	186.6	-6.12	-2.88
Stage 3	186.4	-6.59	-2.35
Stage 3	186.2	-6.97	-1.87
Stage 3	186	-7.25	-1.43
Stage 3	185.8	-7.46	-1.03
Stage 3	185.6	-7.59	-0.68
Stage 3	185.4	-7.67	-0.36
Stage 3	185.2	-7.68	-0.08
Stage 3	185	-7.65	0.16
Stage 3	184.8	-7.53	0.58
Stage 3	184.6	-7.35	0.94
Stage 3	184.4	-7.1	1.25
Stage 3	184.2	-6.8	1.5
Stage 3	184	-6.45	1.71
Stage 3	183.8	-6.08	1.87
Stage 3	183.6	-5.68	2
Stage 3	183.4	-5.26	2.08
Stage 3	183.2	-4.84	2.14
Stage 3	183	-4.4	2.16
Stage 3	182.8	-3.97	2.16
Stage 3	182.6	-3.54	2.14
Stage 3	182.4	-3.13	2.09
Stage 3	182.2	-2.72	2.02
Stage 3	182	-2.33	1.94
Stage 3	181.8	-1.97	1.83
Stage 3	181.6	-1.62	1.72
Stage 3	181.4	-1.31	1.59
Stage 3	181.2	-1.02	1.44
Stage 3	181	-0.76	1.29
Stage 3	180.8	-0.54	1.12
Stage 3	180.6	-0.35	0.94
Stage 3	180.4	-0.2	0.75
Stage 3	180.2	-0.09	0.55
Stage 3	180	-0.02	0.34
Stage 3	179.8	0	0.12



Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	118.17	0
Stage 3	193.5	112.67	-27.52
Stage 3	193.3	107.17	-27.52
Stage 3	193.1	101.66	-27.52
Stage 3	192.9	96.16	-27.52
Stage 3	192.7	90.65	-27.52
Stage 3	192.5	85.15	-27.52
Stage 3	192.3	79.64	-27.52
Stage 3	192.1	74.14	-27.52
Stage 3	191.9	68.64	-27.52
Stage 3	191.8	65.88	-27.52

#### 4.3.7. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 4

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	-93.56	66.1
Stage 4	191.6	-80.34	66.1
Stage 4	191.4	-67.9	62.17
Stage 4	191.2	-56.24	58.31
Stage 4	191	-45.33	54.54
Stage 4	190.8	-35.16	50.87
Stage 4	190.6	-25.7	47.3
Stage 4	190.4	-16.93	43.83
Stage 4	190.2	-8.84	40.47
Stage 4	190	-1.39	37.22
Stage 4	189.8	5.42	34.08
Stage 4	189.6	11.63	31.05
Stage 4	189.4	17.26	28.12
Stage 4	189.2	22.32	25.3
Stage 4	189	26.83	22.58
Stage 4	188.8	30.82	19.95
Stage 4	188.6	34.3	17.42
Stage 4	188.4	37.3	14.98
Stage 4	188.2	39.82	12.61
Stage 4	188	41.89	10.33
Stage 4	187.8	43.51	8.11
Stage 4	187.6	44.7	5.96
Stage 4	187.4	45.48	3.87
Stage 4	187.2	45.84	1.83
Stage 4	187	45.82	-0.13
Stage 4	186.8	45.42	-2
Stage 4	186.6	44.66	-3.8
Stage 4	186.4	43.55	-5.53
Stage 4	186.2	42.11	-7.2
Stage 4	186	40.35	-8.81
Stage 4	185.8	38.27	-10.38
Stage 4	185.6	35.89	-11.91
Stage 4	185.4	33.21	-13.4
Stage 4	185.2	30.23	-14.88
Stage 4	185	26.97	-16.33
Stage 4	184.8	23.91	-15.3
Stage 4	184.6	21.06	-14.25
Stage 4	184.4	18.42	-13.2
Stage 4	184.2	15.99	-12.16
Stage 4	184	13.76	-11.13
Stage 4	183.8	11.74	-10.12
Stage 4	183.6	9.91	-9.14
Stage 4	183.4	8.27	-8.19
Stage 4	183.2	6.81	-7.29
Stage 4	183	5.53	-6.42
Stage 4	182.8	4.41	-5.6
Stage 4	182.6	3.44	-4.83
Stage 4	182.4	2.62	-4.1
Stage 4	182.2	1.94	-3.43
Stage 4	182	1.37	-2.81
Stage 4	181.8	0.92	-2.24
Stage 4	181.6	0.58	-1.74
Stage 4	181.4	0.32	-1.29
Stage 4	181.2	0.14	-0.9
Stage 4	181	0.02	-0.58
Stage 4	180.8	-0.04	-0.31
Stage 4	180.6	-0.06	-0.11
Stage 4	180.4	-0.06	0.03
Stage 4	180.2	-0.04	0.1
Stage 4	180	-0.01	0.12
Stage 4	179.8	0	0.07

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	-0.13
Stage 4	193.9	-0.03	-0.13
Stage 4	193.7	-0.17	-0.72
Stage 4	193.7	-245.29	-0.72
Stage 4	193.5	-227.91	86.92
Stage 4	193.3	-210.72	85.94
Stage 4	193.1	-193.78	84.71
Stage 4	192.9	-177.14	83.2
Stage 4	192.7	-160.86	81.42
Stage 4	192.5	-144.98	79.36
Stage 4	192.3	-129.58	77.03
Stage 4	192.1	-114.7	74.42
Stage 4	191.9	-100.45	71.24
Stage 4	191.8	-93.56	68.93

#### 4.3.8. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 4

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	93.56	-66.1
Stage 4	191.6	80.34	-66.1
Stage 4	191.4	67.9	-62.17
Stage 4	191.2	56.24	-58.31
Stage 4	191	45.33	-54.54
Stage 4	190.8	35.16	-50.87
Stage 4	190.6	25.7	-47.3
Stage 4	190.4	16.93	-43.83
Stage 4	190.2	8.84	-40.47
Stage 4	190	1.39	-37.22
Stage 4	189.8	-5.42	-34.08
Stage 4	189.6	-11.63	-31.05
Stage 4	189.4	-17.26	-28.12
Stage 4	189.2	-22.32	-25.3
Stage 4	189	-26.83	-22.58
Stage 4	188.8	-30.82	-19.95
Stage 4	188.6	-34.3	-17.42
Stage 4	188.4	-37.3	-14.98
Stage 4	188.2	-39.82	-12.61
Stage 4	188	-41.89	-10.33
Stage 4	187.8	-43.51	-8.11
Stage 4	187.6	-44.7	-5.96
Stage 4	187.4	-45.48	-3.87
Stage 4	187.2	-45.84	-1.83
Stage 4	187	-45.82	0.13
Stage 4	186.8	-45.42	2
Stage 4	186.6	-44.66	3.8
Stage 4	186.4	-43.55	5.53
Stage 4	186.2	-42.11	7.2
Stage 4	186	-40.35	8.81
Stage 4	185.8	-38.27	10.38
Stage 4	185.6	-35.89	11.91
Stage 4	185.4	-33.21	13.4
Stage 4	185.2	-30.23	14.88
Stage 4	185	-26.97	16.33
Stage 4	184.8	-23.91	15.3
Stage 4	184.6	-21.06	14.25
Stage 4	184.4	-18.42	13.2
Stage 4	184.2	-15.99	12.16
Stage 4	184	-13.76	11.13
Stage 4	183.8	-11.74	10.12
Stage 4	183.6	-9.91	9.14
Stage 4	183.4	-8.27	8.19
Stage 4	183.2	-6.81	7.29
Stage 4	183	-5.53	6.42
Stage 4	182.8	-4.41	5.6
Stage 4	182.6	-3.44	4.83
Stage 4	182.4	-2.62	4.1
Stage 4	182.2	-1.94	3.43
Stage 4	182	-1.37	2.81
Stage 4	181.8	-0.92	2.24
Stage 4	181.6	-0.58	1.74
Stage 4	181.4	-0.32	1.29
Stage 4	181.2	-0.14	0.9
Stage 4	181	-0.02	0.58
Stage 4	180.8	0.04	0.31
Stage 4	180.6	0.06	0.11
Stage 4	180.4	0.06	-0.03
Stage 4	180.2	0.04	-0.1
Stage 4	180	0.01	-0.12
Stage 4	179.8	0	-0.07

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	0.13
Stage 4	193.9	0.03	0.13
Stage 4	193.7	0.17	0.72
Stage 4	193.7	245.29	0.72
Stage 4	193.5	227.91	-86.92
Stage 4	193.3	210.72	-85.94
Stage 4	193.1	193.78	-84.71
Stage 4	192.9	177.14	-83.2
Stage 4	192.7	160.86	-81.42
Stage 4	192.5	144.98	-79.36
Stage 4	192.3	129.58	-77.03
Stage 4	192.1	114.7	-74.42
Stage 4	191.9	100.45	-71.24
Stage 4	191.8	93.56	-68.93

#### 4.3.9. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 5

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	-82.77	70.58
Stage 5	191.6	-68.65	70.58
Stage 5	191.4	-55.43	66.13
Stage 5	191.2	-43.07	61.77
Stage 5	191	-31.57	57.54
Stage 5	190.8	-20.88	53.44
Stage 5	190.6	-10.99	49.46
Stage 5	190.4	-1.86	45.62
Stage 5	190.2	6.52	41.9
Stage 5	190	14.18	38.32
Stage 5	189.8	21.16	34.86
Stage 5	189.6	27.46	31.53
Stage 5	189.4	33.13	28.32
Stage 5	189.2	38.17	25.23
Stage 5	189	42.62	22.25
Stage 5	188.8	46.5	19.37
Stage 5	188.6	49.81	16.59
Stage 5	188.4	52.59	13.9
Stage 5	188.2	54.85	11.29
Stage 5	188	56.6	8.76
Stage 5	187.8	57.86	6.29
Stage 5	187.6	58.64	3.88
Stage 5	187.4	58.94	1.53
Stage 5	187.2	58.78	-0.79
Stage 5	187	58.18	-3.04
Stage 5	186.8	57.13	-5.21
Stage 5	186.6	55.67	-7.33
Stage 5	186.4	53.79	-9.39
Stage 5	186.2	51.51	-11.41
Stage 5	186	48.83	-13.4
Stage 5	185.8	45.75	-15.37
Stage 5	185.6	42.29	-17.32
Stage 5	185.4	38.44	-19.26
Stage 5	185.2	34.2	-21.2
Stage 5	185	29.57	-23.15
Stage 5	184.8	25.32	-21.22
Stage 5	184.6	21.46	-19.33
Stage 5	184.4	17.96	-17.49
Stage 5	184.2	14.82	-15.71
Stage 5	184	12.02	-13.99
Stage 5	183.8	9.55	-12.36
Stage 5	183.6	7.39	-10.8
Stage 5	183.4	5.52	-9.33
Stage 5	183.2	3.93	-7.95
Stage 5	183	2.6	-6.66
Stage 5	182.8	1.51	-5.47
Stage 5	182.6	0.63	-4.38
Stage 5	182.4	-0.05	-3.38
Stage 5	182.2	-0.54	-2.49
Stage 5	182	-0.88	-1.69
Stage 5	181.8	-1.08	-1
Stage 5	181.6	-1.16	-0.4
Stage 5	181.4	-1.14	0.08
Stage 5	181.2	-1.05	0.47
Stage 5	181	-0.9	0.75
Stage 5	180.8	-0.72	0.92
Stage 5	180.6	-0.52	0.99
Stage 5	180.4	-0.32	0.96
Stage 5	180.2	-0.16	0.82
Stage 5	180	-0.05	0.58
Stage 5	179.8	0	0.23

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	-0.75
Stage 5	193.9	-0.15	-0.75
Stage 5	193.7	-0.66	-2.54
Stage 5	193.7	-253.27	-2.54
Stage 5	193.5	-232.78	102.46
Stage 5	193.3	-212.75	100.13
Stage 5	193.1	-193.25	97.52
Stage 5	192.9	-174.32	94.64
Stage 5	192.7	-156.02	91.48
Stage 5	192.5	-138.41	88.05
Stage 5	192.3	-121.54	84.35
Stage 5	192.1	-105.47	80.37
Stage 5	191.9	-90.15	76.57
Stage 5	191.8	-82.77	73.83

#### 4.3.10. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 5

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	85.86	-71.13
Stage 5	191.6	71.63	-71.13
Stage 5	191.4	58.35	-66.4
Stage 5	191.2	45.99	-61.79
Stage 5	191	34.53	-57.34
Stage 5	190.8	23.92	-53.04
Stage 5	190.6	14.14	-48.89
Stage 5	190.4	5.16	-44.91
Stage 5	190.2	-3.06	-41.08
Stage 5	190	-10.54	-37.41
Stage 5	189.8	-17.32	-33.89
Stage 5	189.6	-23.42	-30.52
Stage 5	189.4	-28.88	-27.3
Stage 5	189.2	-33.72	-24.22
Stage 5	189	-37.98	-21.27
Stage 5	188.8	-41.67	-18.45
Stage 5	188.6	-44.82	-15.76
Stage 5	188.4	-47.46	-13.18
Stage 5	188.2	-49.6	-10.72
Stage 5	188	-51.27	-8.35
Stage 5	187.8	-52.48	-6.07
Stage 5	187.6	-53.26	-3.87
Stage 5	187.4	-53.6	-1.75
Stage 5	187.2	-53.54	0.31
Stage 5	187	-53.09	2.28
Stage 5	186.8	-52.26	4.15
Stage 5	186.6	-51.07	5.93
Stage 5	186.4	-49.55	7.63
Stage 5	186.2	-47.69	9.27
Stage 5	186	-45.52	10.84
Stage 5	185.8	-43.05	12.37
Stage 5	185.6	-40.28	13.85
Stage 5	185.4	-37.22	15.3
Stage 5	185.2	-33.88	16.72
Stage 5	185	-30.26	18.12
Stage 5	184.8	-26.86	16.98
Stage 5	184.6	-23.69	15.83
Stage 5	184.4	-20.76	14.67
Stage 5	184.2	-18.05	13.53
Stage 5	184	-15.57	12.39
Stage 5	183.8	-13.32	11.28
Stage 5	183.6	-11.28	10.2
Stage 5	183.4	-9.44	9.16
Stage 5	183.2	-7.81	8.16
Stage 5	183	-6.37	7.21
Stage 5	182.8	-5.11	6.3
Stage 5	182.6	-4.02	5.45
Stage 5	182.4	-3.09	4.65
Stage 5	182.2	-2.31	3.9
Stage 5	182	-1.67	3.21
Stage 5	181.8	-1.15	2.59
Stage 5	181.6	-0.75	2.02
Stage 5	181.4	-0.44	1.53
Stage 5	181.2	-0.22	1.09
Stage 5	181	-0.08	0.72
Stage 5	180.8	0	0.42
Stage 5	180.6	0.04	0.19
Stage 5	180.4	0.05	0.02
Stage 5	180.2	0.03	-0.07
Stage 5	180	0.01	-0.1
Stage 5	179.8	0	-0.06



Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia Muro: RIGHT			
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	0.61
Stage 5	193.9	0.12	0.61
Stage 5	193.7	0.55	2.13
Stage 5	193.7	258.44	2.13
Stage 5	193.5	237.82	-103.11
Stage 5	193.3	217.62	-101
Stage 5	193.1	197.91	-98.57
Stage 5	192.9	178.74	-95.83
Stage 5	192.7	160.19	-92.77
Stage 5	192.5	142.31	-89.39
Stage 5	192.3	125.17	-85.69
Stage 5	192.1	108.84	-81.67
Stage 5	191.9	93.32	-77.59
Stage 5	191.8	85.86	-74.61

#### 4.3.11. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 6

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	-774.68	290.22
Stage 6	191.6	-716.64	290.22
Stage 6	191.4	-660.27	281.82
Stage 6	191.2	-605.68	272.96
Stage 6	191	-552.94	263.69
Stage 6	190.8	-502.13	254.03
Stage 6	190.6	-453.33	244
Stage 6	190.4	-406.61	233.63
Stage 6	190.2	-362.02	222.92
Stage 6	190	-319.62	212.03
Stage 6	189.8	-279.39	201.15
Stage 6	189.6	-241.33	190.3
Stage 6	189.4	-205.43	179.49
Stage 6	189.2	-171.68	168.72
Stage 6	189	-140.08	158.01
Stage 6	188.8	-110.61	147.36
Stage 6	188.6	-83.27	136.79
Stage 6	188.4	-58	126.31
Stage 6	188.2	-34.83	115.87
Stage 6	188	-13.69	105.72
Stage 6	187.8	5.49	95.9
Stage 6	187.6	22.77	86.39
Stage 6	187.4	38.21	77.2
Stage 6	187.2	51.88	68.34
Stage 6	187	63.85	59.84
Stage 6	186.8	74.19	51.7
Stage 6	186.6	82.97	43.92
Stage 6	186.4	90.27	36.49
Stage 6	186.2	96.15	29.4
Stage 6	186	100.68	22.64
Stage 6	185.8	103.92	16.2
Stage 6	185.6	105.93	10.07
Stage 6	185.4	106.78	4.24
Stage 6	185.2	106.52	-1.32
Stage 6	185	105.2	-6.55
Stage 6	184.8	102.91	-11.45
Stage 6	184.6	99.78	-15.67
Stage 6	184.4	95.93	-19.25
Stage 6	184.2	91.49	-22.23
Stage 6	184	86.56	-24.65
Stage 6	183.8	81.25	-26.56
Stage 6	183.6	75.65	-27.99
Stage 6	183.4	69.85	-28.97
Stage 6	183.2	63.94	-29.55
Stage 6	183	57.99	-29.74
Stage 6	182.8	52.08	-29.58
Stage 6	182.6	46.26	-29.09
Stage 6	182.4	40.6	-28.3
Stage 6	182.2	35.16	-27.21
Stage 6	182	29.99	-25.85
Stage 6	181.8	25.14	-24.25
Stage 6	181.6	20.65	-22.46
Stage 6	181.4	16.54	-20.56
Stage 6	181.2	12.83	-18.53
Stage 6	181	9.55	-16.4
Stage 6	180.8	6.72	-14.16
Stage 6	180.6	4.35	-11.81
Stage 6	180.4	2.48	-9.36
Stage 6	180.2	1.12	-6.82
Stage 6	180	0.28	-4.17
Stage 6	179.8	0	-1.42

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	-0.07
Stage 6	193.9	-0.01	-0.07
Stage 6	193.7	-0.14	-0.64
Stage 6	193.7	-1394.56	-0.64
Stage 6	193.5	-1325.01	347.74
Stage 6	193.3	-1255.94	345.34
Stage 6	193.1	-1187.64	341.5
Stage 6	192.9	-1120.31	336.65
Stage 6	192.7	-1054.15	330.81
Stage 6	192.5	-989.34	324.02
Stage 6	192.3	-926.08	316.3
Stage 6	192.1	-864.55	307.68
Stage 6	191.9	-804.29	301.28
Stage 6	191.8	-774.68	296.12

#### 4.3.12. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 6

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	786.93	-291.22
Stage 6	191.6	728.69	-291.22
Stage 6	191.4	672.02	-283.33
Stage 6	191.2	617.03	-274.94
Stage 6	191	563.82	-266.08
Stage 6	190.8	512.46	-256.79
Stage 6	190.6	463.05	-247.07
Stage 6	190.4	415.65	-236.96
Stage 6	190.2	370.36	-226.47
Stage 6	190	327.21	-215.75
Stage 6	189.8	286.21	-204.99
Stage 6	189.6	247.37	-194.23
Stage 6	189.4	210.68	-183.46
Stage 6	189.2	176.14	-172.7
Stage 6	189	143.75	-161.95
Stage 6	188.8	113.5	-151.23
Stage 6	188.6	85.4	-140.57
Stage 6	188.4	59.4	-129.98
Stage 6	188.2	35.51	-119.46
Stage 6	188	13.72	-108.96
Stage 6	187.8	-6.04	-98.81
Stage 6	187.6	-23.84	-89
Stage 6	187.4	-39.76	-79.56
Stage 6	187.2	-53.85	-70.46
Stage 6	187	-66.2	-61.75
Stage 6	186.8	-76.88	-53.43
Stage 6	186.6	-85.98	-45.5
Stage 6	186.4	-93.57	-37.94
Stage 6	186.2	-99.72	-30.75
Stage 6	186	-104.5	-23.91
Stage 6	185.8	-107.99	-17.42
Stage 6	185.6	-110.24	-11.26
Stage 6	185.4	-111.32	-5.41
Stage 6	185.2	-111.3	0.11
Stage 6	185	-110.26	5.2
Stage 6	184.8	-108.12	10.67
Stage 6	184.6	-105.05	15.38
Stage 6	184.4	-101.17	19.39
Stage 6	184.2	-96.62	22.74
Stage 6	184	-91.53	25.46
Stage 6	183.8	-86.01	27.61
Stage 6	183.6	-80.16	29.22
Stage 6	183.4	-74.1	30.33
Stage 6	183.2	-67.91	30.96
Stage 6	183	-61.67	31.16
Stage 6	182.8	-55.48	30.95
Stage 6	182.6	-49.41	30.38
Stage 6	182.4	-43.5	29.53
Stage 6	182.2	-37.82	28.43
Stage 6	182	-32.4	27.1
Stage 6	181.8	-27.28	25.59
Stage 6	181.6	-22.5	23.89
Stage 6	181.4	-18.1	22.03
Stage 6	181.2	-14.1	20
Stage 6	181	-10.54	17.81
Stage 6	180.8	-7.44	15.48
Stage 6	180.6	-4.84	12.99
Stage 6	180.4	-2.77	10.36
Stage 6	180.2	-1.25	7.58
Stage 6	180	-0.32	4.66
Stage 6	179.8	0	1.6

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	0.07
Stage 6	193.9	0.01	0.07
Stage 6	193.7	0.11	0.48
Stage 6	193.7	1406.49	0.48
Stage 6	193.5	1336.93	-347.8
Stage 6	193.3	1267.92	-345.08
Stage 6	193.1	1199.66	-341.28
Stage 6	192.9	1132.38	-336.44
Stage 6	192.7	1066.26	-330.58
Stage 6	192.5	1001.51	-323.73
Stage 6	192.3	938.33	-315.93
Stage 6	192.1	876.89	-307.19
Stage 6	191.9	816.6	-301.42
Stage 6	191.8	786.93	-296.7

#### 4.3.13. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 7

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	-761.28	298.94
Stage 7	191.6	-701.5	298.94
Stage 7	191.4	-643.61	289.43
Stage 7	191.2	-587.7	279.54
Stage 7	191	-533.84	269.32
Stage 7	190.8	-482.09	258.77
Stage 7	190.6	-432.5	247.92
Stage 7	190.4	-385.14	236.79
Stage 7	190.2	-340.07	225.38
Stage 7	190	-297.3	213.84
Stage 7	189.8	-256.83	202.36
Stage 7	189.6	-218.64	190.95
Stage 7	189.4	-182.71	179.63
Stage 7	189.2	-149.04	168.38
Stage 7	189	-117.59	157.21
Stage 7	188.8	-88.37	146.12
Stage 7	188.6	-61.35	135.15
Stage 7	188.4	-36.5	124.28
Stage 7	188.2	-13.8	113.48
Stage 7	188	6.79	102.96
Stage 7	187.8	25.34	92.75
Stage 7	187.6	41.91	82.86
Stage 7	187.4	56.57	73.29
Stage 7	187.2	69.38	64.03
Stage 7	187	80.4	55.12
Stage 7	186.8	89.71	46.55
Stage 7	186.6	97.37	38.32
Stage 7	186.4	103.46	30.41
Stage 7	186.2	108.02	22.81
Stage 7	186	111.12	15.52
Stage 7	185.8	112.82	8.51
Stage 7	185.6	113.18	1.77
Stage 7	185.4	112.24	-4.7
Stage 7	185.2	110.05	-10.94
Stage 7	185	106.68	-16.83
Stage 7	184.8	102.63	-20.29
Stage 7	184.6	98	-23.15
Stage 7	184.4	92.91	-25.45
Stage 7	184.2	87.46	-27.24
Stage 7	184	81.75	-28.55
Stage 7	183.8	75.86	-29.42
Stage 7	183.6	69.88	-29.89
Stage 7	183.4	63.89	-29.99
Stage 7	183.2	57.94	-29.75
Stage 7	183	52.1	-29.2
Stage 7	182.8	46.42	-28.36
Stage 7	182.6	40.97	-27.25
Stage 7	182.4	35.77	-26.01
Stage 7	182.2	30.85	-24.63
Stage 7	182	26.22	-23.14
Stage 7	181.8	21.91	-21.55
Stage 7	181.6	17.94	-19.86
Stage 7	181.4	14.32	-18.08
Stage 7	181.2	11.08	-16.22
Stage 7	181	8.22	-14.28
Stage 7	180.8	5.77	-12.28
Stage 7	180.6	3.73	-10.2
Stage 7	180.4	2.12	-8.05
Stage 7	180.2	0.95	-5.83
Stage 7	180	0.24	-3.55
Stage 7	179.8	0	-1.21

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	-0.96
Stage 7	193.9	-0.19	-0.96
Stage 7	193.7	-0.79	-3
Stage 7	193.7	-1409.87	-3
Stage 7	193.5	-1336.1	368.82
Stage 7	193.3	-1263.13	364.86
Stage 7	193.1	-1191.26	359.37
Stage 7	192.9	-1120.65	353.01
Stage 7	192.7	-1051.49	345.82
Stage 7	192.5	-983.93	337.81
Stage 7	192.3	-918.12	329.04
Stage 7	192.1	-854.22	319.52
Stage 7	191.9	-791.86	311.8
Stage 7	191.8	-761.28	305.72

#### 4.3.14. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 7

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	775.08	-298.89
Stage 7	191.6	715.3	-298.89
Stage 7	191.4	657.31	-289.92
Stage 7	191.2	601.21	-280.53
Stage 7	191	547.06	-270.74
Stage 7	190.8	494.94	-260.58
Stage 7	190.6	444.93	-250.07
Stage 7	190.4	397.08	-239.23
Stage 7	190.2	351.47	-228.06
Stage 7	190	308.13	-216.72
Stage 7	189.8	267.05	-205.39
Stage 7	189.6	228.23	-194.1
Stage 7	189.4	191.66	-182.85
Stage 7	189.2	157.33	-171.65
Stage 7	189	125.23	-160.5
Stage 7	188.8	95.35	-149.4
Stage 7	188.6	67.69	-138.39
Stage 7	188.4	42.19	-127.47
Stage 7	188.2	18.86	-116.64
Stage 7	188	-2.32	-105.9
Stage 7	187.8	-21.41	-95.47
Stage 7	187.6	-38.49	-85.39
Stage 7	187.4	-53.62	-75.67
Stage 7	187.2	-66.88	-66.31
Stage 7	187	-78.35	-57.34
Stage 7	186.8	-88.1	-48.75
Stage 7	186.6	-96.21	-40.55
Stage 7	186.4	-102.76	-32.71
Stage 7	186.2	-107.8	-25.23
Stage 7	186	-111.42	-18.09
Stage 7	185.8	-113.67	-11.28
Stage 7	185.6	-114.63	-4.78
Stage 7	185.4	-114.35	1.42
Stage 7	185.2	-112.89	7.3
Stage 7	185	-110.33	12.78
Stage 7	184.8	-106.92	17.06
Stage 7	184.6	-102.79	20.62
Stage 7	184.4	-98.09	23.52
Stage 7	184.2	-92.93	25.79
Stage 7	184	-87.44	27.47
Stage 7	183.8	-81.72	28.61
Stage 7	183.6	-75.85	29.33
Stage 7	183.4	-69.91	29.73
Stage 7	183.2	-63.94	29.84
Stage 7	183	-58	29.69
Stage 7	182.8	-52.14	29.28
Stage 7	182.6	-46.41	28.64
Stage 7	182.4	-40.86	27.78
Stage 7	182.2	-35.51	26.72
Stage 7	182	-30.42	25.47
Stage 7	181.8	-25.61	24.04
Stage 7	181.6	-21.13	22.44
Stage 7	181.4	-16.99	20.69
Stage 7	181.2	-13.23	18.78
Stage 7	181	-9.89	16.72
Stage 7	180.8	-6.98	14.53
Stage 7	180.6	-4.54	12.19
Stage 7	180.4	-2.6	9.72
Stage 7	180.2	-1.18	7.12
Stage 7	180	-0.3	4.38
Stage 7	179.8	0	1.5



Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	1.1
Stage 7	193.9	0.22	1.1
Stage 7	193.7	0.93	3.54
Stage 7	193.7	1420.9	3.54
Stage 7	193.5	1347.4	-367.51
Stage 7	193.3	1274.79	-363.07
Stage 7	193.1	1203.25	-357.69
Stage 7	192.9	1132.96	-351.42
Stage 7	192.7	1064.11	-344.27
Stage 7	192.5	996.85	-336.29
Stage 7	192.3	931.36	-327.49
Stage 7	192.1	867.77	-317.91
Stage 7	191.9	805.6	-310.86
Stage 7	191.8	775.08	-305.23

#### 4.3.15. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Left Wall - Stage: Stage 8

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	-115.89	48.79
Stage 8	191.6	-106.14	48.79
Stage 8	191.4	-96.72	47.09
Stage 8	191.2	-87.6	45.61
Stage 8	191	-78.74	44.31
Stage 8	190.8	-70.11	43.14
Stage 8	190.6	-61.7	42.05
Stage 8	190.4	-53.49	41.01
Stage 8	190.2	-45.5	39.97
Stage 8	190	-37.71	38.94
Stage 8	189.8	-30.13	37.94
Stage 8	189.6	-22.73	36.96
Stage 8	189.4	-15.54	35.96
Stage 8	189.2	-8.54	34.99
Stage 8	189	-1.78	33.81
Stage 8	188.8	4.7	32.39
Stage 8	188.6	10.84	30.75
Stage 8	188.4	16.61	28.84
Stage 8	188.2	21.94	26.63
Stage 8	188	26.8	24.32
Stage 8	187.8	31.19	21.92
Stage 8	187.6	35.07	19.44
Stage 8	187.4	38.45	16.88
Stage 8	187.2	41.3	14.23
Stage 8	187	43.6	11.53
Stage 8	186.8	45.36	8.78
Stage 8	186.6	46.56	5.99
Stage 8	186.4	47.18	3.15
Stage 8	186.2	47.24	0.26
Stage 8	186	46.7	-2.68
Stage 8	185.8	45.57	-5.67
Stage 8	185.6	43.83	-8.71
Stage 8	185.4	41.47	-11.8
Stage 8	185.2	38.48	-14.95
Stage 8	185	34.87	-18.03
Stage 8	184.8	31.38	-17.44
Stage 8	184.6	28.03	-16.76
Stage 8	184.4	24.83	-15.99
Stage 8	184.2	21.81	-15.14
Stage 8	184	18.96	-14.23
Stage 8	183.8	16.31	-13.26
Stage 8	183.6	13.86	-12.25
Stage 8	183.4	11.62	-11.2
Stage 8	183.2	9.59	-10.12
Stage 8	183	7.79	-9.02
Stage 8	182.8	6.21	-7.9
Stage 8	182.6	4.86	-6.76
Stage 8	182.4	3.71	-5.72
Stage 8	182.2	2.76	-4.76
Stage 8	182	1.98	-3.89
Stage 8	181.8	1.36	-3.11
Stage 8	181.6	0.88	-2.42
Stage 8	181.4	0.52	-1.81
Stage 8	181.2	0.26	-1.29
Stage 8	181	0.09	-0.85
Stage 8	180.8	-0.01	-0.49
Stage 8	180.6	-0.05	-0.22
Stage 8	180.4	-0.05	-0.02
Stage 8	180.2	-0.04	0.09
Stage 8	180	-0.01	0.12
Stage 8	179.8	0	0.07

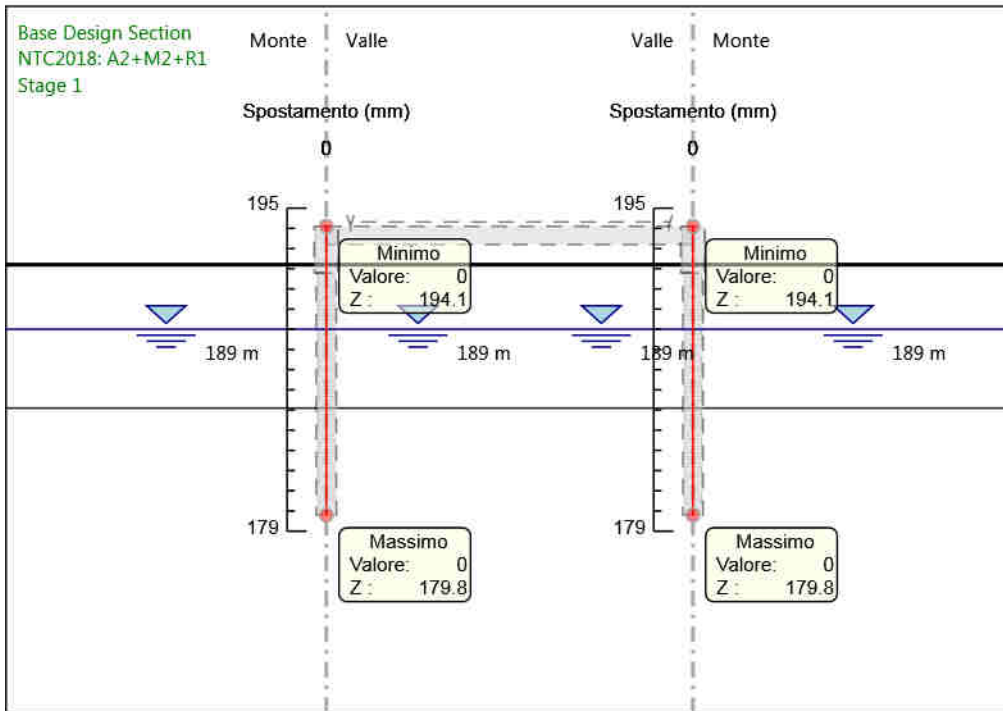
Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	-0.82
Stage 8	193.9	-0.16	-0.82
Stage 8	193.7	-0.93	-3.85
Stage 8	193.7	-227.23	-3.85
Stage 8	193.5	-213.95	66.37
Stage 8	193.3	-201.05	64.5
Stage 8	193.1	-188.46	62.96
Stage 8	192.9	-176.17	61.45
Stage 8	192.7	-164.24	59.67
Stage 8	192.5	-152.71	57.61
Stage 8	192.3	-141.66	55.28
Stage 8	192.1	-131.12	52.67
Stage 8	191.9	-120.91	51.07
Stage 8	191.8	-115.89	50.14

#### 4.3.16. Tabella Risultati Paratia NTC2018: A2+M2+R1 - Right wall - Stage: Stage 8

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	128.32	-49.55
Stage 8	191.6	118.41	-49.55
Stage 8	191.4	108.76	-48.26
Stage 8	191.2	99.33	-47.14
Stage 8	191	90.1	-46.14
Stage 8	190.8	81.06	-45.21
Stage 8	190.6	72.19	-44.32
Stage 8	190.4	63.51	-43.41
Stage 8	190.2	55.02	-42.46
Stage 8	190	46.73	-41.46
Stage 8	189.8	38.64	-40.46
Stage 8	189.6	30.75	-39.42
Stage 8	189.4	23.09	-38.32
Stage 8	189.2	15.66	-37.15
Stage 8	189	8.48	-35.87
Stage 8	188.8	1.57	-34.55
Stage 8	188.6	-5.02	-32.97
Stage 8	188.4	-11.24	-31.12
Stage 8	188.2	-17.03	-28.97
Stage 8	188	-22.34	-26.52
Stage 8	187.8	-27.14	-23.98
Stage 8	187.6	-31.42	-21.4
Stage 8	187.4	-35.17	-18.77
Stage 8	187.2	-38.39	-16.09
Stage 8	187	-41.07	-13.4
Stage 8	186.8	-43.21	-10.71
Stage 8	186.6	-44.81	-8
Stage 8	186.4	-45.87	-5.29
Stage 8	186.2	-46.38	-2.57
Stage 8	186	-46.35	0.16
Stage 8	185.8	-45.77	2.9
Stage 8	185.6	-44.64	5.66
Stage 8	185.4	-42.95	8.43
Stage 8	185.2	-40.71	11.19
Stage 8	185	-37.95	13.82
Stage 8	184.8	-35.15	13.99
Stage 8	184.6	-32.36	13.95
Stage 8	184.4	-29.62	13.71
Stage 8	184.2	-26.95	13.37
Stage 8	184	-24.37	12.91
Stage 8	183.8	-21.9	12.35
Stage 8	183.6	-19.55	11.7
Stage 8	183.4	-17.36	10.97
Stage 8	183.2	-15.32	10.22
Stage 8	183	-13.42	9.48
Stage 8	182.8	-11.66	8.77
Stage 8	182.6	-10.05	8.08
Stage 8	182.4	-8.57	7.41
Stage 8	182.2	-7.22	6.75
Stage 8	182	-6	6.11
Stage 8	181.8	-4.9	5.49
Stage 8	181.6	-3.92	4.88
Stage 8	181.4	-3.06	4.3
Stage 8	181.2	-2.32	3.73
Stage 8	181	-1.68	3.18
Stage 8	180.8	-1.15	2.64
Stage 8	180.6	-0.73	2.12
Stage 8	180.4	-0.4	1.62
Stage 8	180.2	-0.18	1.14
Stage 8	180	-0.04	0.67
Stage 8	179.8	0	0.22

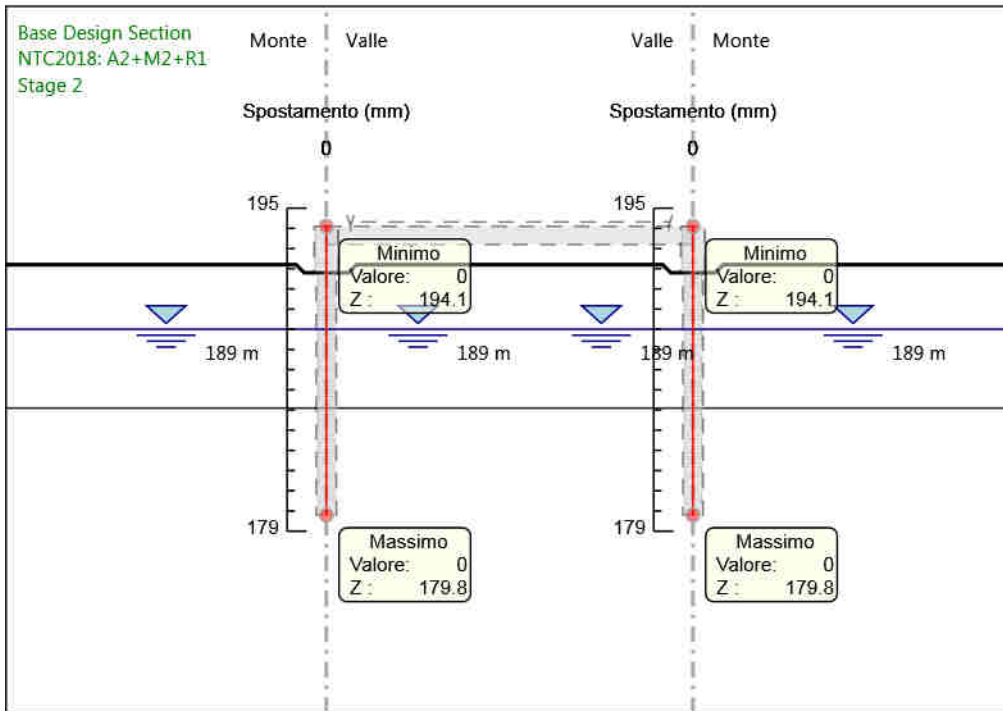
Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia Muro: RIGHT			
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	0.82
Stage 8	193.9	0.16	0.82
Stage 8	193.7	0.93	3.82
Stage 8	193.7	238.84	3.82
Stage 8	193.5	225.68	-65.84
Stage 8	193.3	212.94	-63.68
Stage 8	193.1	200.44	-62.47
Stage 8	192.9	188.25	-60.96
Stage 8	192.7	176.42	-59.18
Stage 8	192.5	164.99	-57.12
Stage 8	192.3	154.03	-54.79
Stage 8	192.1	143.6	-52.18
Stage 8	191.9	133.37	-51.12
Stage 8	191.8	128.32	-50.56

### 4.3.17. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 1



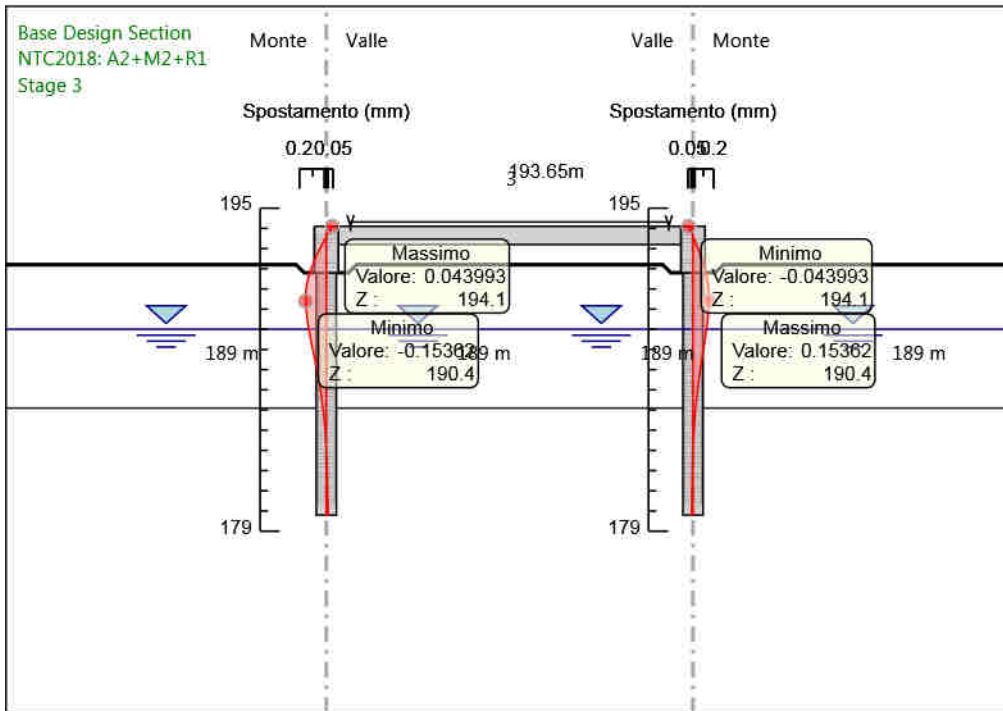
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 1  
Spostamento

### 4.3.18. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 2



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 2  
Spostamento

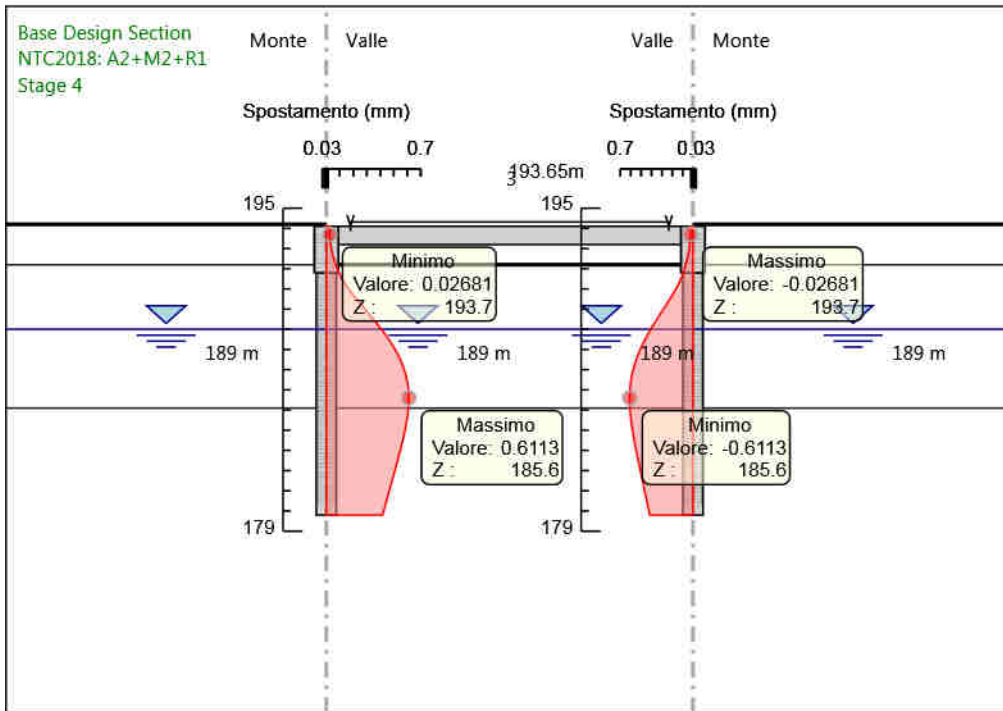
### 4.3.19. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 3



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 3  
Spostamento

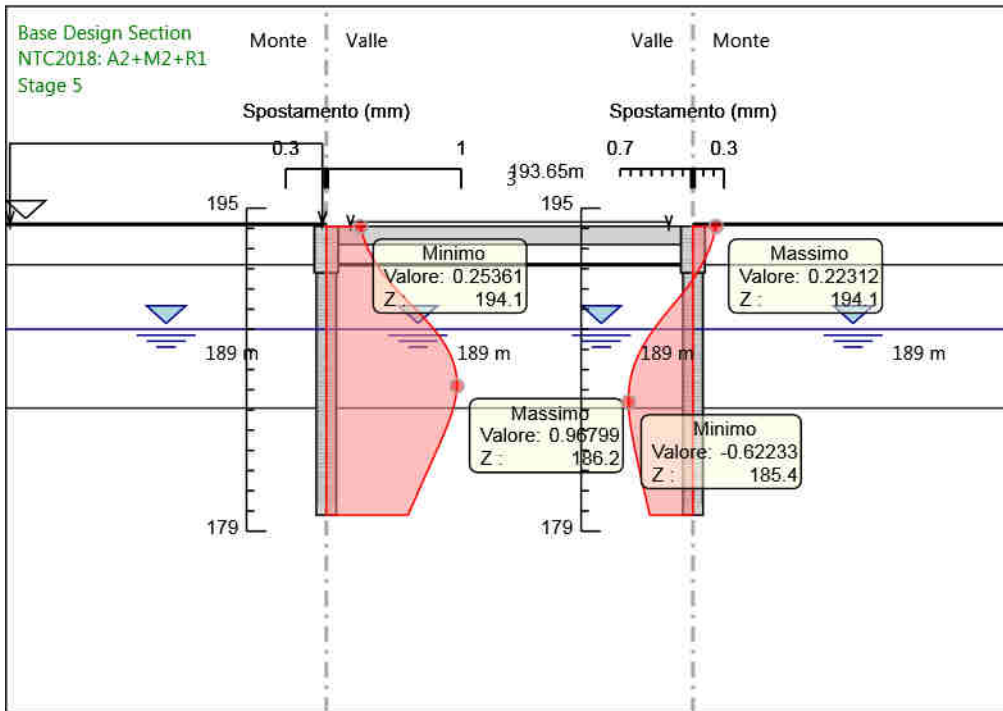


### 4.3.20. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 4



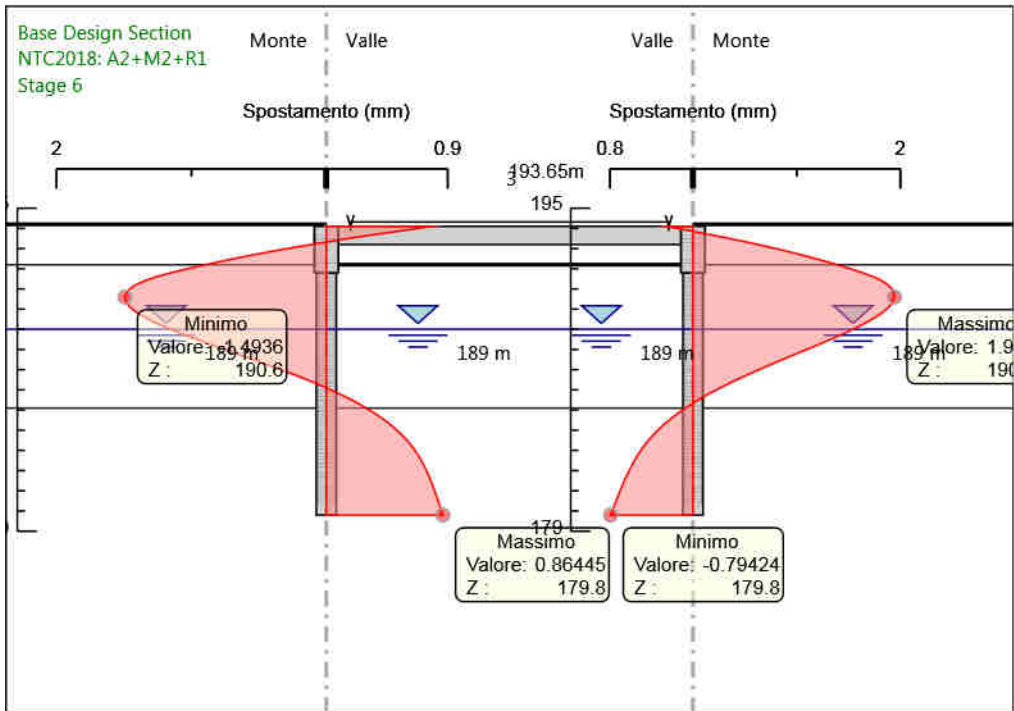
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 4  
Spostamento

### 4.3.21. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 5



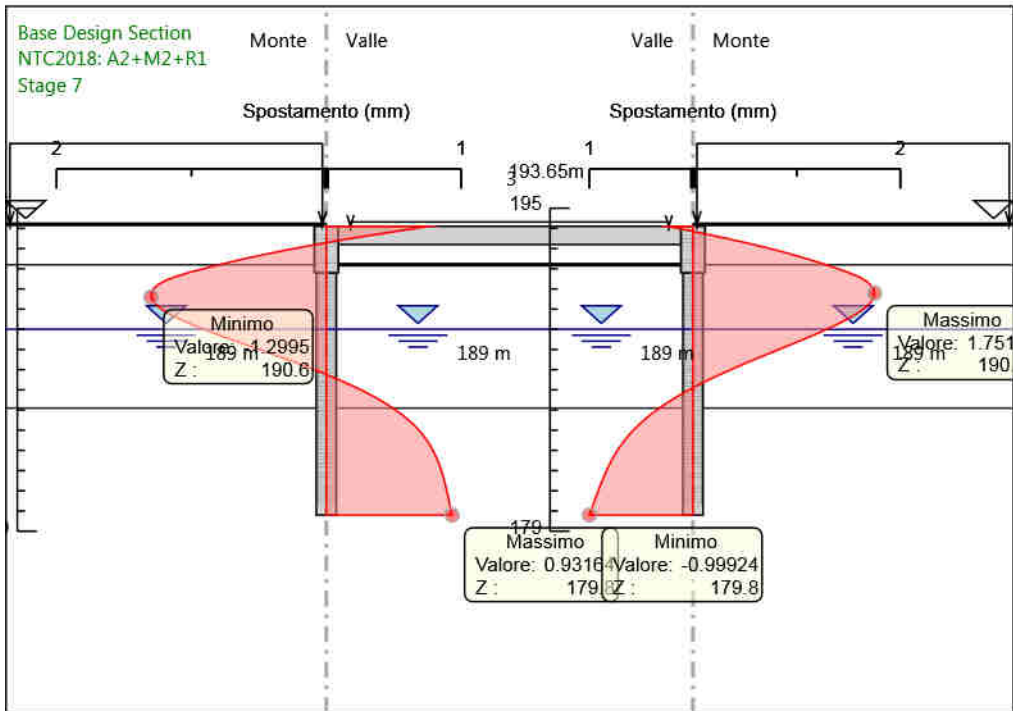
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 5  
Spostamento

### 4.3.22. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 6



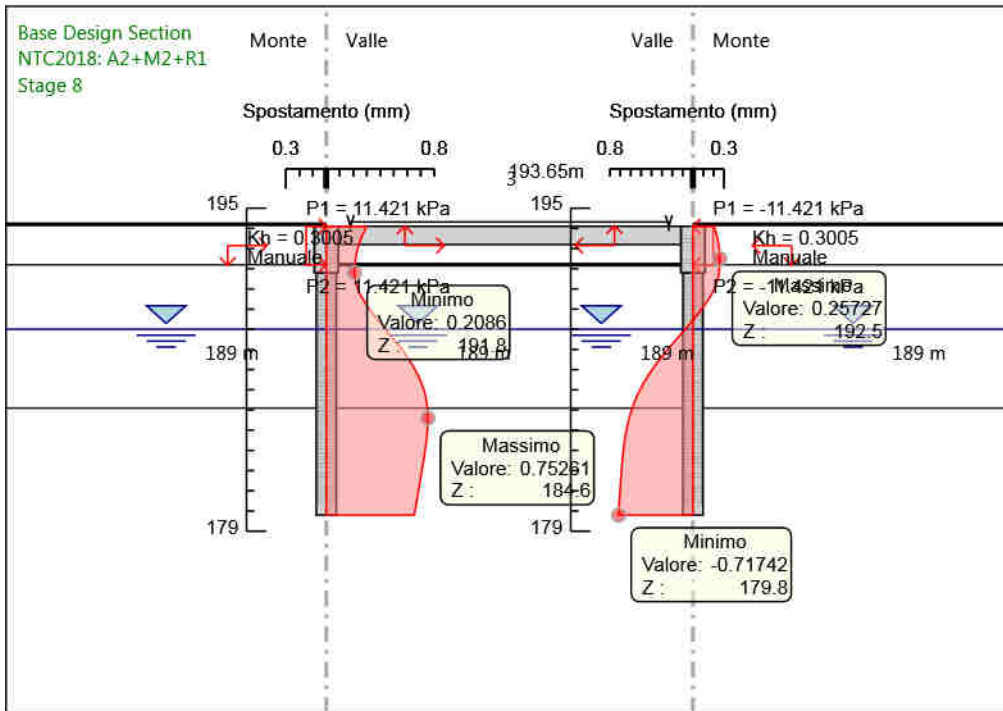
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 6  
Spostamento

### 4.3.23. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 7



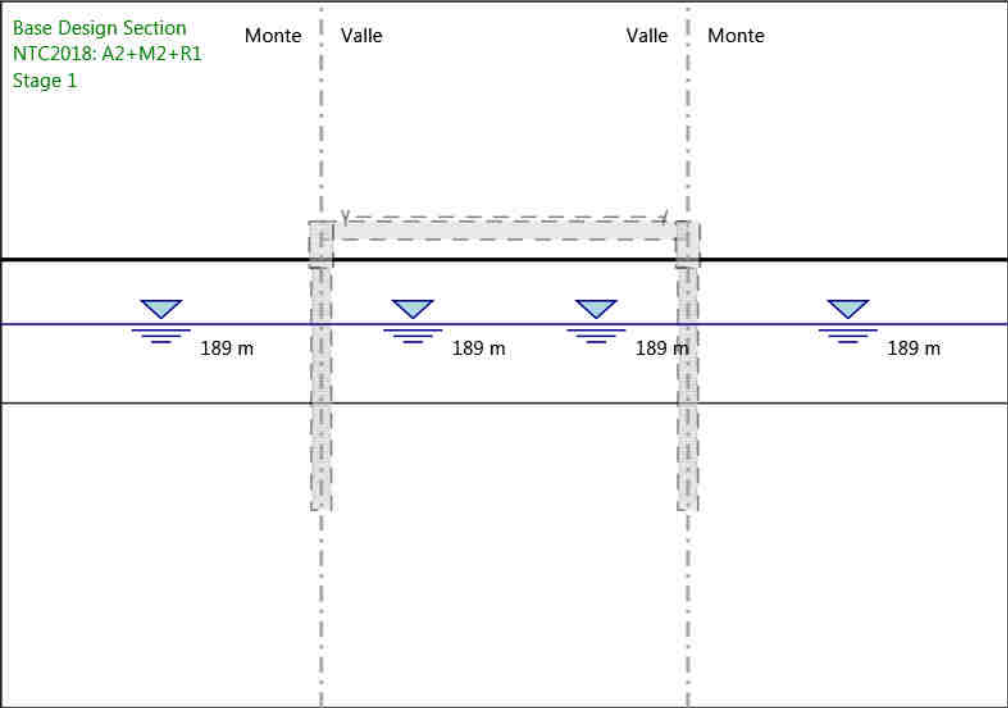
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 7  
Spostamento

### 4.3.24. Grafico Spostamento NTC2018: A2+M2+R1 - Stage: Stage 8



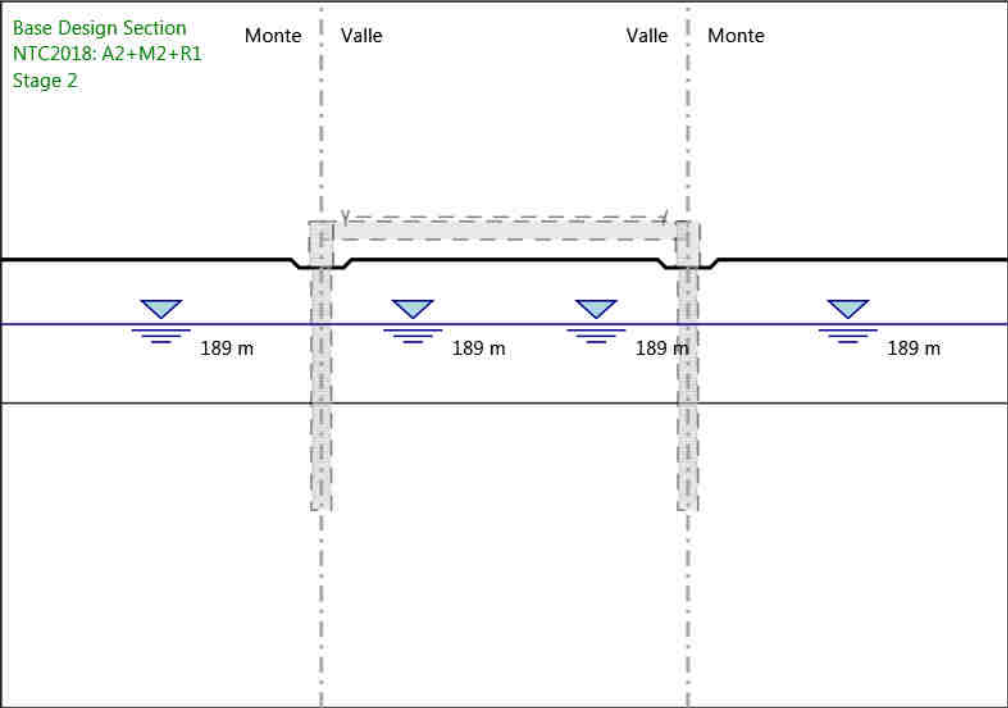
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 8  
Spostamento

4.3.25. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 1



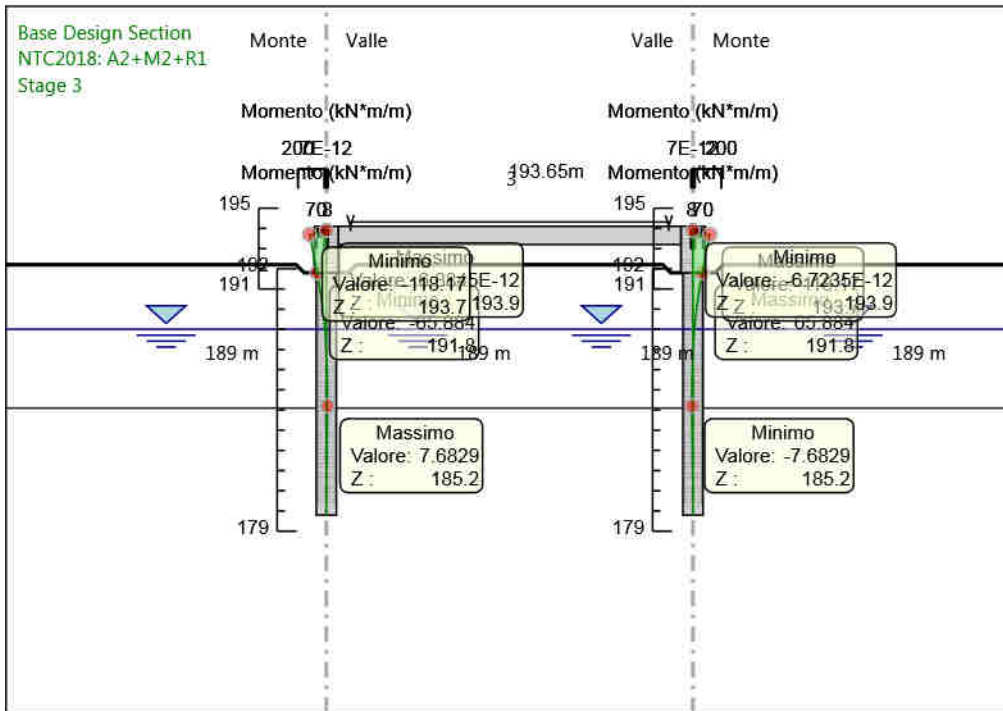
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 1  
Momento

4.3.26. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 2



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 2  
Momento

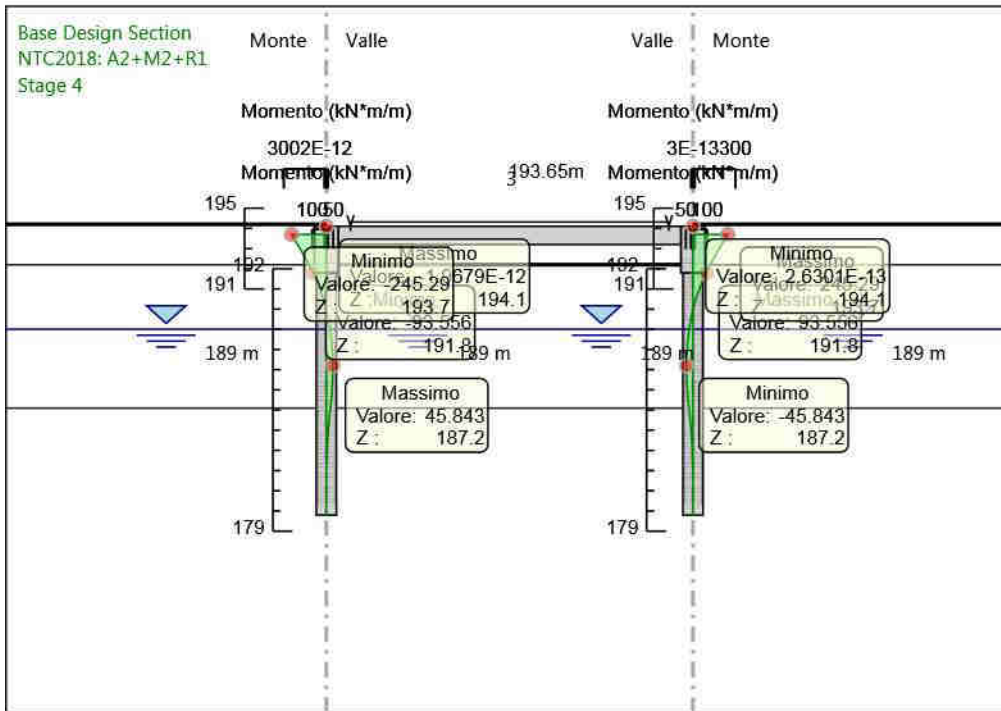
### 4.3.27. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 3



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 3  
Momento

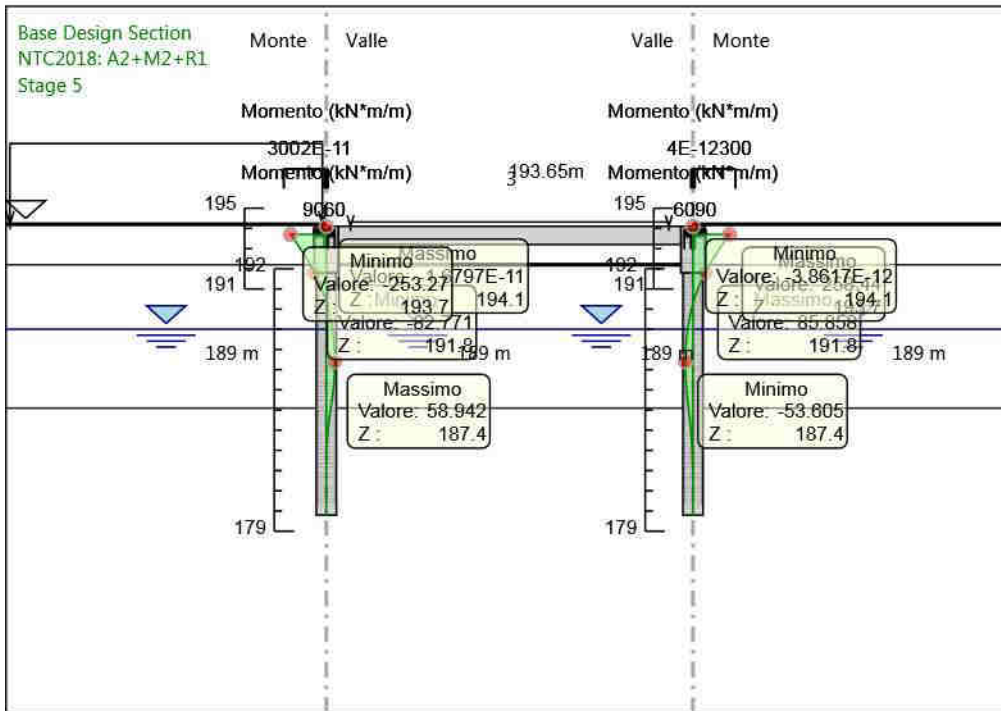


### 4.3.28. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 4



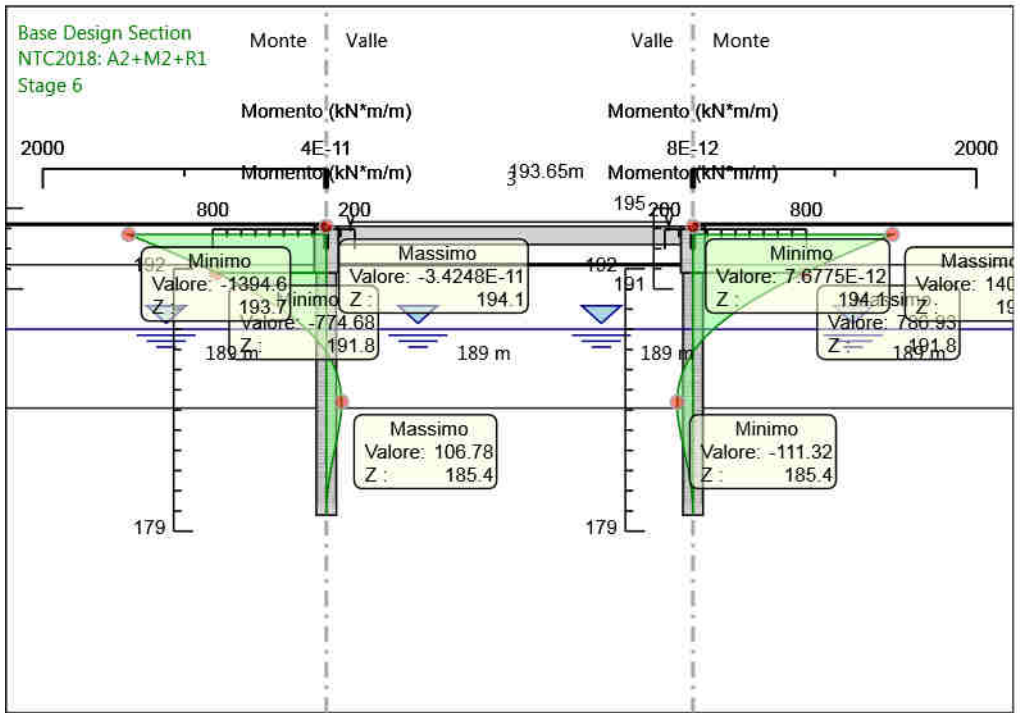
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 4  
Momento

### 4.3.29. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 5



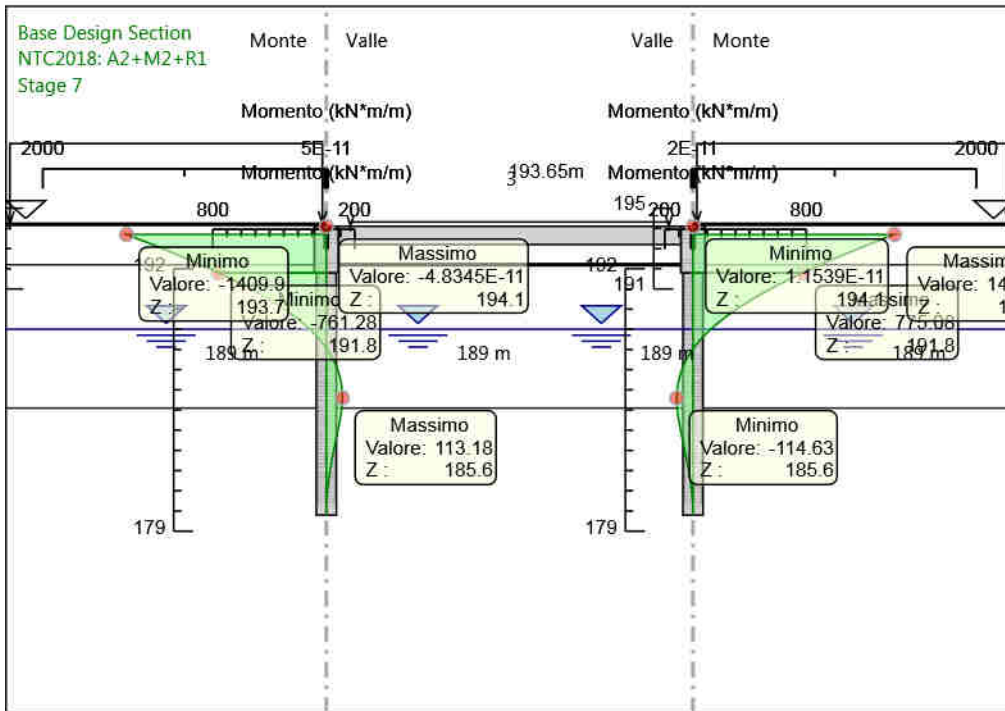
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 5  
Momento

### 4.3.30. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 6



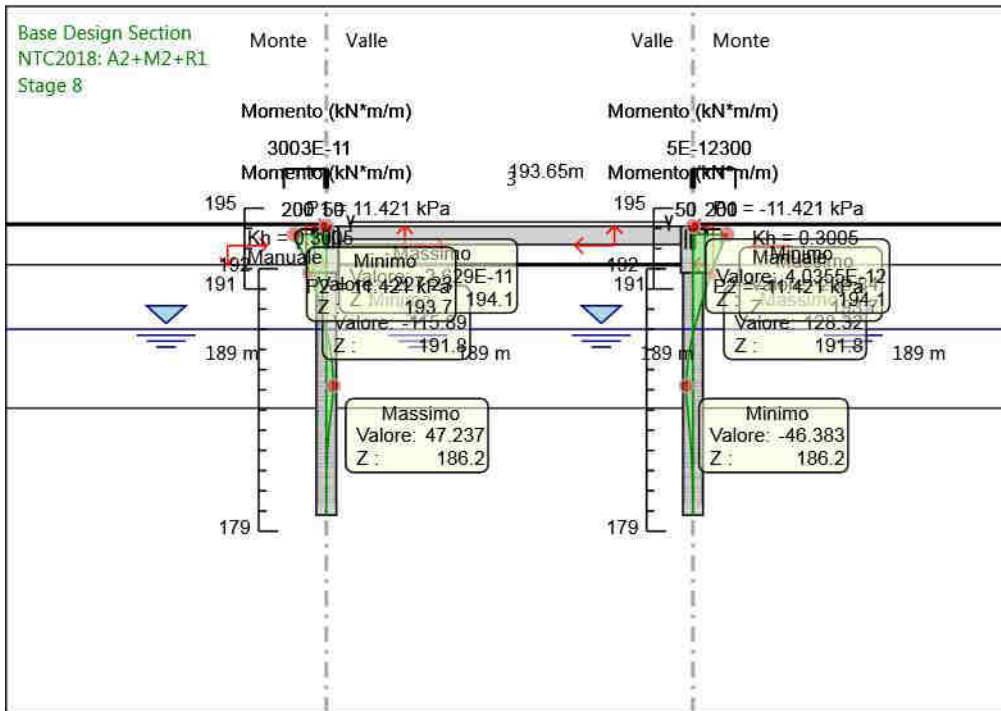
Design Assumption: NTC2018: A2+M2+R1  
 Stage: Stage 6  
 Momento

### 4.3.31. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 7



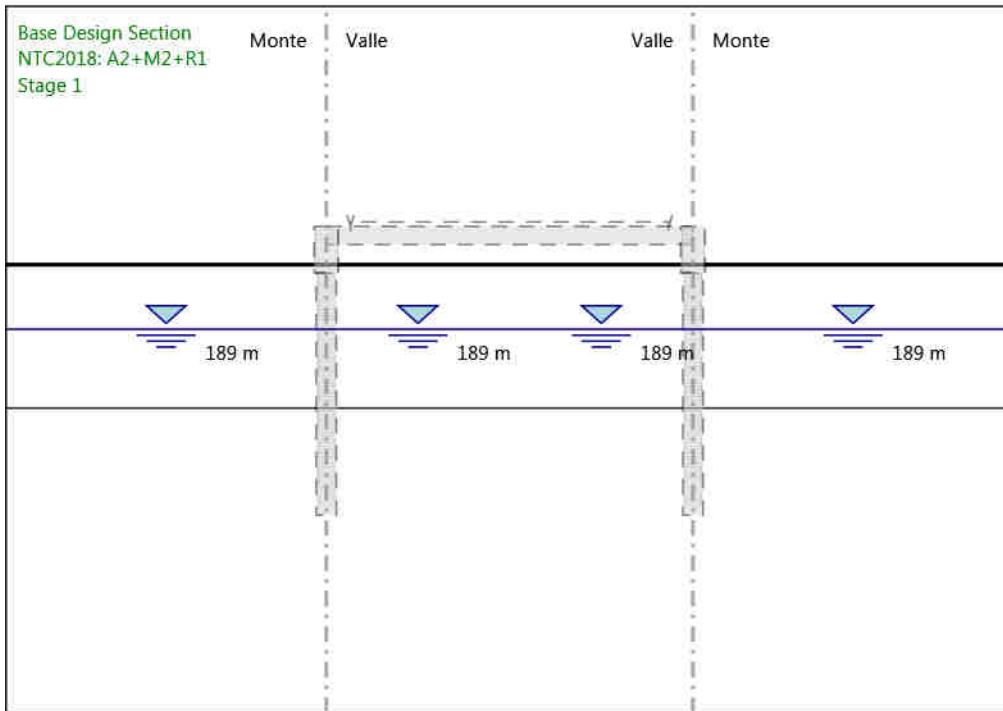
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 7  
Momento

### 4.3.32. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 8



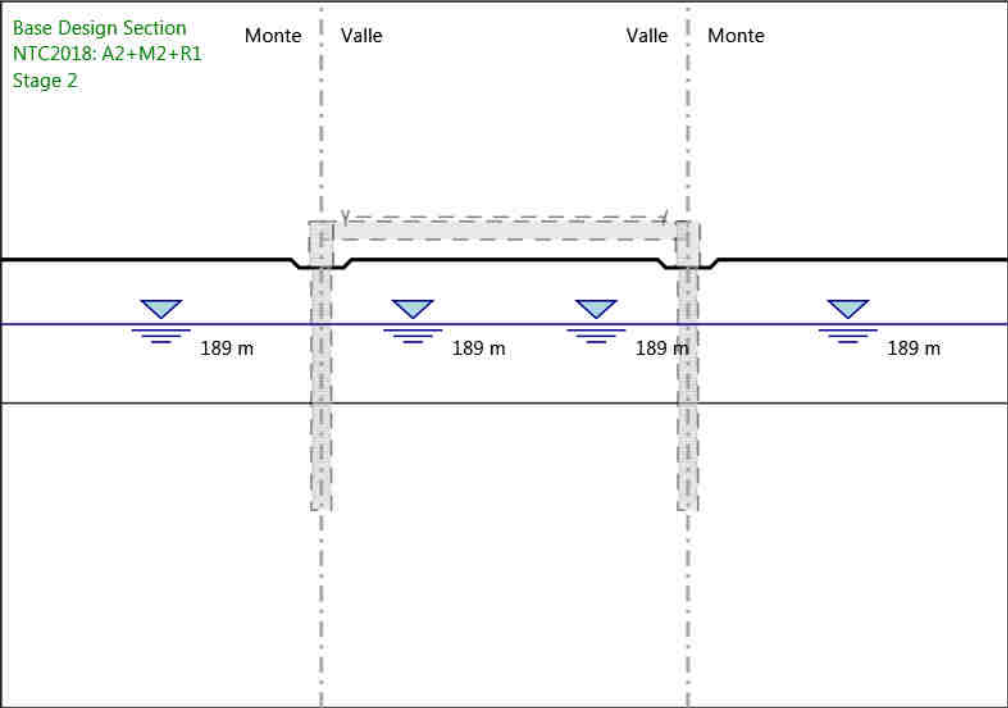
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 8  
Momento

### 4.3.33. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 1



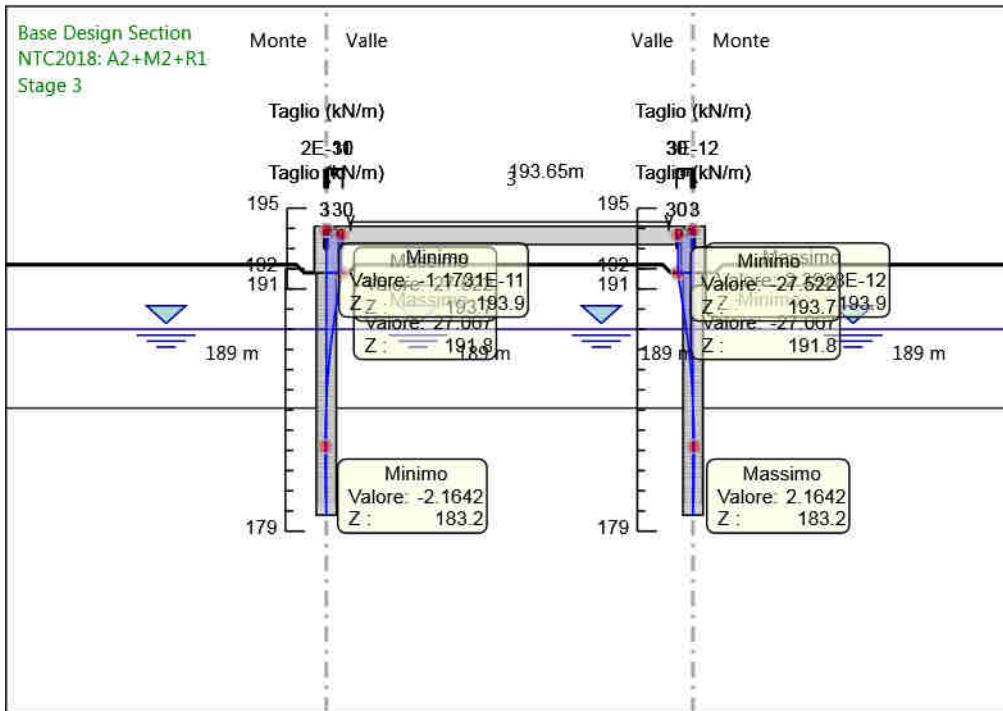
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 1  
Taglio

4.3.34. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 2



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 2  
Taglio

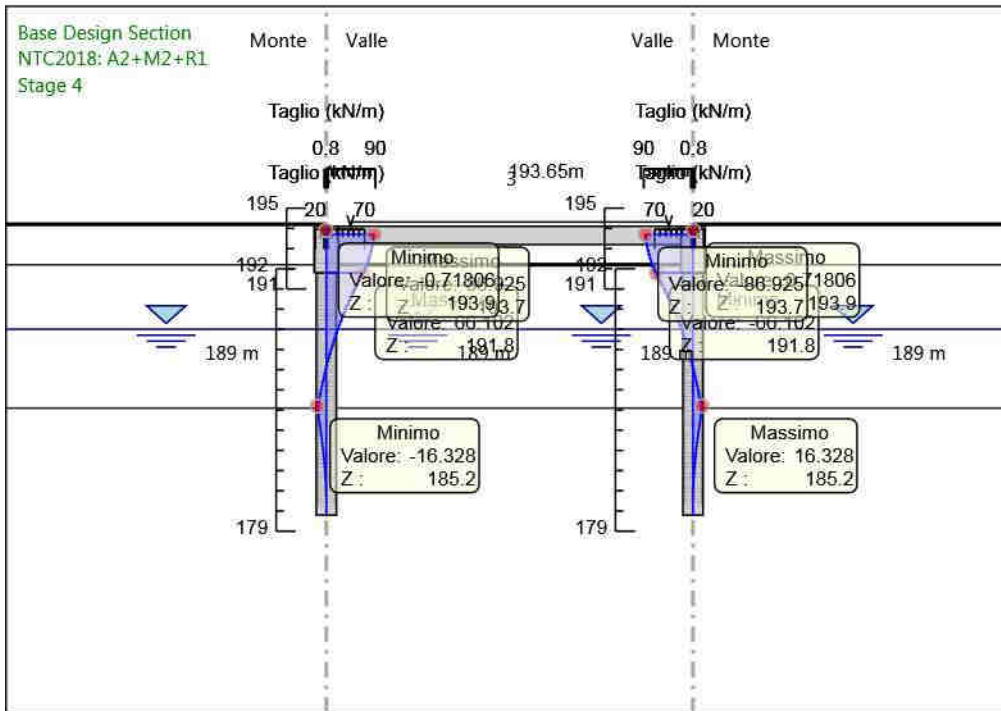
### 4.3.35. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 3



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 3  
Taglio

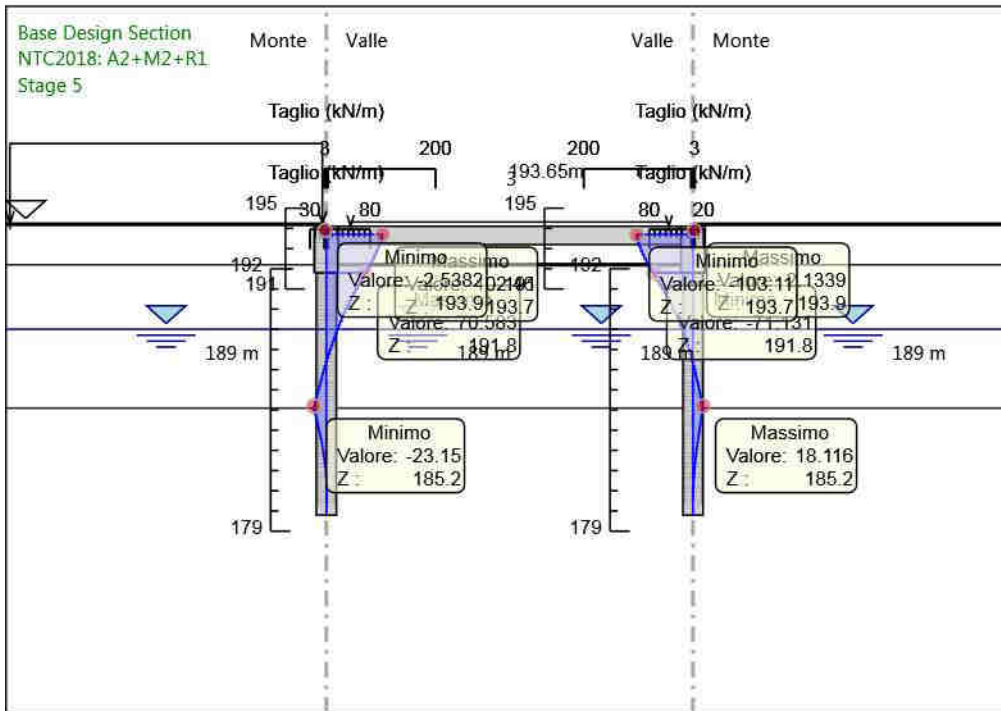


### 4.3.36. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 4



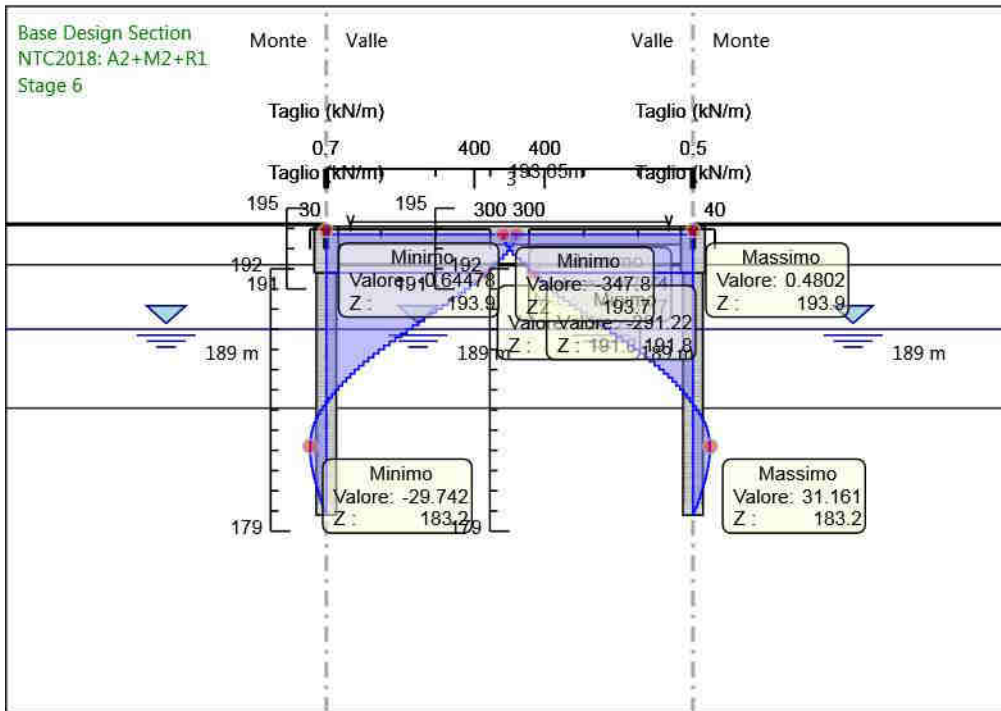
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 4  
Taglio

### 4.3.37. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 5



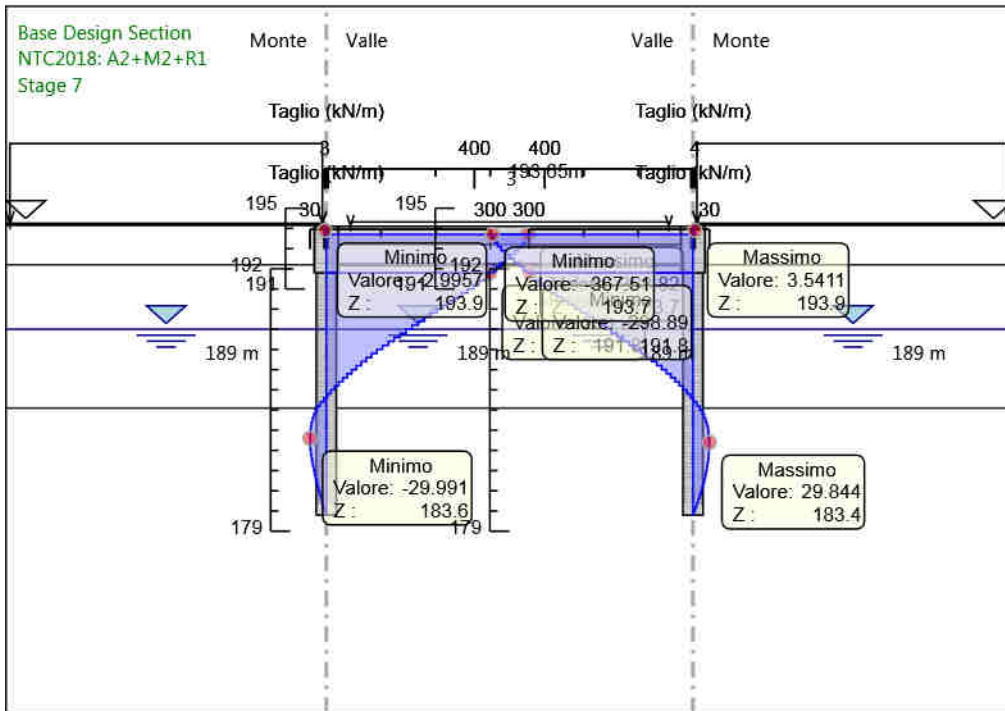
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 5  
Taglio

### 4.3.38. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 6



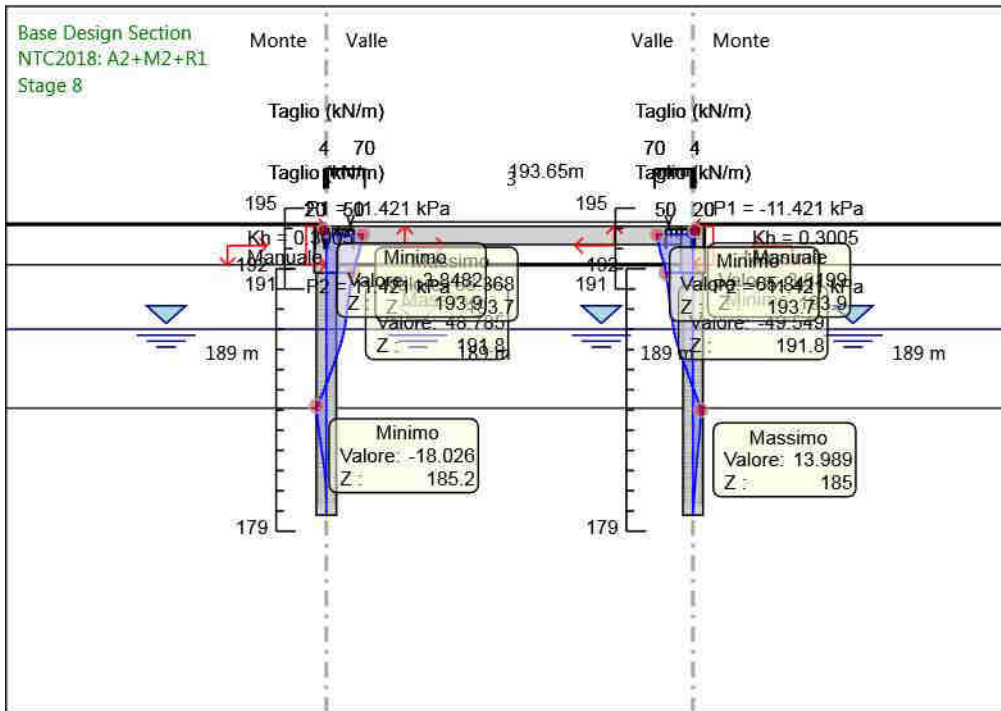
Design Assumption: NTC2018: A2+M2+R1  
 Stage: Stage 6  
 Taglio

### 4.3.39. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 7



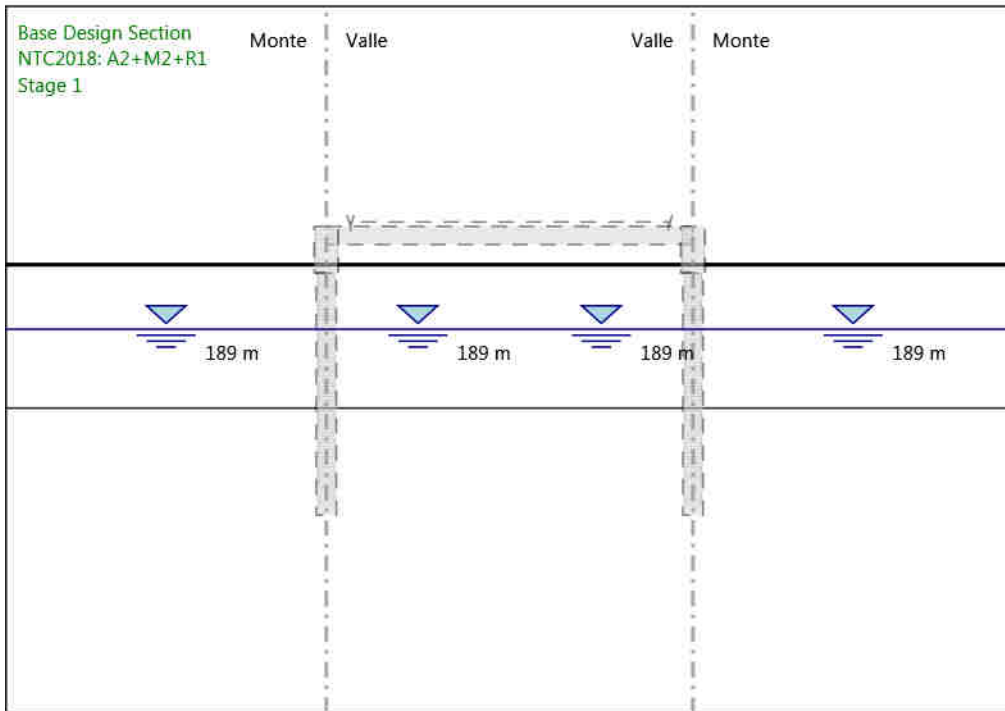
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 7  
Taglio

### 4.3.40. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 8



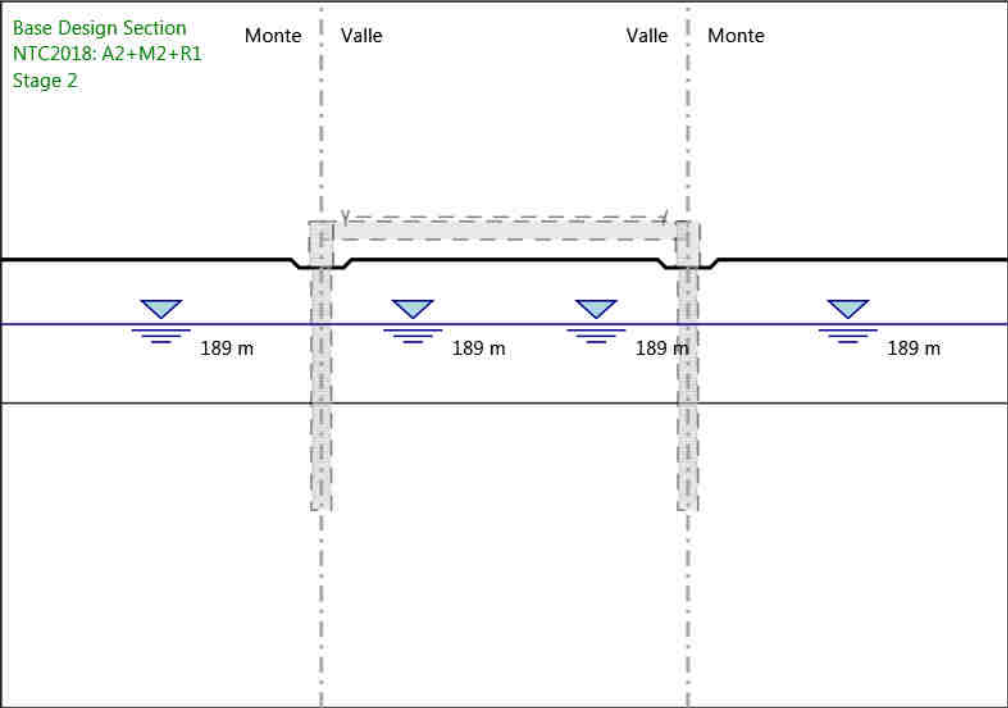
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 8  
Taglio

### 4.3.41. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 1



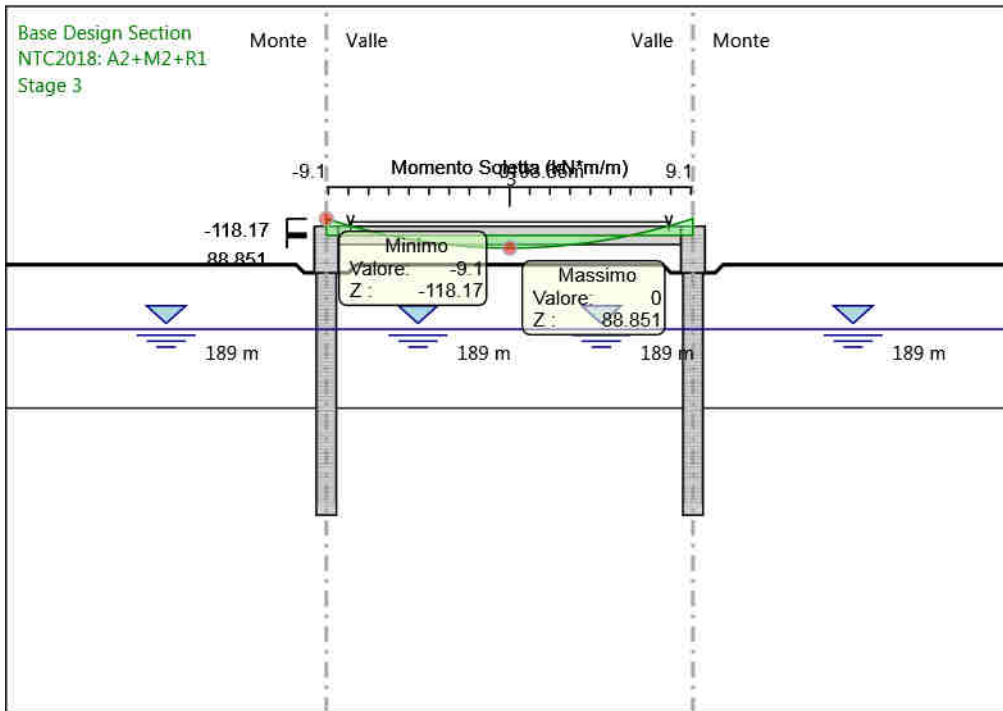
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 1  
Momento

4.3.42. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 2



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 2  
Momento

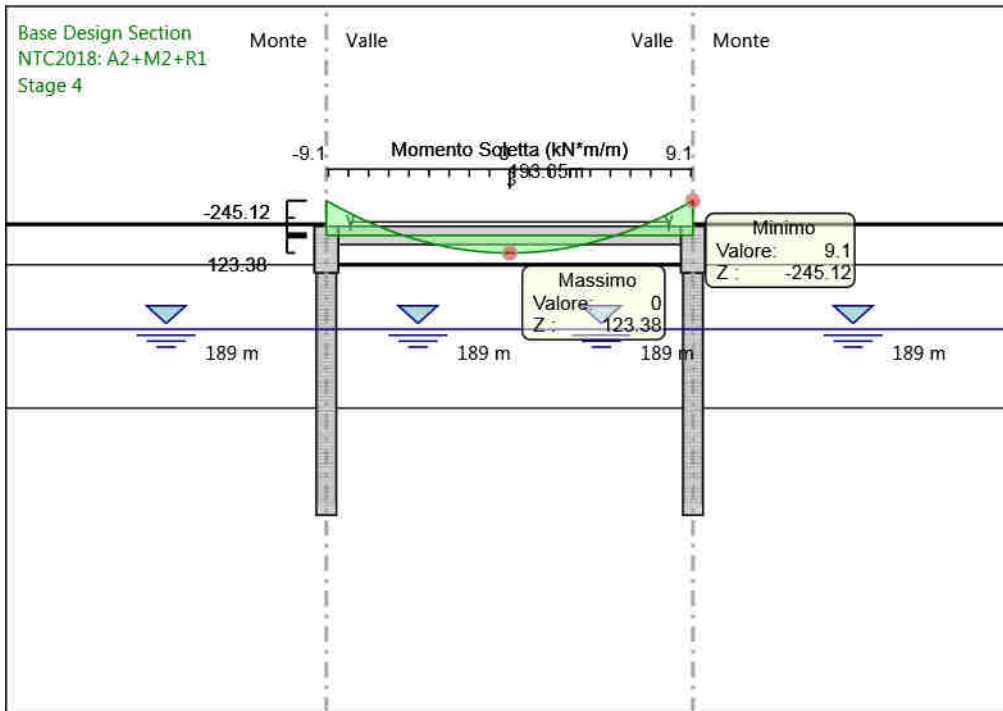
### 4.3.43. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 3



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 3  
Momento

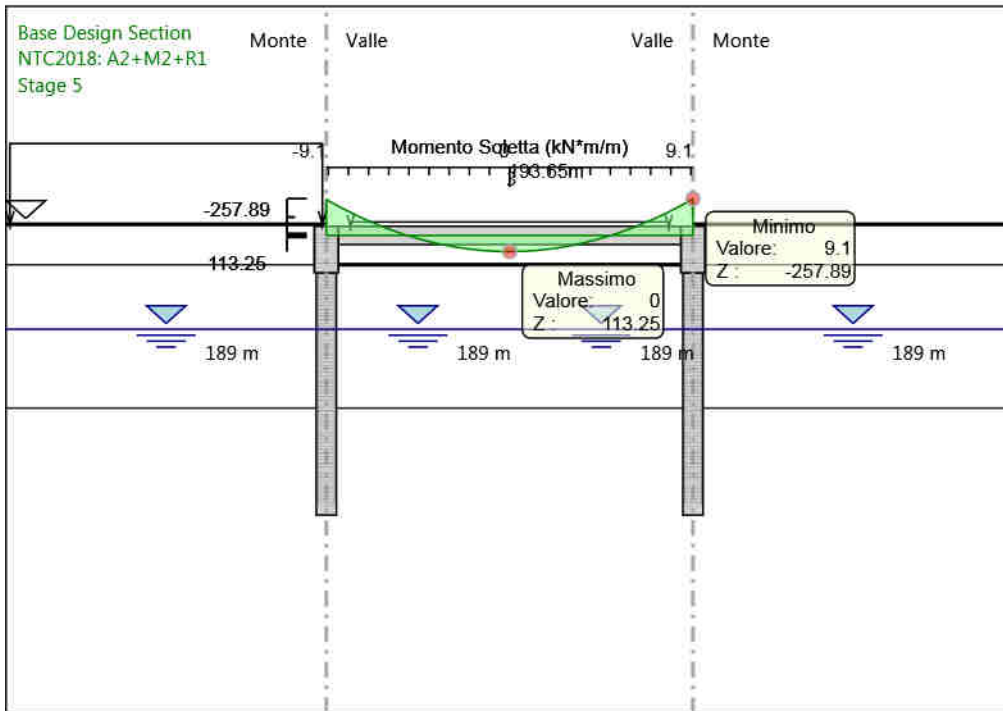


#### 4.3.44. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 4



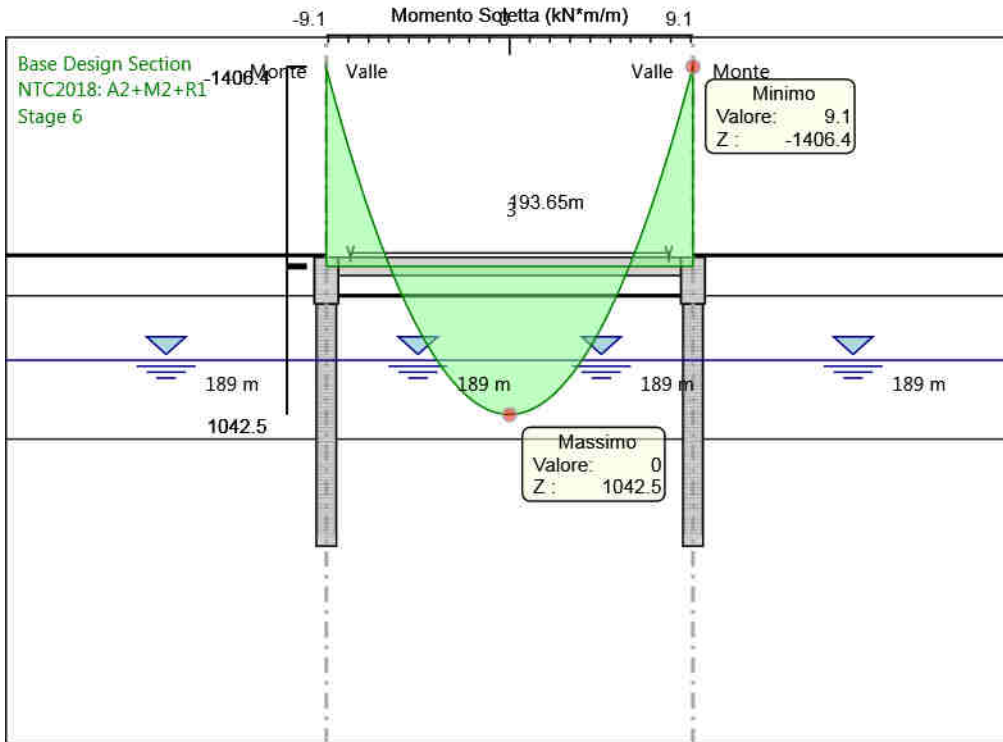
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 4  
Momento

### 4.3.45. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 5



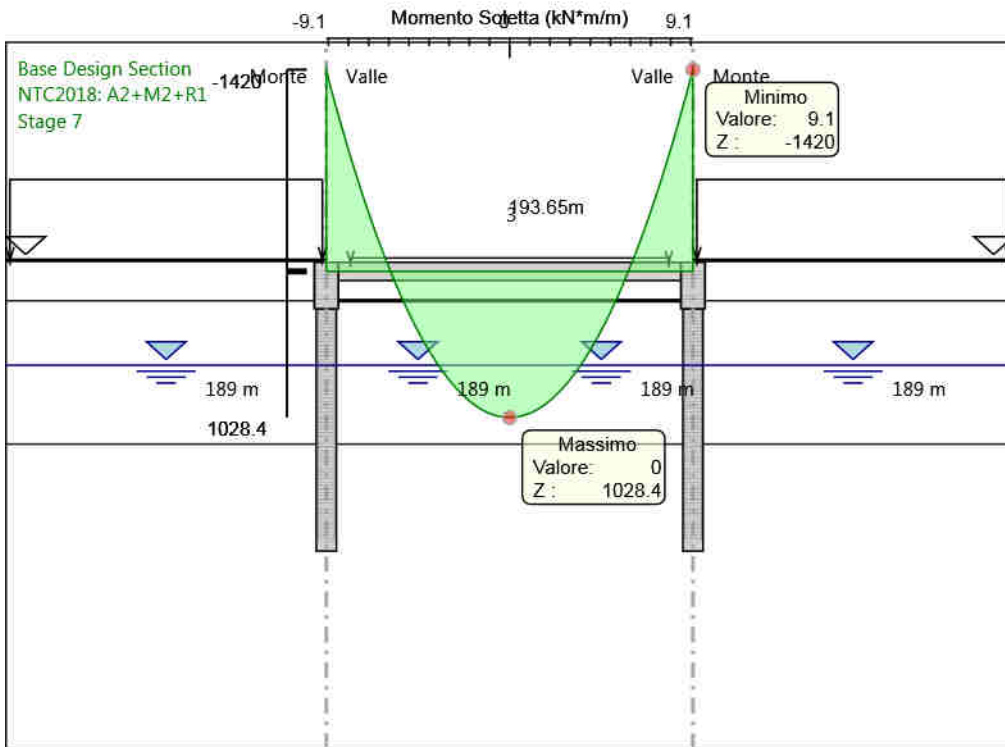
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 5  
Momento

4.3.46. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 6



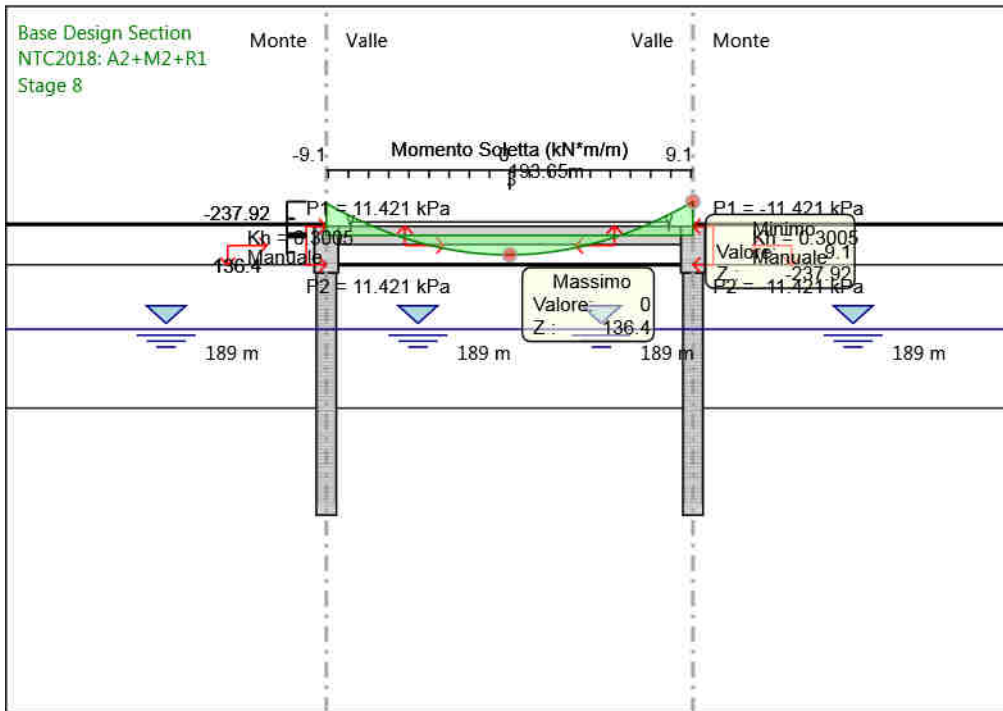
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 6  
Momento

4.3.47. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 7



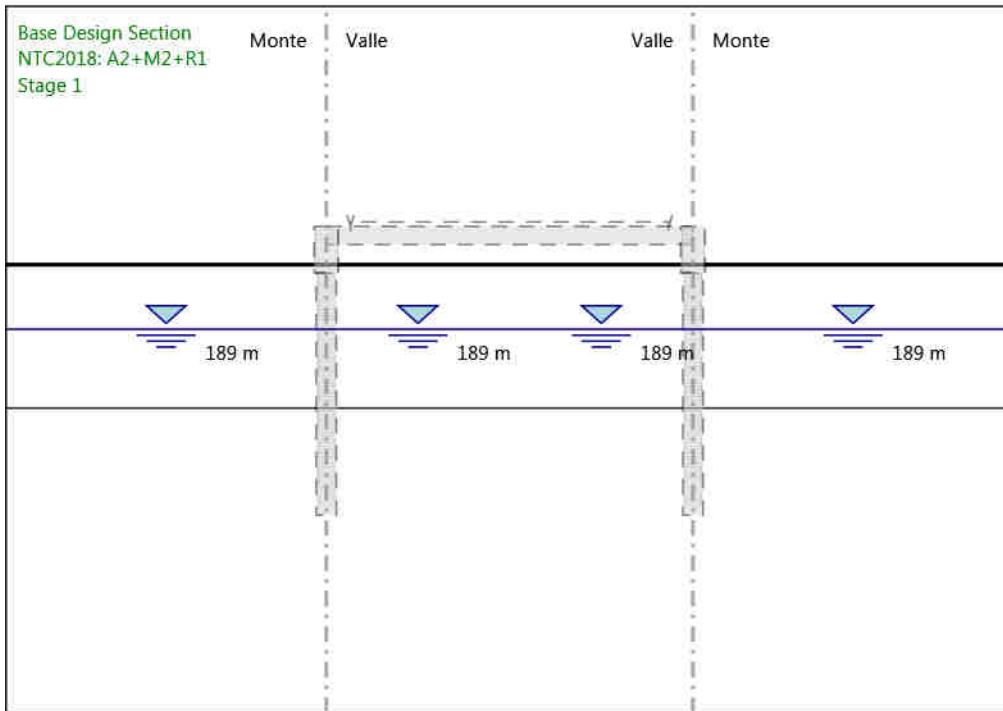
Design Assumption: NTC2018: A2+M2+R1  
 Stage: Stage 7  
 Momento

### 4.3.48. Grafico Risultati Momento NTC2018: A2+M2+R1 - Stage: Stage 8



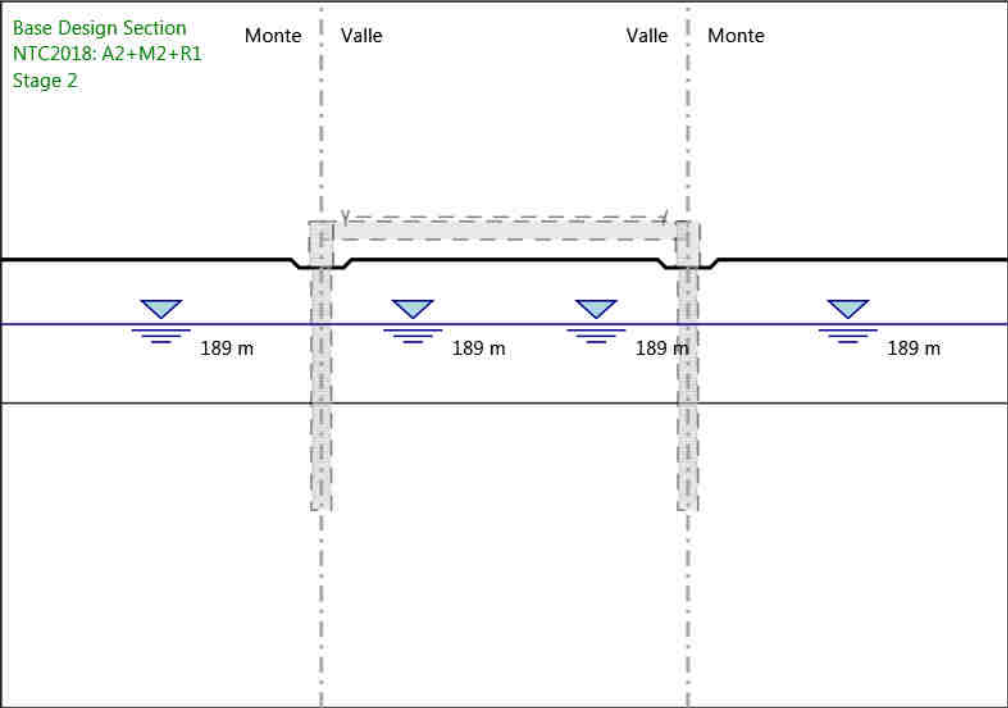
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 8  
Momento

#### 4.3.49. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 1



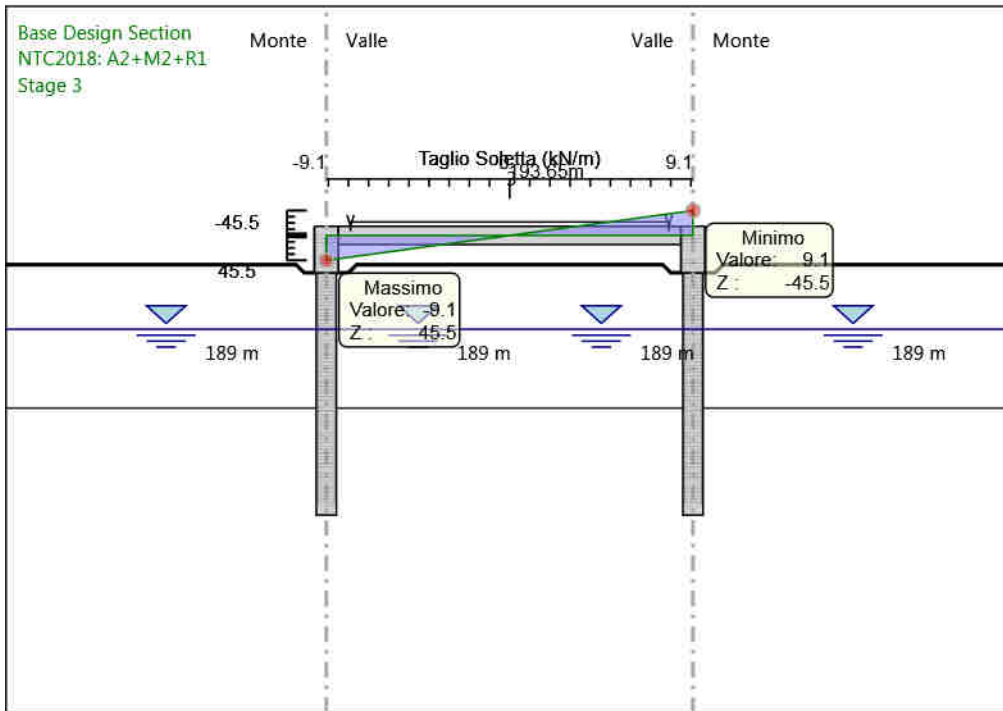
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 1  
Taglio

4.3.50. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 2



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 2  
Taglio

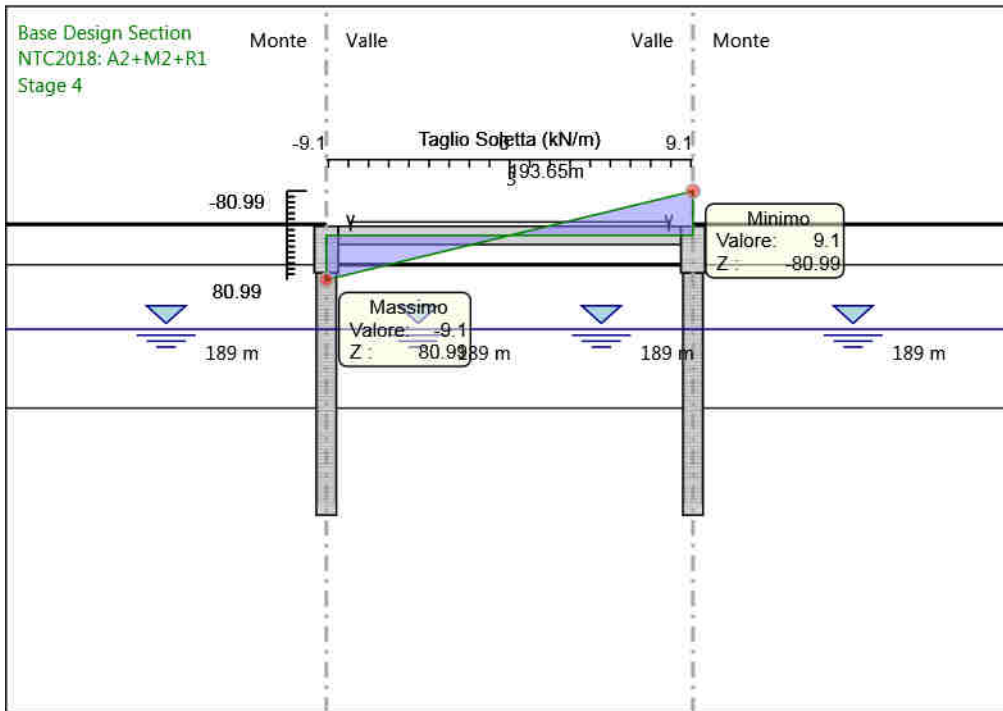
### 4.3.51. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 3



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 3  
Taglio

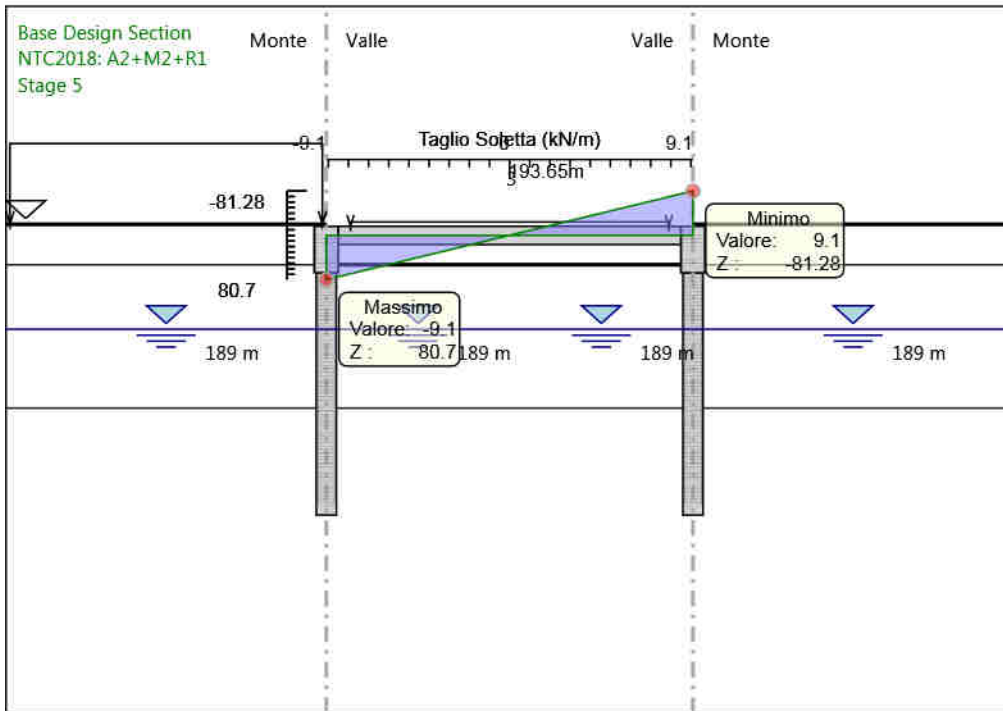


### 4.3.52. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 4



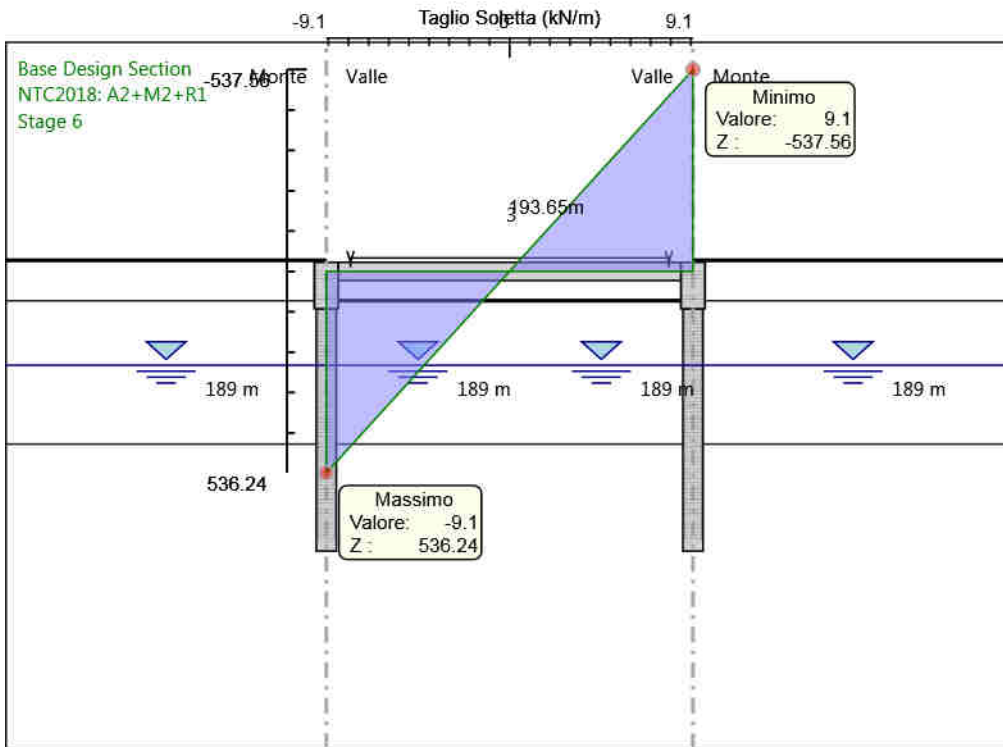
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 4  
Taglio

### 4.3.53. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 5



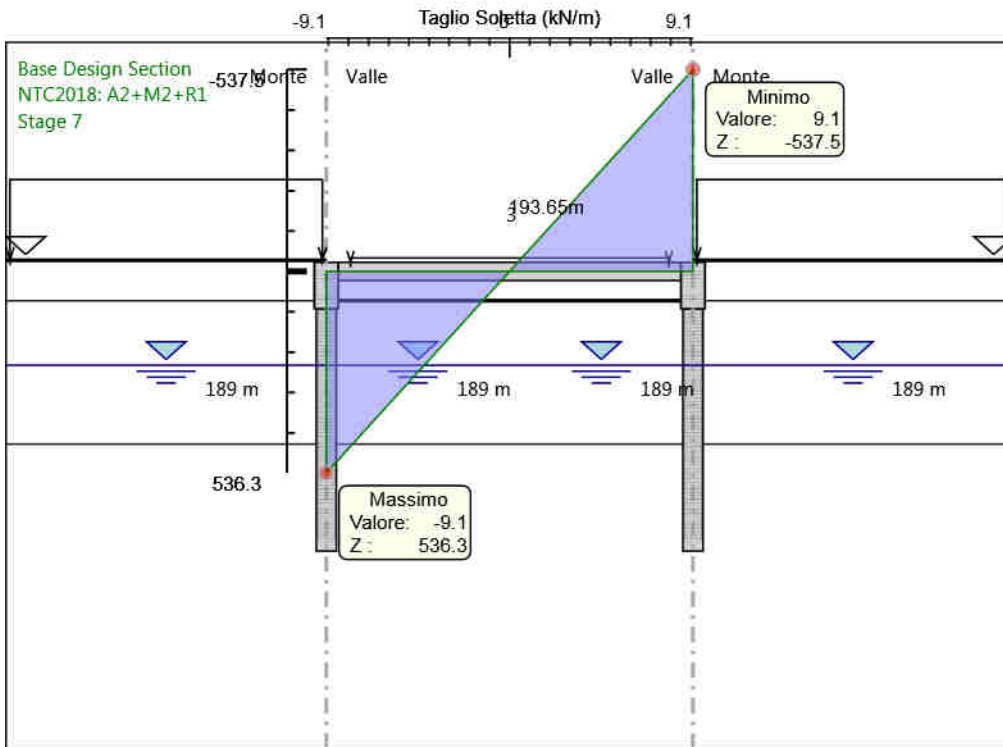
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 5  
Taglio

### 4.3.54. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 6



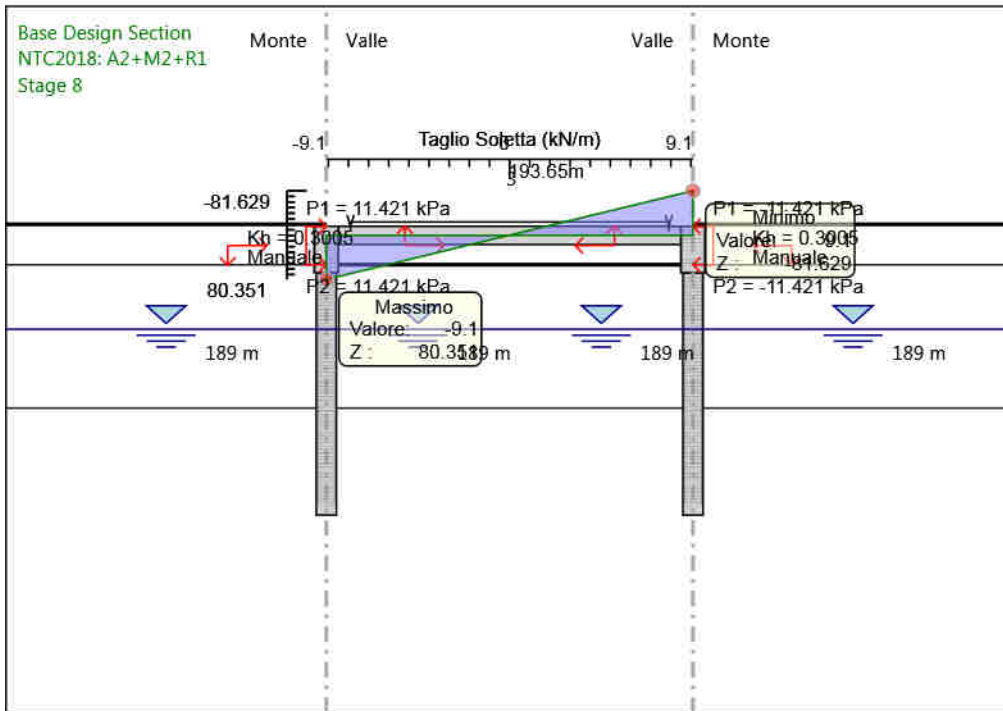
Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 6  
Taglio

### 4.3.55. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 7



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 7  
Taglio

### 4.3.56. Grafico Risultati Taglio NTC2018: A2+M2+R1 - Stage: Stage 8



Design Assumption: NTC2018: A2+M2+R1  
Stage: Stage 8  
Taglio

#### 4.3.57. Risultati Elementi strutturali - NTC2018: A2+M2+R1

Design Assumption: NTC2018: A2+M2+R1 Stage	Tipo Risultato: So- letta Taglio-a (kN/m)	soletta				
		Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)	Surcharge (kPa)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	45.5	45.5	118.1745	-118.1745	-27.5215	5
Stage 4	80.99	80.99	245.124	-245.124	-88.43007	8.9
Stage 5	80.69981	81.2802	252.6125	-257.894	-107.0569	8.9
Stage 6	536.2424	537.5576	1394.415	-1406.383	-349.5251	59
Stage 7	536.3011	537.4989	1409.075	-1419.975	-374.1747	59
Stage 8	80.3513	81.62869	226.2915	-237.9157	-72.46529	8.9

## 4.4. Risultati NTC2018: SISMICA STR

### 4.4.1. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 1

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0



#### 4.4.2. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 1

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

#### 4.4.3. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 2

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.4.4. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 2

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.4.5. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 3

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	-66.04	26.86
Stage 3	191.6	-60.67	26.86
Stage 3	191.4	-55.51	25.8
Stage 3	191.2	-50.56	24.72
Stage 3	191	-45.84	23.63
Stage 3	190.8	-41.34	22.52
Stage 3	190.6	-37.06	21.39
Stage 3	190.4	-33	20.27
Stage 3	190.2	-29.17	19.14
Stage 3	190	-25.57	18.03
Stage 3	189.8	-22.18	16.92
Stage 3	189.6	-19.02	15.84
Stage 3	189.4	-16.06	14.77
Stage 3	189.2	-13.32	13.73
Stage 3	189	-10.78	12.71
Stage 3	188.8	-8.43	11.72
Stage 3	188.6	-6.28	10.76
Stage 3	188.4	-4.31	9.83
Stage 3	188.2	-2.52	8.94
Stage 3	188	-0.91	8.08
Stage 3	187.8	0.54	7.25
Stage 3	187.6	1.83	6.46
Stage 3	187.4	2.98	5.7
Stage 3	187.2	3.97	4.98
Stage 3	187	4.83	4.27
Stage 3	186.8	5.55	3.62
Stage 3	186.6	6.15	3.02
Stage 3	186.4	6.65	2.47
Stage 3	186.2	7.04	1.96
Stage 3	186	7.34	1.51
Stage 3	185.8	7.56	1.1
Stage 3	185.6	7.71	0.73
Stage 3	185.4	7.79	0.41
Stage 3	185.2	7.81	0.12
Stage 3	185	7.79	-0.13
Stage 3	184.8	7.67	-0.57
Stage 3	184.6	7.48	-0.94
Stage 3	184.4	7.23	-1.26
Stage 3	184.2	6.93	-1.52
Stage 3	184	6.58	-1.73
Stage 3	183.8	6.2	-1.9
Stage 3	183.6	5.79	-2.03
Stage 3	183.4	5.37	-2.12
Stage 3	183.2	4.93	-2.18
Stage 3	183	4.49	-2.21
Stage 3	182.8	4.05	-2.21
Stage 3	182.6	3.62	-2.18
Stage 3	182.4	3.19	-2.13
Stage 3	182.2	2.78	-2.06
Stage 3	182	2.38	-1.98
Stage 3	181.8	2.01	-1.87
Stage 3	181.6	1.66	-1.75
Stage 3	181.4	1.33	-1.62
Stage 3	181.2	1.04	-1.47
Stage 3	181	0.78	-1.31
Stage 3	180.8	0.55	-1.14
Stage 3	180.6	0.36	-0.96
Stage 3	180.4	0.2	-0.76
Stage 3	180.2	0.09	-0.56
Stage 3	180	0.02	-0.34
Stage 3	179.8	0	-0.12

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	-118.04	0
Stage 3	193.5	-112.57	27.37
Stage 3	193.3	-107.09	27.37
Stage 3	193.1	-101.62	27.37
Stage 3	192.9	-96.15	27.37
Stage 3	192.7	-90.67	27.37
Stage 3	192.5	-85.2	27.37
Stage 3	192.3	-79.73	27.37
Stage 3	192.1	-74.25	27.37
Stage 3	191.9	-68.78	27.37
Stage 3	191.8	-66.04	27.37



#### 4.4.6. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 3

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	66.04	-26.86
Stage 3	191.6	60.67	-26.86
Stage 3	191.4	55.51	-25.8
Stage 3	191.2	50.56	-24.72
Stage 3	191	45.84	-23.63
Stage 3	190.8	41.34	-22.52
Stage 3	190.6	37.06	-21.39
Stage 3	190.4	33	-20.27
Stage 3	190.2	29.17	-19.14
Stage 3	190	25.57	-18.03
Stage 3	189.8	22.18	-16.92
Stage 3	189.6	19.02	-15.84
Stage 3	189.4	16.06	-14.77
Stage 3	189.2	13.32	-13.73
Stage 3	189	10.78	-12.71
Stage 3	188.8	8.43	-11.72
Stage 3	188.6	6.28	-10.76
Stage 3	188.4	4.31	-9.83
Stage 3	188.2	2.52	-8.94
Stage 3	188	0.91	-8.08
Stage 3	187.8	-0.54	-7.25
Stage 3	187.6	-1.83	-6.46
Stage 3	187.4	-2.98	-5.7
Stage 3	187.2	-3.97	-4.98
Stage 3	187	-4.83	-4.27
Stage 3	186.8	-5.55	-3.62
Stage 3	186.6	-6.15	-3.02
Stage 3	186.4	-6.65	-2.47
Stage 3	186.2	-7.04	-1.96
Stage 3	186	-7.34	-1.51
Stage 3	185.8	-7.56	-1.1
Stage 3	185.6	-7.71	-0.73
Stage 3	185.4	-7.79	-0.41
Stage 3	185.2	-7.81	-0.12
Stage 3	185	-7.79	0.13
Stage 3	184.8	-7.67	0.57
Stage 3	184.6	-7.48	0.94
Stage 3	184.4	-7.23	1.26
Stage 3	184.2	-6.93	1.52
Stage 3	184	-6.58	1.73
Stage 3	183.8	-6.2	1.9
Stage 3	183.6	-5.79	2.03
Stage 3	183.4	-5.37	2.12
Stage 3	183.2	-4.93	2.18
Stage 3	183	-4.49	2.21
Stage 3	182.8	-4.05	2.21
Stage 3	182.6	-3.62	2.18
Stage 3	182.4	-3.19	2.13
Stage 3	182.2	-2.78	2.06
Stage 3	182	-2.38	1.98
Stage 3	181.8	-2.01	1.87
Stage 3	181.6	-1.66	1.75
Stage 3	181.4	-1.33	1.62
Stage 3	181.2	-1.04	1.47
Stage 3	181	-0.78	1.31
Stage 3	180.8	-0.55	1.14
Stage 3	180.6	-0.36	0.96
Stage 3	180.4	-0.2	0.76
Stage 3	180.2	-0.09	0.56
Stage 3	180	-0.02	0.34
Stage 3	179.8	0	0.12

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	118.04	0
Stage 3	193.5	112.57	-27.37
Stage 3	193.3	107.09	-27.37
Stage 3	193.1	101.62	-27.37
Stage 3	192.9	96.15	-27.37
Stage 3	192.7	90.67	-27.37
Stage 3	192.5	85.2	-27.37
Stage 3	192.3	79.73	-27.37
Stage 3	192.1	74.25	-27.37
Stage 3	191.9	68.78	-27.37
Stage 3	191.8	66.04	-27.37

#### 4.4.7. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 4

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	-82.64	61.67
Stage 4	191.6	-70.31	61.67
Stage 4	191.4	-58.73	57.87
Stage 4	191.2	-47.9	54.16
Stage 4	191	-37.8	50.54
Stage 4	190.8	-28.39	47.02
Stage 4	190.6	-19.67	43.62
Stage 4	190.4	-11.6	40.32
Stage 4	190.2	-4.18	37.13
Stage 4	190	2.63	34.06
Stage 4	189.8	8.85	31.1
Stage 4	189.6	14.5	28.25
Stage 4	189.4	19.6	25.5
Stage 4	189.2	24.18	22.86
Stage 4	189	28.24	20.32
Stage 4	188.8	31.81	17.87
Stage 4	188.6	34.92	15.52
Stage 4	188.4	37.56	13.24
Stage 4	188.2	39.77	11.05
Stage 4	188	41.56	8.93
Stage 4	187.8	42.94	6.88
Stage 4	187.6	43.92	4.89
Stage 4	187.4	44.51	2.95
Stage 4	187.2	44.72	1.06
Stage 4	187	44.56	-0.79
Stage 4	186.8	44.04	-2.6
Stage 4	186.6	43.18	-4.33
Stage 4	186.4	41.98	-5.99
Stage 4	186.2	40.46	-7.59
Stage 4	186	38.63	-9.14
Stage 4	185.8	36.51	-10.64
Stage 4	185.6	34.09	-12.11
Stage 4	185.4	31.38	-13.54
Stage 4	185.2	28.39	-14.96
Stage 4	185	25.12	-16.35
Stage 4	184.8	22.07	-15.24
Stage 4	184.6	19.24	-14.13
Stage 4	184.4	16.64	-13.02
Stage 4	184.2	14.25	-11.91
Stage 4	184	12.09	-10.83
Stage 4	183.8	10.13	-9.77
Stage 4	183.6	8.39	-8.75
Stage 4	183.4	6.83	-7.76
Stage 4	183.2	5.47	-6.82
Stage 4	183	4.28	-5.93
Stage 4	182.8	3.27	-5.08
Stage 4	182.6	2.41	-4.3
Stage 4	182.4	1.69	-3.56
Stage 4	182.2	1.12	-2.89
Stage 4	182	0.66	-2.28
Stage 4	181.8	0.32	-1.73
Stage 4	181.6	0.07	-1.24
Stage 4	181.4	-0.1	-0.82
Stage 4	181.2	-0.19	-0.47
Stage 4	181	-0.23	-0.18
Stage 4	180.8	-0.22	0.04
Stage 4	180.6	-0.18	0.19
Stage 4	180.4	-0.13	0.27
Stage 4	180.2	-0.07	0.29
Stage 4	180	-0.02	0.24
Stage 4	179.8	0	0.11

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	-0.15
Stage 4	193.9	-0.03	-0.15
Stage 4	193.7	-0.18	-0.77
Stage 4	193.7	-223.09	-0.77
Stage 4	193.5	-207.13	79.8
Stage 4	193.3	-191.35	78.88
Stage 4	193.1	-175.79	77.83
Stage 4	192.9	-160.46	76.63
Stage 4	192.7	-145.42	75.22
Stage 4	192.5	-130.7	73.6
Stage 4	192.3	-116.35	71.76
Stage 4	192.1	-102.41	69.7
Stage 4	191.9	-89.08	66.63
Stage 4	191.8	-82.64	64.41

#### 4.4.8. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 4

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	82.64	-61.67
Stage 4	191.6	70.31	-61.67
Stage 4	191.4	58.73	-57.87
Stage 4	191.2	47.9	-54.16
Stage 4	191	37.8	-50.54
Stage 4	190.8	28.39	-47.02
Stage 4	190.6	19.67	-43.62
Stage 4	190.4	11.6	-40.32
Stage 4	190.2	4.18	-37.13
Stage 4	190	-2.63	-34.06
Stage 4	189.8	-8.85	-31.1
Stage 4	189.6	-14.5	-28.25
Stage 4	189.4	-19.6	-25.5
Stage 4	189.2	-24.18	-22.86
Stage 4	189	-28.24	-20.32
Stage 4	188.8	-31.81	-17.87
Stage 4	188.6	-34.92	-15.52
Stage 4	188.4	-37.56	-13.24
Stage 4	188.2	-39.77	-11.05
Stage 4	188	-41.56	-8.93
Stage 4	187.8	-42.94	-6.88
Stage 4	187.6	-43.92	-4.89
Stage 4	187.4	-44.51	-2.95
Stage 4	187.2	-44.72	-1.06
Stage 4	187	-44.56	0.79
Stage 4	186.8	-44.04	2.6
Stage 4	186.6	-43.18	4.33
Stage 4	186.4	-41.98	5.99
Stage 4	186.2	-40.46	7.59
Stage 4	186	-38.63	9.14
Stage 4	185.8	-36.51	10.64
Stage 4	185.6	-34.09	12.11
Stage 4	185.4	-31.38	13.54
Stage 4	185.2	-28.39	14.96
Stage 4	185	-25.12	16.35
Stage 4	184.8	-22.07	15.24
Stage 4	184.6	-19.24	14.13
Stage 4	184.4	-16.64	13.02
Stage 4	184.2	-14.25	11.91
Stage 4	184	-12.09	10.83
Stage 4	183.8	-10.13	9.77
Stage 4	183.6	-8.39	8.75
Stage 4	183.4	-6.83	7.76
Stage 4	183.2	-5.47	6.82
Stage 4	183	-4.28	5.93
Stage 4	182.8	-3.27	5.08
Stage 4	182.6	-2.41	4.3
Stage 4	182.4	-1.69	3.56
Stage 4	182.2	-1.12	2.89
Stage 4	182	-0.66	2.28
Stage 4	181.8	-0.32	1.73
Stage 4	181.6	-0.07	1.24
Stage 4	181.4	0.1	0.82
Stage 4	181.2	0.19	0.47
Stage 4	181	0.23	0.18
Stage 4	180.8	0.22	-0.04
Stage 4	180.6	0.18	-0.19
Stage 4	180.4	0.13	-0.27
Stage 4	180.2	0.07	-0.29
Stage 4	180	0.02	-0.24
Stage 4	179.8	0	-0.11

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	0.15
Stage 4	193.9	0.03	0.15
Stage 4	193.7	0.18	0.77
Stage 4	193.7	223.09	0.77
Stage 4	193.5	207.13	-79.8
Stage 4	193.3	191.35	-78.88
Stage 4	193.1	175.79	-77.83
Stage 4	192.9	160.46	-76.63
Stage 4	192.7	145.42	-75.22
Stage 4	192.5	130.7	-73.6
Stage 4	192.3	116.35	-71.76
Stage 4	192.1	102.41	-69.7
Stage 4	191.9	89.08	-66.63
Stage 4	191.8	82.64	-64.41

#### 4.4.9. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 5

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	-73.3	67.39
Stage 5	191.6	-59.82	67.39
Stage 5	191.4	-47.23	62.95
Stage 5	191.2	-35.51	58.64
Stage 5	191	-24.61	54.46
Stage 5	190.8	-14.53	50.42
Stage 5	190.6	-5.22	46.52
Stage 5	190.4	3.33	42.77
Stage 5	190.2	11.16	39.15
Stage 5	190	18.29	35.67
Stage 5	189.8	24.76	32.33
Stage 5	189.6	30.58	29.12
Stage 5	189.4	35.79	26.03
Stage 5	189.2	40.4	23.07
Stage 5	189	44.45	20.22
Stage 5	188.8	47.94	17.48
Stage 5	188.6	50.91	14.84
Stage 5	188.4	53.36	12.28
Stage 5	188.2	55.33	9.82
Stage 5	188	56.81	7.42
Stage 5	187.8	57.83	5.1
Stage 5	187.6	58.4	2.83
Stage 5	187.4	58.52	0.61
Stage 5	187.2	58.21	-1.57
Stage 5	187	57.46	-3.72
Stage 5	186.8	56.29	-5.84
Stage 5	186.6	54.71	-7.9
Stage 5	186.4	52.73	-9.9
Stage 5	186.2	50.36	-11.86
Stage 5	186	47.6	-13.79
Stage 5	185.8	44.47	-15.69
Stage 5	185.6	40.95	-17.58
Stage 5	185.4	37.06	-19.46
Stage 5	185.2	32.79	-21.34
Stage 5	185	28.15	-23.23
Stage 5	184.8	23.9	-21.24
Stage 5	184.6	20.04	-19.29
Stage 5	184.4	16.56	-17.39
Stage 5	184.2	13.45	-15.56
Stage 5	184	10.69	-13.8
Stage 5	183.8	8.27	-12.12
Stage 5	183.6	6.16	-10.52
Stage 5	183.4	4.36	-9.01
Stage 5	183.2	2.84	-7.6
Stage 5	183	1.58	-6.29
Stage 5	182.8	0.57	-5.08
Stage 5	182.6	-0.22	-3.96
Stage 5	182.4	-0.81	-2.96
Stage 5	182.2	-1.23	-2.05
Stage 5	182	-1.48	-1.26
Stage 5	181.8	-1.59	-0.57
Stage 5	181.6	-1.59	0.01
Stage 5	181.4	-1.5	0.48
Stage 5	181.2	-1.33	0.83
Stage 5	181	-1.11	1.08
Stage 5	180.8	-0.87	1.22
Stage 5	180.6	-0.62	1.25
Stage 5	180.4	-0.38	1.17
Stage 5	180.2	-0.19	0.98
Stage 5	180	-0.05	0.67
Stage 5	179.8	0	0.26

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	-0.6
Stage 5	193.9	-0.12	-0.6
Stage 5	193.7	-0.52	-2.01
Stage 5	193.7	-233.72	-2.01
Stage 5	193.5	-214.79	94.64
Stage 5	193.3	-196.23	92.8
Stage 5	193.1	-178.09	90.74
Stage 5	192.9	-160.39	88.46
Stage 5	192.7	-143.2	85.97
Stage 5	192.5	-126.55	83.26
Stage 5	192.3	-110.48	80.33
Stage 5	192.1	-95.04	77.19
Stage 5	191.9	-80.37	73.38
Stage 5	191.8	-73.3	70.64



#### 4.4.10. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 5

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	74.38	-64.83
Stage 5	191.6	61.41	-64.83
Stage 5	191.4	49.33	-60.42
Stage 5	191.2	38.1	-56.15
Stage 5	191	27.69	-52.02
Stage 5	190.8	18.09	-48.03
Stage 5	190.6	9.25	-44.2
Stage 5	190.4	1.14	-40.53
Stage 5	190.2	-6.26	-37
Stage 5	190	-12.99	-33.63
Stage 5	189.8	-19.07	-30.4
Stage 5	189.6	-24.53	-27.32
Stage 5	189.4	-29.4	-24.37
Stage 5	189.2	-33.72	-21.56
Stage 5	189	-37.49	-18.87
Stage 5	188.8	-40.75	-16.31
Stage 5	188.6	-43.52	-13.85
Stage 5	188.4	-45.82	-11.51
Stage 5	188.2	-47.67	-9.26
Stage 5	188	-49.09	-7.1
Stage 5	187.8	-50.1	-5.02
Stage 5	187.6	-50.7	-3.02
Stage 5	187.4	-50.92	-1.07
Stage 5	187.2	-50.75	0.81
Stage 5	187	-50.23	2.64
Stage 5	186.8	-49.34	4.43
Stage 5	186.6	-48.11	6.13
Stage 5	186.4	-46.56	7.75
Stage 5	186.2	-44.7	9.32
Stage 5	186	-42.54	10.82
Stage 5	185.8	-40.08	12.28
Stage 5	185.6	-37.34	13.7
Stage 5	185.4	-34.32	15.08
Stage 5	185.2	-31.04	16.45
Stage 5	185	-27.48	17.79
Stage 5	184.8	-24.16	16.59
Stage 5	184.6	-21.08	15.37
Stage 5	184.4	-18.25	14.16
Stage 5	184.2	-15.66	12.97
Stage 5	184	-13.3	11.79
Stage 5	183.8	-11.17	10.65
Stage 5	183.6	-9.26	9.54
Stage 5	183.4	-7.57	8.47
Stage 5	183.2	-6.08	7.45
Stage 5	183	-4.78	6.48
Stage 5	182.8	-3.67	5.57
Stage 5	182.6	-2.73	4.72
Stage 5	182.4	-1.94	3.92
Stage 5	182.2	-1.3	3.19
Stage 5	182	-0.8	2.53
Stage 5	181.8	-0.41	1.93
Stage 5	181.6	-0.13	1.4
Stage 5	181.4	0.06	0.94
Stage 5	181.2	0.17	0.56
Stage 5	181	0.22	0.24
Stage 5	180.8	0.22	0
Stage 5	180.6	0.18	-0.17
Stage 5	180.4	0.13	-0.27
Stage 5	180.2	0.07	-0.29
Stage 5	180	0.02	-0.24
Stage 5	179.8	0	-0.11

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	0.58
Stage 5	193.9	0.12	0.58
Stage 5	193.7	0.52	2.02
Stage 5	193.7	232.27	2.02
Stage 5	193.5	213.36	-94.53
Stage 5	193.3	194.85	-92.54
Stage 5	193.1	176.8	-90.27
Stage 5	192.9	159.25	-87.73
Stage 5	192.7	142.28	-84.88
Stage 5	192.5	125.93	-81.74
Stage 5	192.3	110.27	-78.29
Stage 5	192.1	95.35	-74.63
Stage 5	191.9	81.18	-70.81
Stage 5	191.8	74.38	-68.08

#### 4.4.11. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 6

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	-596.15	242.07
Stage 6	191.6	-547.73	242.07
Stage 6	191.4	-500.91	234.13
Stage 6	191.2	-455.75	225.78
Stage 6	191	-412.34	217.04
Stage 6	190.8	-370.75	207.94
Stage 6	190.6	-331.05	198.51
Stage 6	190.4	-293.3	188.74
Stage 6	190.2	-257.57	178.66
Stage 6	190	-223.84	168.64
Stage 6	189.8	-192.09	158.75
Stage 6	189.6	-162.29	149.02
Stage 6	189.4	-134.39	139.47
Stage 6	189.2	-108.37	130.13
Stage 6	189	-84.17	120.97
Stage 6	188.8	-61.77	112.01
Stage 6	188.6	-41.13	103.25
Stage 6	188.4	-22.19	94.7
Stage 6	188.2	-4.92	86.38
Stage 6	188	10.74	78.29
Stage 6	187.8	24.83	70.43
Stage 6	187.6	37.39	62.82
Stage 6	187.4	48.48	55.43
Stage 6	187.2	58.14	48.29
Stage 6	187	66.41	41.37
Stage 6	186.8	73.35	34.7
Stage 6	186.6	79.01	28.3
Stage 6	186.4	83.44	22.16
Stage 6	186.2	86.7	16.28
Stage 6	186	88.83	10.66
Stage 6	185.8	89.91	5.39
Stage 6	185.6	90	0.44
Stage 6	185.4	89.16	-4.19
Stage 6	185.2	87.45	-8.53
Stage 6	185	84.93	-12.6
Stage 6	184.8	81.85	-15.4
Stage 6	184.6	78.31	-17.74
Stage 6	184.4	74.38	-19.63
Stage 6	184.2	70.15	-21.13
Stage 6	184	65.7	-22.25
Stage 6	183.8	61.1	-23.03
Stage 6	183.6	56.4	-23.51
Stage 6	183.4	51.66	-23.7
Stage 6	183.2	46.93	-23.64
Stage 6	183	42.26	-23.34
Stage 6	182.8	37.7	-22.83
Stage 6	182.6	33.27	-22.12
Stage 6	182.4	29.02	-21.24
Stage 6	182.2	24.98	-20.2
Stage 6	182	21.18	-19.02
Stage 6	181.8	17.64	-17.7
Stage 6	181.6	14.39	-16.25
Stage 6	181.4	11.45	-14.71
Stage 6	181.2	8.82	-13.12
Stage 6	181	6.52	-11.49
Stage 6	180.8	4.56	-9.82
Stage 6	180.6	2.94	-8.11
Stage 6	180.4	1.66	-6.37
Stage 6	180.2	0.74	-4.59
Stage 6	180	0.19	-2.78
Stage 6	179.8	0	-0.94

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	-0.05
Stage 6	193.9	-0.01	-0.05
Stage 6	193.7	-0.09	-0.38
Stage 6	193.7	-1117.16	-0.38
Stage 6	193.5	-1058.6	292.79
Stage 6	193.3	-1000.45	290.76
Stage 6	193.1	-942.99	287.33
Stage 6	192.9	-886.36	283.12
Stage 6	192.7	-830.74	278.11
Stage 6	192.5	-776.27	272.33
Stage 6	192.3	-723.12	265.79
Stage 6	192.1	-671.41	258.53
Stage 6	191.9	-620.91	252.5
Stage 6	191.8	-596.15	247.65

#### 4.4.12. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 6

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	603.9	-242.58
Stage 6	191.6	555.39	-242.58
Stage 6	191.4	508.35	-235.16
Stage 6	191.2	462.9	-227.27
Stage 6	191	419.11	-218.93
Stage 6	190.8	377.08	-210.18
Stage 6	190.6	336.87	-201.03
Stage 6	190.4	298.58	-191.49
Stage 6	190.2	262.26	-181.58
Stage 6	190	227.97	-171.43
Stage 6	189.8	195.7	-161.37
Stage 6	189.6	165.41	-151.44
Stage 6	189.4	137.08	-141.67
Stage 6	189.2	110.66	-132.09
Stage 6	189	86.12	-122.7
Stage 6	188.8	63.41	-113.53
Stage 6	188.6	42.51	-104.58
Stage 6	188.4	23.33	-95.88
Stage 6	188.2	5.85	-87.42
Stage 6	188	-9.99	-79.21
Stage 6	187.8	-24.24	-71.25
Stage 6	187.6	-36.95	-63.55
Stage 6	187.4	-48.17	-56.1
Stage 6	187.2	-57.95	-48.9
Stage 6	187	-66.34	-41.95
Stage 6	186.8	-73.4	-35.26
Stage 6	186.6	-79.17	-28.85
Stage 6	186.4	-83.71	-22.72
Stage 6	186.2	-87.08	-16.86
Stage 6	186	-89.35	-11.34
Stage 6	185.8	-90.59	-6.2
Stage 6	185.6	-90.87	-1.41
Stage 6	185.4	-90.26	3.05
Stage 6	185.2	-88.83	7.19
Stage 6	185	-86.62	11.03
Stage 6	184.8	-83.77	14.24
Stage 6	184.6	-80.39	16.93
Stage 6	184.4	-76.56	19.15
Stage 6	184.2	-72.38	20.92
Stage 6	184	-67.92	22.27
Stage 6	183.8	-63.27	23.24
Stage 6	183.6	-58.5	23.87
Stage 6	183.4	-53.67	24.17
Stage 6	183.2	-48.83	24.17
Stage 6	183	-44.05	23.9
Stage 6	182.8	-39.38	23.38
Stage 6	182.6	-34.85	22.62
Stage 6	182.4	-30.51	21.71
Stage 6	182.2	-26.38	20.67
Stage 6	182	-22.48	19.51
Stage 6	181.8	-18.83	18.24
Stage 6	181.6	-15.45	16.88
Stage 6	181.4	-12.37	15.43
Stage 6	181.2	-9.59	13.9
Stage 6	181	-7.13	12.28
Stage 6	180.8	-5.01	10.59
Stage 6	180.6	-3.25	8.83
Stage 6	180.4	-1.85	6.99
Stage 6	180.2	-0.83	5.08
Stage 6	180	-0.21	3.1
Stage 6	179.8	0	1.06

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	0.05
Stage 6	193.9	0.01	0.05
Stage 6	193.7	0.09	0.38
Stage 6	193.7	1123.9	0.38
Stage 6	193.5	1065.39	-292.53
Stage 6	193.3	1007.36	-290.14
Stage 6	193.1	949.99	-286.84
Stage 6	192.9	893.46	-282.67
Stage 6	192.7	837.93	-277.62
Stage 6	192.5	783.59	-271.72
Stage 6	192.3	730.59	-265
Stage 6	192.1	679.09	-257.47
Stage 6	191.9	628.67	-252.11
Stage 6	191.8	603.9	-247.72

#### 4.4.13. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 7

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	-582.69	250.82
Stage 7	191.6	-532.53	250.82
Stage 7	191.4	-484.18	241.77
Stage 7	191.2	-437.7	232.38
Stage 7	191	-393.16	222.68
Stage 7	190.8	-350.63	212.68
Stage 7	190.6	-310.14	202.41
Stage 7	190.4	-271.77	191.88
Stage 7	190.2	-235.55	181.09
Stage 7	190	-201.47	170.4
Stage 7	189.8	-169.49	159.9
Stage 7	189.6	-139.57	149.59
Stage 7	189.4	-111.67	139.51
Stage 7	189.2	-85.74	129.67
Stage 7	189	-61.73	120.03
Stage 7	188.8	-39.61	110.61
Stage 7	188.6	-19.34	101.42
Stage 7	188.4	-0.85	92.45
Stage 7	188.2	15.9	83.71
Stage 7	188	30.94	75.22
Stage 7	187.8	44.33	66.95
Stage 7	187.6	56.11	58.92
Stage 7	187.4	66.34	51.12
Stage 7	187.2	75.05	43.54
Stage 7	187	82.28	36.17
Stage 7	186.8	88.08	29.02
Stage 7	186.6	92.51	22.13
Stage 7	186.4	95.6	15.47
Stage 7	186.2	97.41	9.04
Stage 7	186	97.98	2.85
Stage 7	185.8	97.41	-2.88
Stage 7	185.6	95.77	-8.17
Stage 7	185.4	93.16	-13.06
Stage 7	185.2	89.65	-17.57
Stage 7	185	85.3	-21.72
Stage 7	184.8	80.66	-23.2
Stage 7	184.6	75.81	-24.28
Stage 7	184.4	70.8	-25.01
Stage 7	184.2	65.72	-25.41
Stage 7	184	60.62	-25.52
Stage 7	183.8	55.54	-25.37
Stage 7	183.6	50.55	-24.98
Stage 7	183.4	45.67	-24.38
Stage 7	183.2	40.95	-23.59
Stage 7	183	36.43	-22.63
Stage 7	182.8	32.12	-21.52
Stage 7	182.6	28.06	-20.32
Stage 7	182.4	24.25	-19.05
Stage 7	182.2	20.7	-17.75
Stage 7	182	17.42	-16.41
Stage 7	181.8	14.41	-15.03
Stage 7	181.6	11.69	-13.64
Stage 7	181.4	9.24	-12.23
Stage 7	181.2	7.08	-10.81
Stage 7	181	5.2	-9.38
Stage 7	180.8	3.61	-7.94
Stage 7	180.6	2.31	-6.5
Stage 7	180.4	1.3	-5.06
Stage 7	180.2	0.58	-3.61
Stage 7	180	0.14	-2.17
Stage 7	179.8	0	-0.72

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	-0.96
Stage 7	193.9	-0.19	-0.96
Stage 7	193.7	-0.74	-2.76
Stage 7	193.7	-1132.04	-2.76
Stage 7	193.5	-1069.38	313.26
Stage 7	193.3	-1007.4	309.92
Stage 7	193.1	-946.43	304.86
Stage 7	192.9	-886.59	299.2
Stage 7	192.7	-828.01	292.89
Stage 7	192.5	-770.82	285.98
Stage 7	192.3	-715.12	278.48
Stage 7	192.1	-661.04	270.42
Stage 7	191.9	-608.42	263.07
Stage 7	191.8	-582.69	257.3



#### 4.4.14. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 7

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	592.49	-250.27
Stage 7	191.6	542.44	-250.27
Stage 7	191.4	494.08	-241.78
Stage 7	191.2	447.51	-232.89
Stage 7	191	402.78	-223.63
Stage 7	190.8	359.97	-214.02
Stage 7	190.6	319.16	-204.08
Stage 7	190.4	280.4	-193.81
Stage 7	190.2	243.75	-183.24
Stage 7	190	209.26	-172.47
Stage 7	189.8	176.89	-161.85
Stage 7	189.6	146.6	-151.41
Stage 7	189.4	118.37	-141.17
Stage 7	189.2	92.14	-131.15
Stage 7	189	67.87	-121.36
Stage 7	188.8	45.5	-111.82
Stage 7	188.6	25	-102.54
Stage 7	188.4	6.3	-93.52
Stage 7	188.2	-10.65	-84.77
Stage 7	188	-25.91	-76.28
Stage 7	187.8	-39.52	-68.06
Stage 7	187.6	-51.54	-60.1
Stage 7	187.4	-62.02	-52.4
Stage 7	187.2	-71.01	-44.96
Stage 7	187	-78.56	-37.76
Stage 7	186.8	-84.73	-30.81
Stage 7	186.6	-89.56	-24.15
Stage 7	186.4	-93.11	-17.76
Stage 7	186.2	-95.43	-11.63
Stage 7	186	-96.6	-5.82
Stage 7	185.8	-96.67	-0.38
Stage 7	185.6	-95.73	4.73
Stage 7	185.4	-93.83	9.51
Stage 7	185.2	-91.03	14
Stage 7	185	-87.38	18.21
Stage 7	184.8	-83.34	20.21
Stage 7	184.6	-78.99	21.74
Stage 7	184.4	-74.43	22.82
Stage 7	184.2	-69.73	23.5
Stage 7	184	-64.94	23.94
Stage 7	183.8	-60.11	24.14
Stage 7	183.6	-55.29	24.13
Stage 7	183.4	-50.51	23.92
Stage 7	183.2	-45.8	23.52
Stage 7	183	-41.21	22.97
Stage 7	182.8	-36.75	22.28
Stage 7	182.6	-32.46	21.45
Stage 7	182.4	-28.36	20.5
Stage 7	182.2	-24.47	19.44
Stage 7	182	-20.82	18.29
Stage 7	181.8	-17.41	17.05
Stage 7	181.6	-14.26	15.73
Stage 7	181.4	-11.39	14.34
Stage 7	181.2	-8.82	12.88
Stage 7	181	-6.55	11.35
Stage 7	180.8	-4.59	9.76
Stage 7	180.6	-2.97	8.11
Stage 7	180.4	-1.69	6.41
Stage 7	180.2	-0.76	4.65
Stage 7	180	-0.19	2.83
Stage 7	179.8	0	0.96

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	1.08
Stage 7	193.9	0.22	1.08
Stage 7	193.7	0.9	3.41
Stage 7	193.7	1138.26	3.41
Stage 7	193.5	1075.91	-311.71
Stage 7	193.3	1014.39	-307.62
Stage 7	193.1	953.83	-302.79
Stage 7	192.9	894.38	-297.25
Stage 7	192.7	836.18	-291
Stage 7	192.5	779.37	-284.06
Stage 7	192.3	724.08	-276.45
Stage 7	192.1	670.44	-268.21
Stage 7	191.9	618.12	-261.57
Stage 7	191.8	592.49	-256.28

#### 4.4.15. Tabella Risultati Paratia NTC2018: SISMICA STR - Left Wall - Stage: Stage 8

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	-83.66	51.18
Stage 8	191.6	-73.42	51.18
Stage 8	191.4	-63.67	48.79
Stage 8	191.2	-54.35	46.59
Stage 8	191	-45.44	44.54
Stage 8	190.8	-36.92	42.6
Stage 8	190.6	-28.77	40.73
Stage 8	190.4	-20.99	38.91
Stage 8	190.2	-13.62	36.84
Stage 8	190	-6.66	34.81
Stage 8	189.8	-0.09	32.87
Stage 8	189.6	6.11	30.99
Stage 8	189.4	11.94	29.15
Stage 8	189.2	17.41	27.34
Stage 8	189	22.51	25.51
Stage 8	188.8	27.24	23.63
Stage 8	188.6	31.58	21.7
Stage 8	188.4	35.52	19.72
Stage 8	188.2	39.05	17.67
Stage 8	188	42.16	15.55
Stage 8	187.8	44.83	13.35
Stage 8	187.6	47.05	11.07
Stage 8	187.4	48.79	8.71
Stage 8	187.2	50.04	6.25
Stage 8	187	50.78	3.7
Stage 8	186.8	50.99	1.07
Stage 8	186.6	50.67	-1.61
Stage 8	186.4	49.81	-4.33
Stage 8	186.2	48.38	-7.12
Stage 8	186	46.4	-9.92
Stage 8	185.8	43.89	-12.53
Stage 8	185.6	40.9	-14.95
Stage 8	185.4	37.46	-17.21
Stage 8	185.2	33.6	-19.3
Stage 8	185	29.35	-21.26
Stage 8	184.8	25.39	-19.79
Stage 8	184.6	21.73	-18.31
Stage 8	184.4	18.36	-16.82
Stage 8	184.2	15.3	-15.34
Stage 8	184	12.52	-13.87
Stage 8	183.8	10.04	-12.43
Stage 8	183.6	7.83	-11.01
Stage 8	183.4	5.91	-9.63
Stage 8	183.2	4.25	-8.29
Stage 8	183	2.85	-7
Stage 8	182.8	1.7	-5.75
Stage 8	182.6	0.78	-4.59
Stage 8	182.4	0.07	-3.54
Stage 8	182.2	-0.45	-2.61
Stage 8	182	-0.81	-1.78
Stage 8	181.8	-1.02	-1.07
Stage 8	181.6	-1.11	-0.46
Stage 8	181.4	-1.1	0.04
Stage 8	181.2	-1.02	0.43
Stage 8	181	-0.88	0.71
Stage 8	180.8	-0.7	0.89
Stage 8	180.6	-0.51	0.97
Stage 8	180.4	-0.32	0.94
Stage 8	180.2	-0.16	0.8
Stage 8	180	-0.04	0.56
Stage 8	179.8	0	0.22

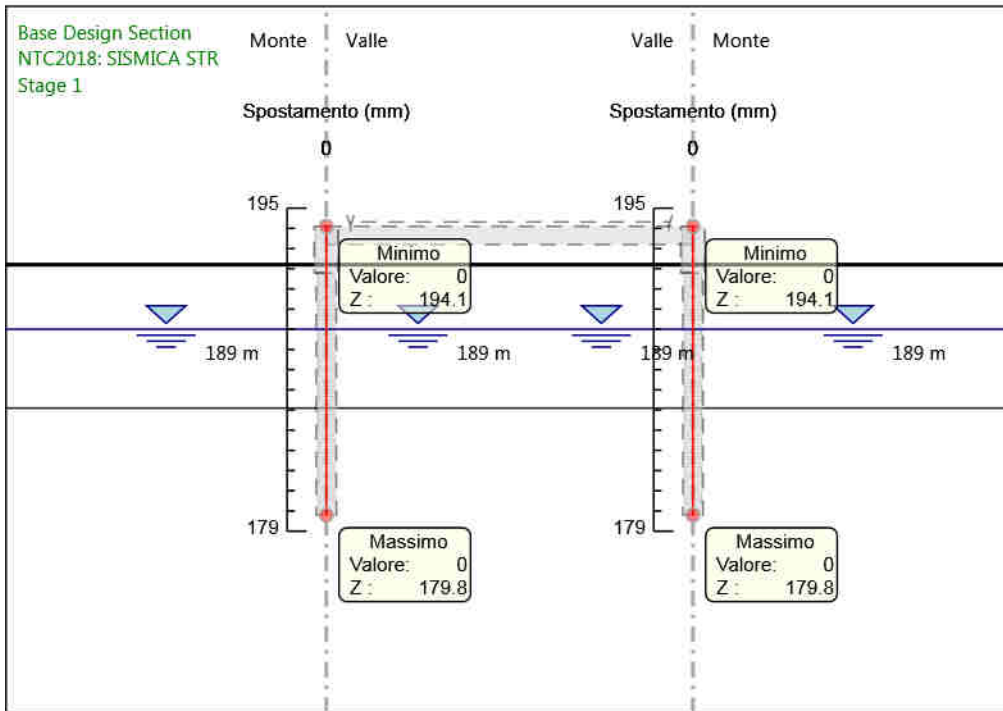
Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	-3.21
Stage 8	193.9	-0.64	-3.21
Stage 8	193.7	-2.67	-10.16
Stage 8	193.7	-221.68	-10.16
Stage 8	193.5	-202.57	95.57
Stage 8	193.3	-184.54	90.15
Stage 8	193.1	-167.62	84.6
Stage 8	192.9	-151.77	79.21
Stage 8	192.7	-137.05	73.6
Stage 8	192.5	-123.5	67.78
Stage 8	192.3	-111.15	61.73
Stage 8	192.1	-99.84	56.55
Stage 8	191.9	-88.96	54.4
Stage 8	191.8	-83.66	53.02

#### 4.4.16. Tabella Risultati Paratia NTC2018: SISMICA STR - Right wall - Stage: Stage 8

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	92.91	-51.14
Stage 8	191.6	82.68	-51.14
Stage 8	191.4	72.85	-49.15
Stage 8	191.2	63.39	-47.3
Stage 8	191	54.29	-45.53
Stage 8	190.8	45.53	-43.8
Stage 8	190.6	37.11	-42.09
Stage 8	190.4	29.03	-40.36
Stage 8	190.2	21.33	-38.54
Stage 8	190	14.03	-36.47
Stage 8	189.8	7.14	-34.45
Stage 8	189.6	0.65	-32.47
Stage 8	189.4	-5.45	-30.51
Stage 8	189.2	-11.17	-28.57
Stage 8	189	-16.49	-26.62
Stage 8	188.8	-21.42	-24.67
Stage 8	188.6	-25.96	-22.69
Stage 8	188.4	-30.1	-20.7
Stage 8	188.2	-33.83	-18.67
Stage 8	188	-37.15	-16.6
Stage 8	187.8	-40.05	-14.48
Stage 8	187.6	-42.51	-12.32
Stage 8	187.4	-44.53	-10.1
Stage 8	187.2	-46.1	-7.82
Stage 8	187	-47.19	-5.48
Stage 8	186.8	-47.81	-3.1
Stage 8	186.6	-47.95	-0.69
Stage 8	186.4	-47.61	1.73
Stage 8	186.2	-46.77	4.17
Stage 8	186	-45.46	6.55
Stage 8	185.8	-43.69	8.87
Stage 8	185.6	-41.47	11.11
Stage 8	185.4	-38.81	13.28
Stage 8	185.2	-35.73	15.39
Stage 8	185	-32.24	17.45
Stage 8	184.8	-28.91	16.65
Stage 8	184.6	-25.76	15.78
Stage 8	184.4	-22.79	14.84
Stage 8	184.2	-20.02	13.85
Stage 8	184	-17.46	12.82
Stage 8	183.8	-15.11	11.75
Stage 8	183.6	-12.98	10.65
Stage 8	183.4	-11.06	9.6
Stage 8	183.2	-9.34	8.6
Stage 8	183	-7.8	7.66
Stage 8	182.8	-6.45	6.77
Stage 8	182.6	-5.26	5.94
Stage 8	182.4	-4.23	5.16
Stage 8	182.2	-3.34	4.44
Stage 8	182	-2.59	3.77
Stage 8	181.8	-1.96	3.16
Stage 8	181.6	-1.44	2.6
Stage 8	181.4	-1.02	2.09
Stage 8	181.2	-0.69	1.64
Stage 8	181	-0.44	1.25
Stage 8	180.8	-0.26	0.91
Stage 8	180.6	-0.14	0.62
Stage 8	180.4	-0.06	0.39
Stage 8	180.2	-0.02	0.21
Stage 8	180	0	0.08
Stage 8	179.8	0	0.01

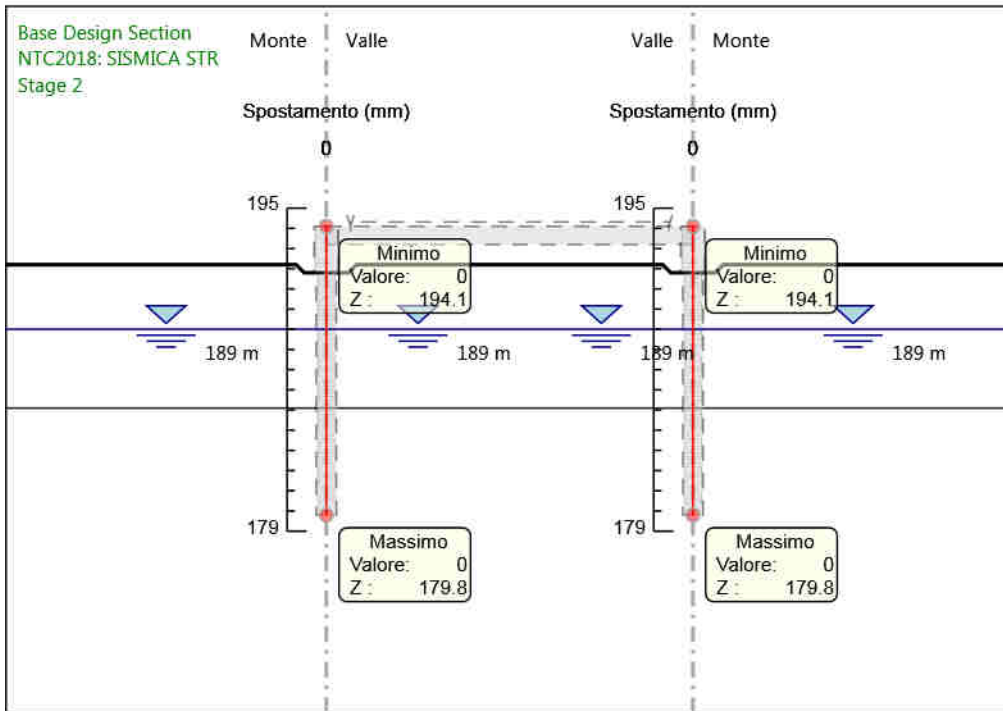
Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	3.21
Stage 8	193.9	0.64	3.21
Stage 8	193.7	2.67	10.15
Stage 8	193.7	228.65	10.15
Stage 8	193.5	209.71	-94.71
Stage 8	193.3	192	-88.57
Stage 8	193.1	175.34	-83.27
Stage 8	192.9	159.77	-77.88
Stage 8	192.7	145.31	-72.27
Stage 8	192.5	132.02	-66.45
Stage 8	192.3	119.94	-60.4
Stage 8	192.1	108.9	-55.22
Stage 8	191.9	98.17	-53.63
Stage 8	191.8	92.91	-52.63

#### 4.4.17. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 1



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 1  
Spostamento

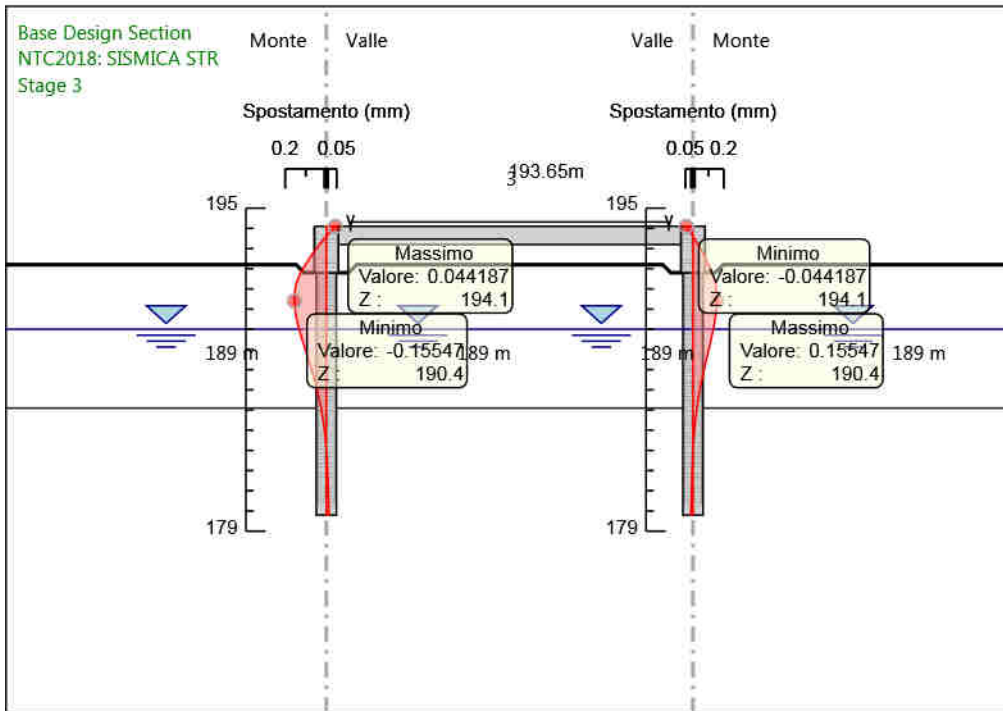
#### 4.4.18. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 2



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 2  
Spostamento

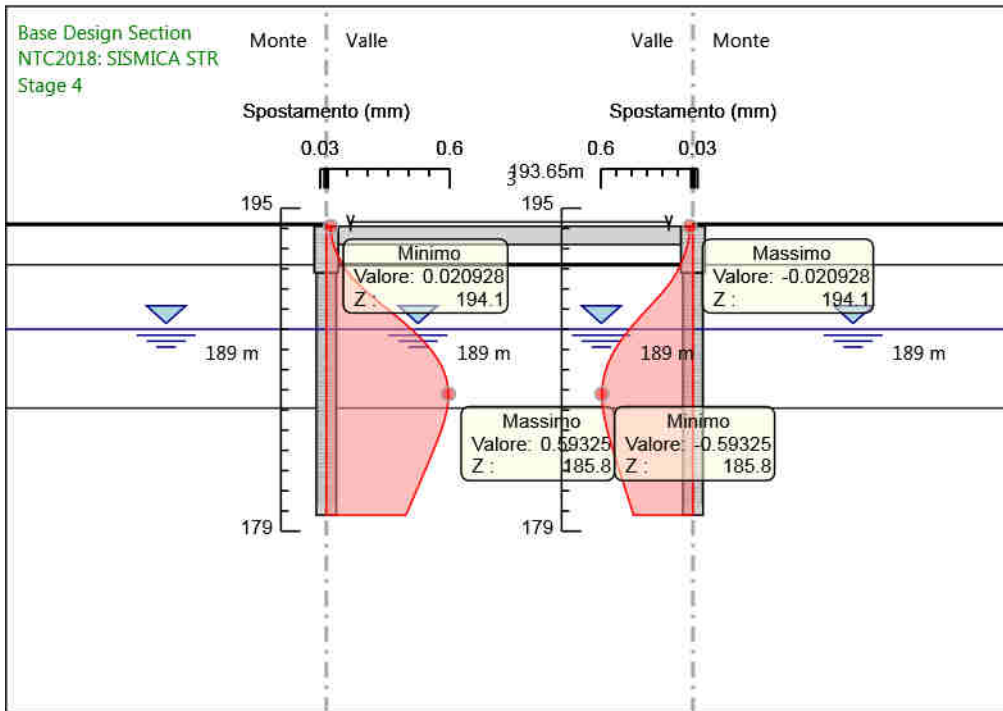


#### 4.4.19. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 3



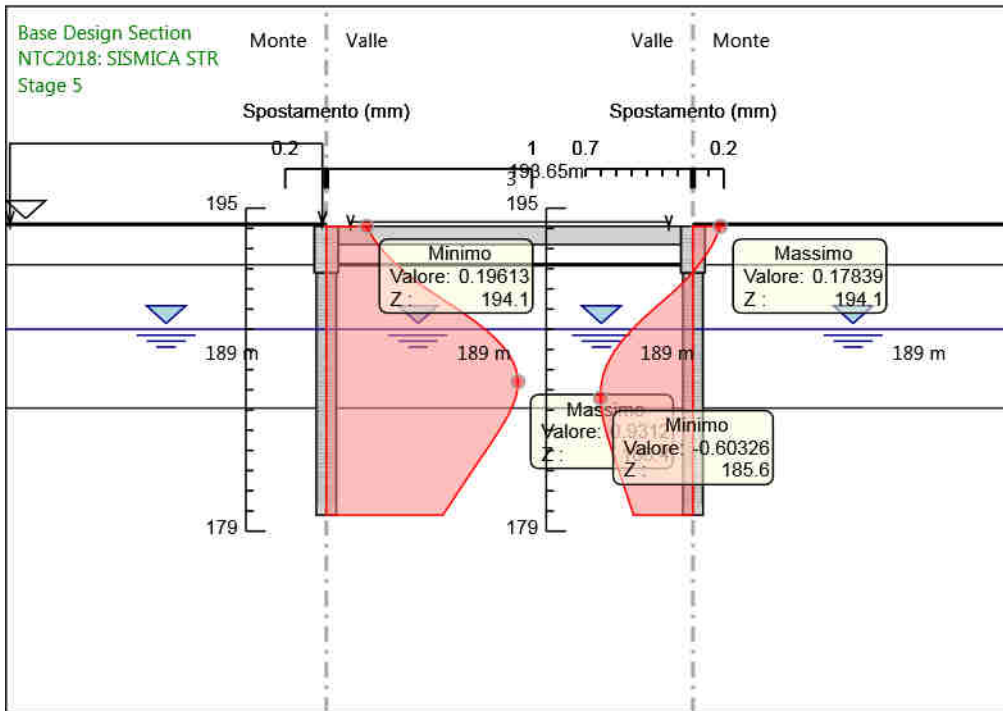
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 3  
Spostamento

#### 4.4.20. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 4



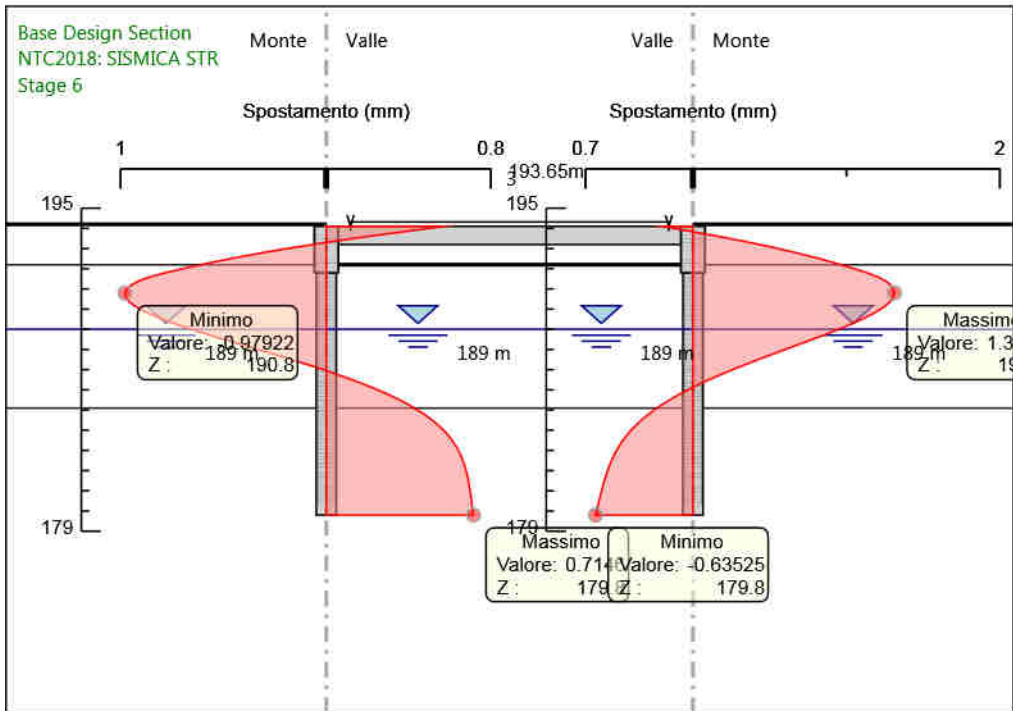
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 4  
Spostamento

#### 4.4.21. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 5



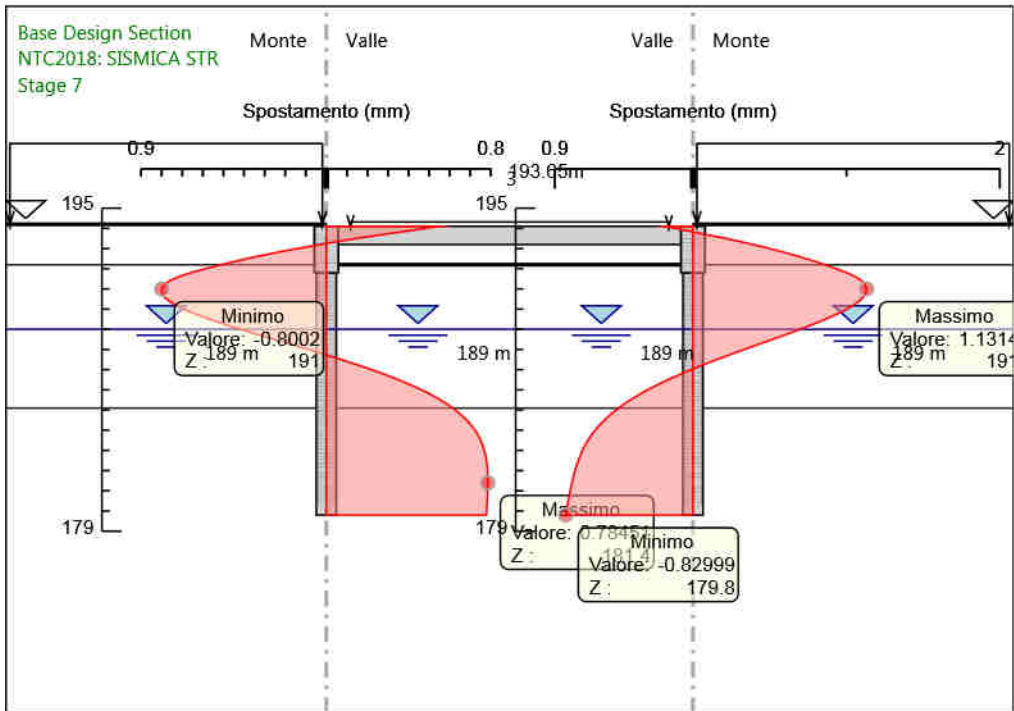
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 5  
Spostamento

#### 4.4.22. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 6



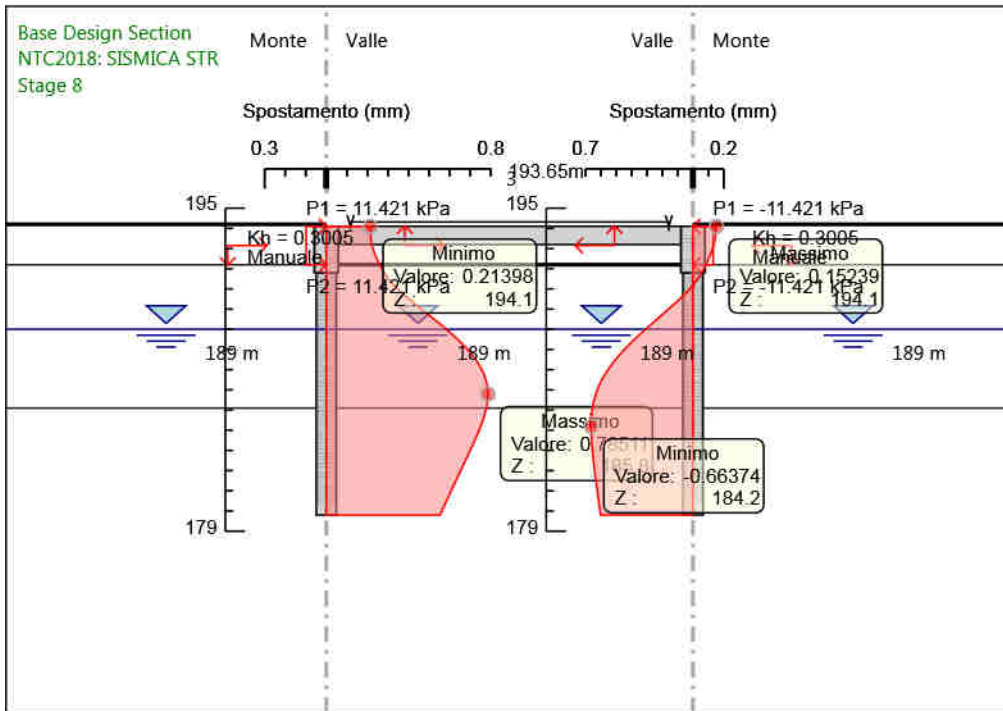
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 6  
Spostamento

#### 4.4.23. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 7



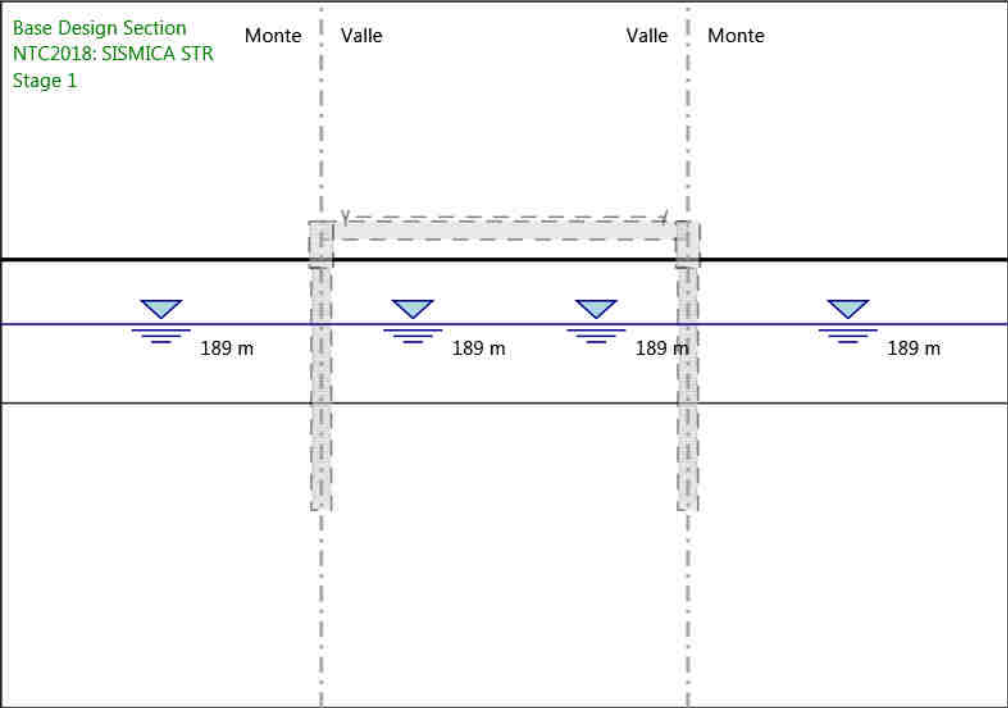
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 7  
Spostamento

#### 4.4.24. Grafico Spostamento NTC2018: SISMICA STR - Stage: Stage 8



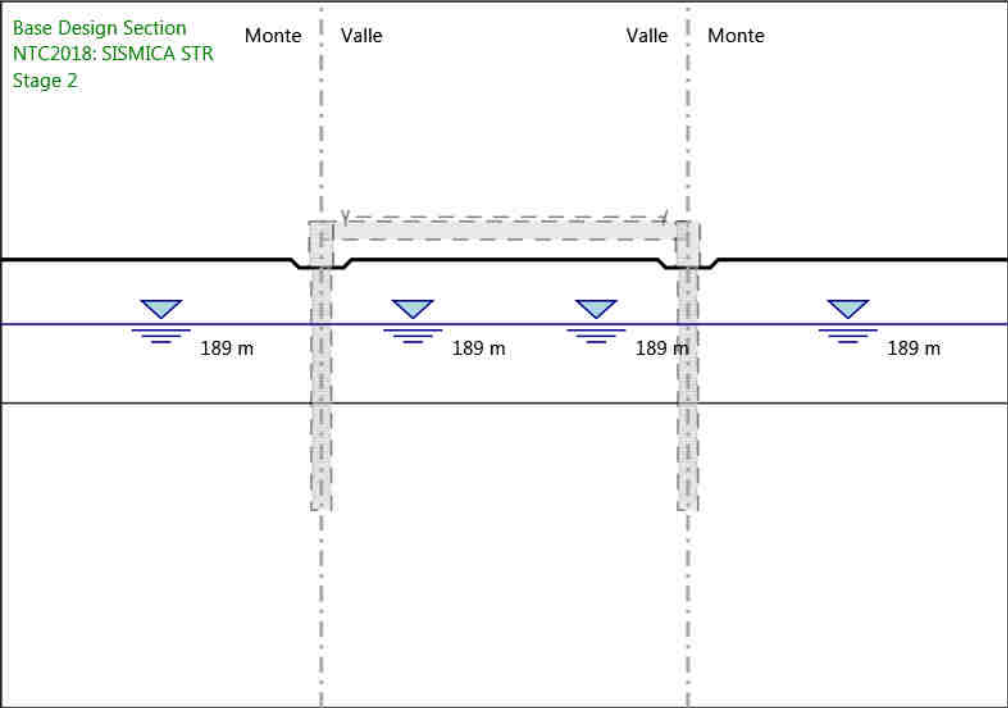
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 8  
Spostamento

4.4.25. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 1



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 1  
Momento

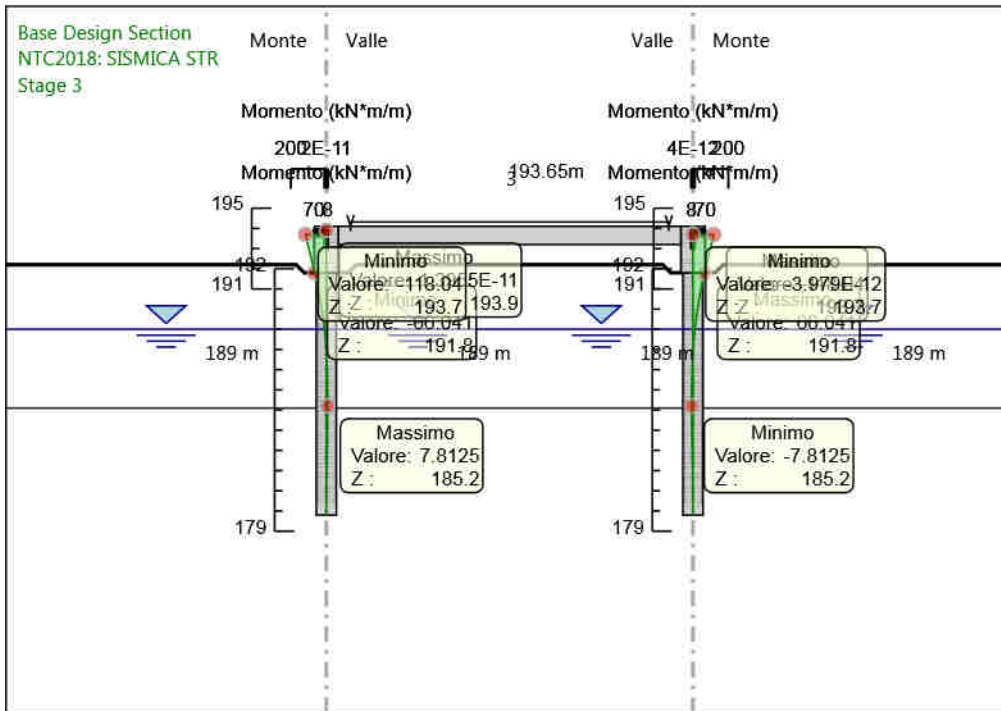
4.4.26. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 2



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 2  
Momento

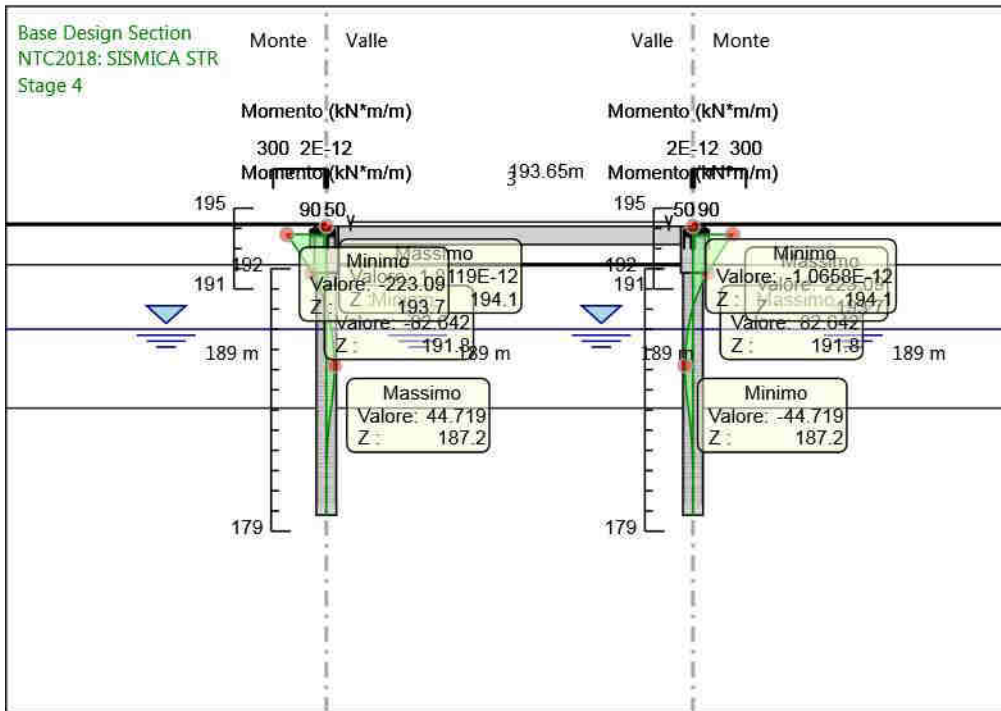


#### 4.4.27. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 3



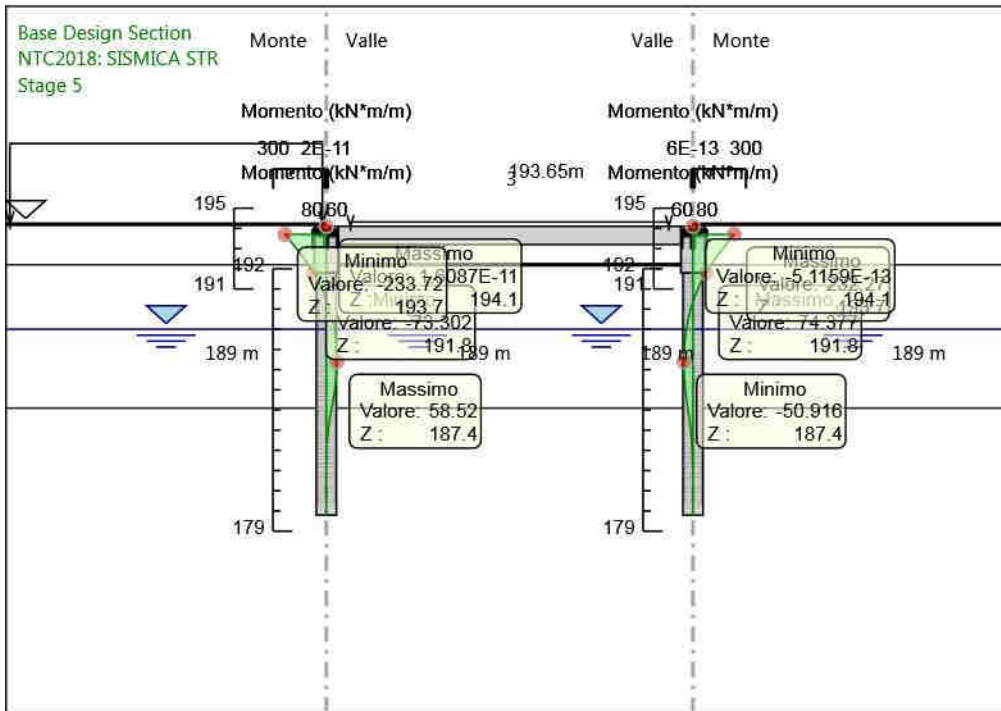
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 3  
Momento

#### 4.4.28. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 4



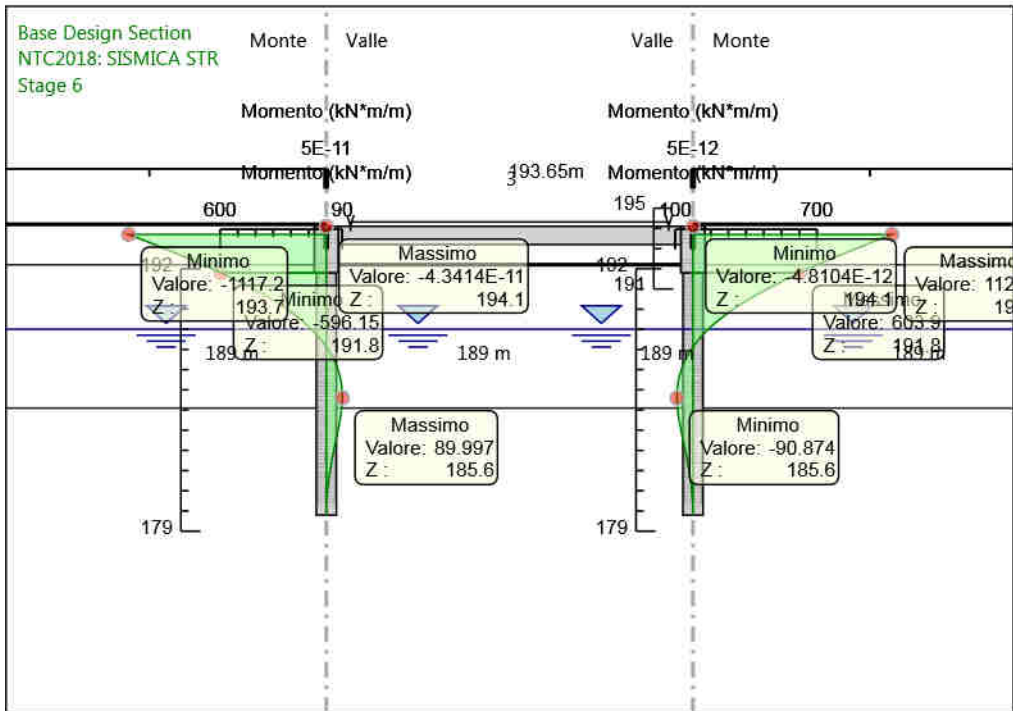
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 4  
 Momento

#### 4.4.29. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 5



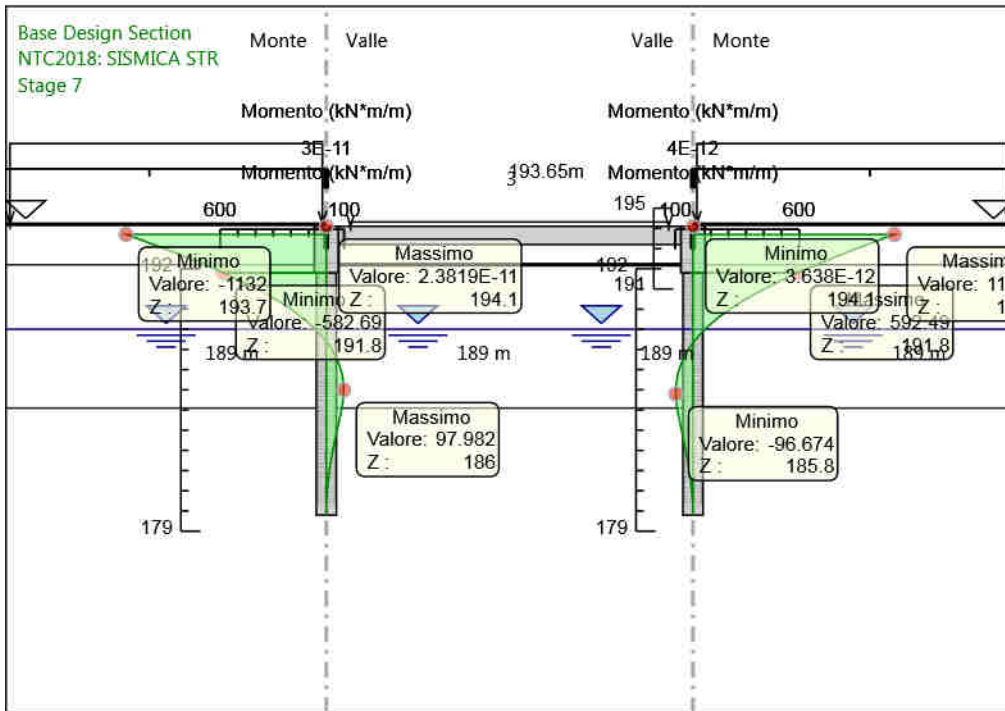
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 5  
Momento

#### 4.4.30. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 6



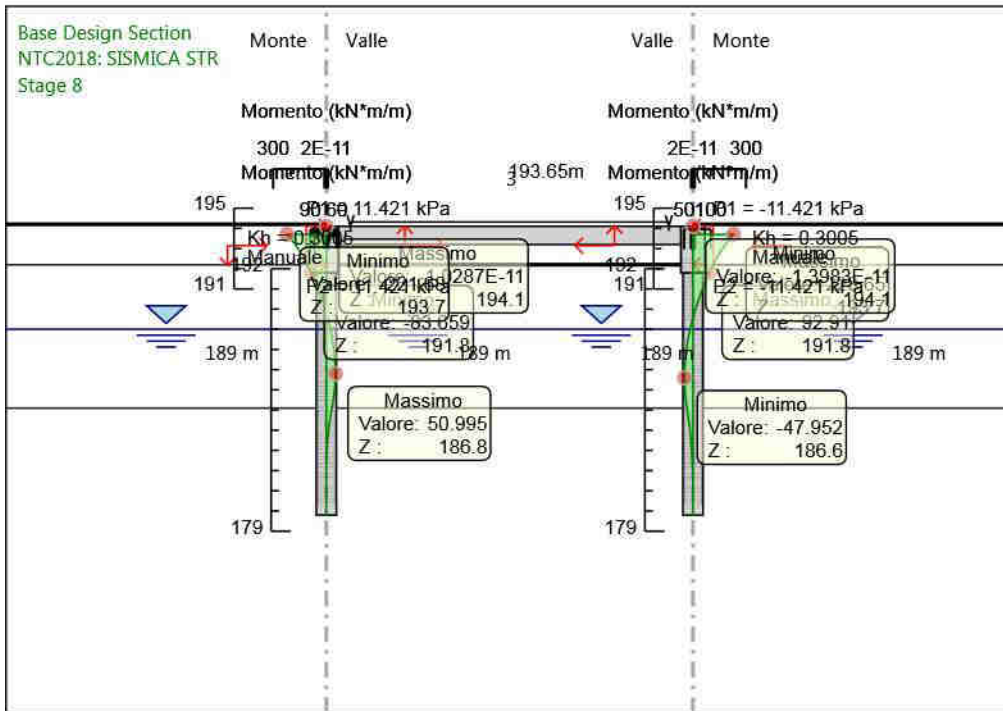
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 6  
 Momento

#### 4.4.31. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 7



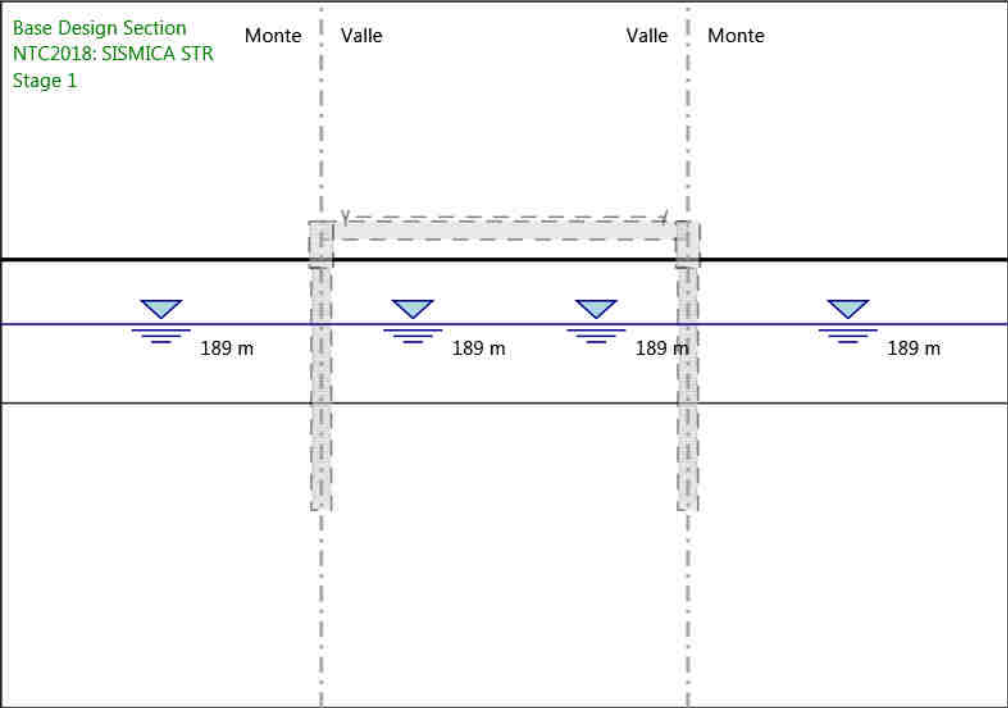
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 7  
 Momento

#### 4.4.32. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 8



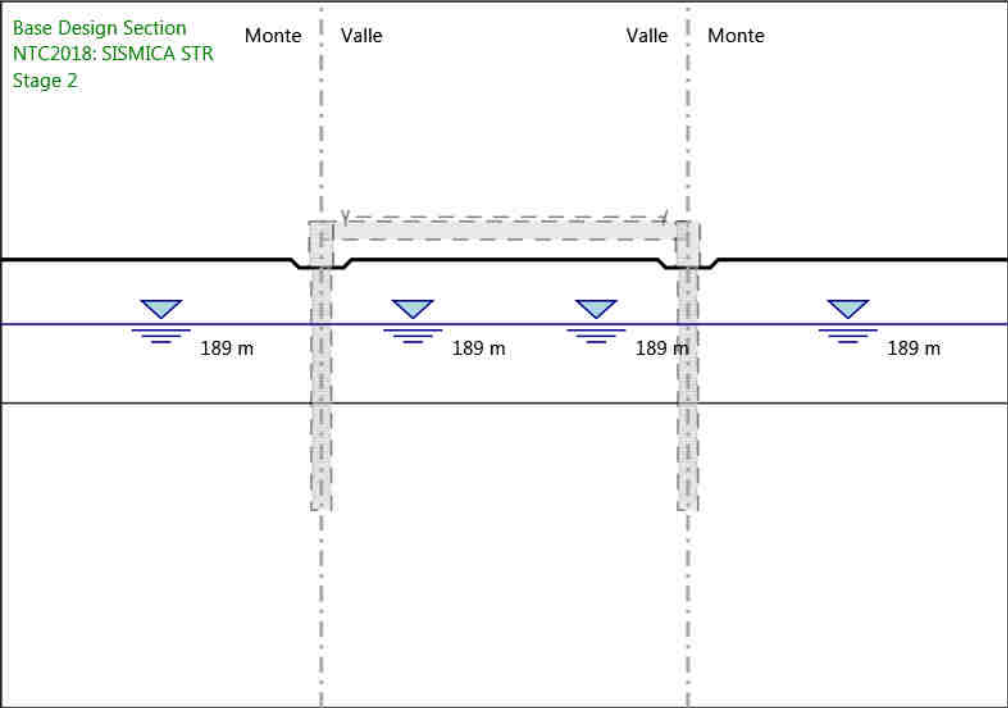
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 8  
 Momento

4.4.33. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 1



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 1  
Taglio

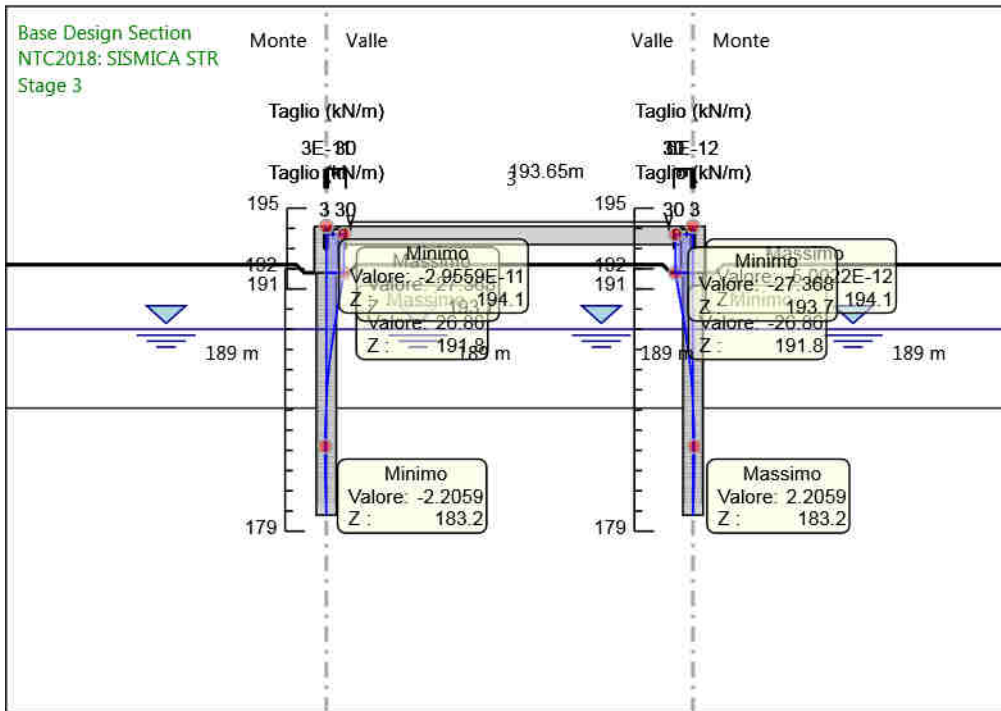
4.4.34. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 2



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 2  
Taglio

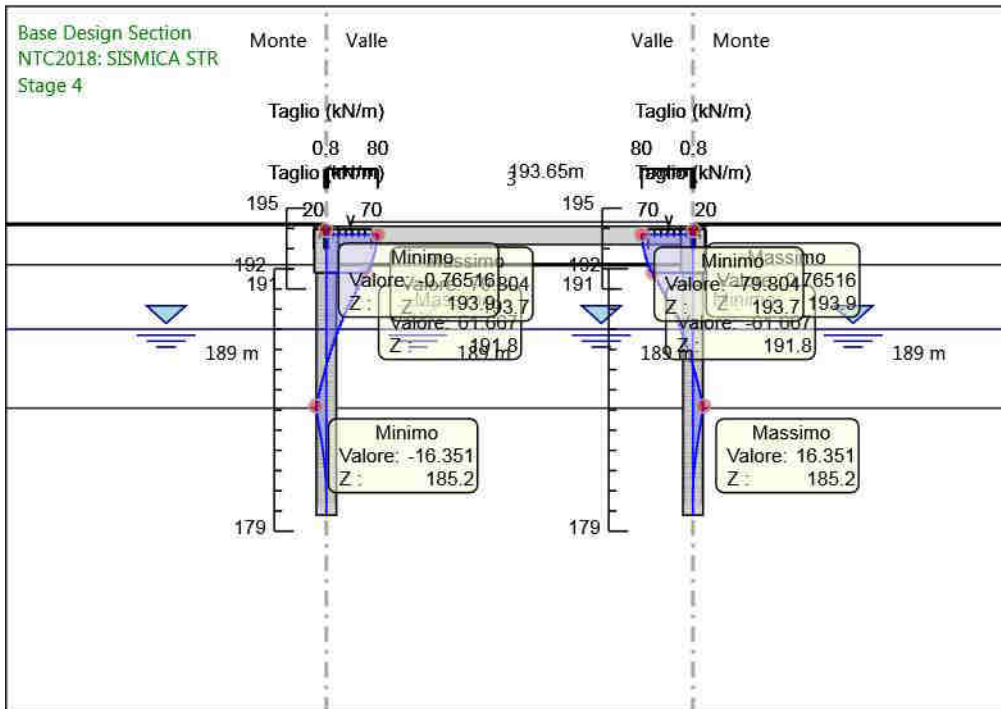


#### 4.4.35. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 3



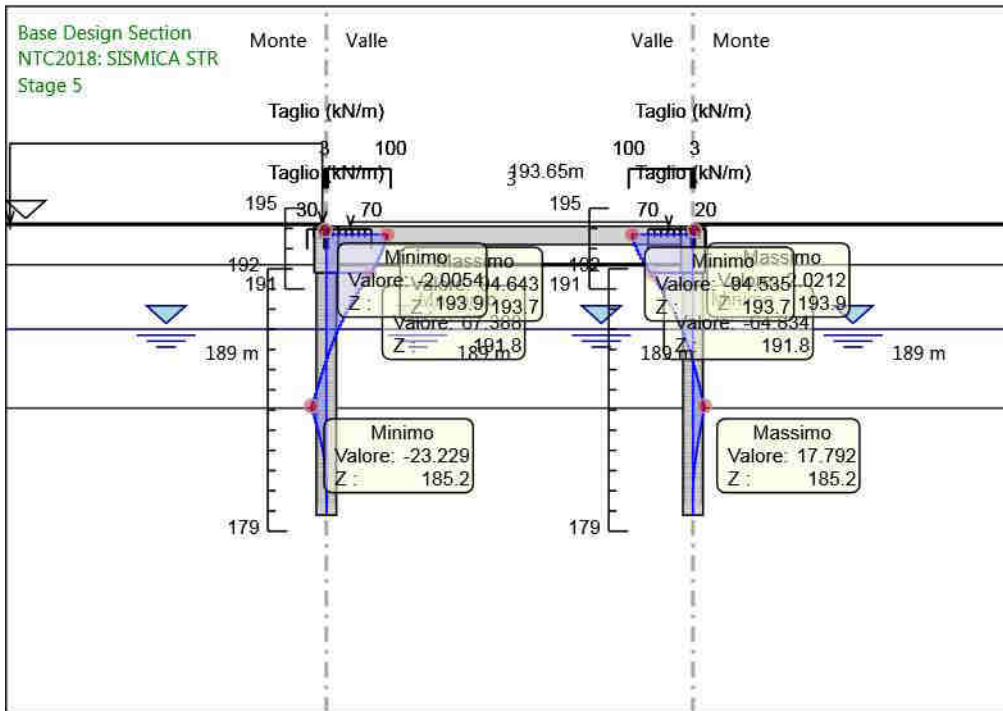
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 3  
 Taglio

#### 4.4.36. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 4



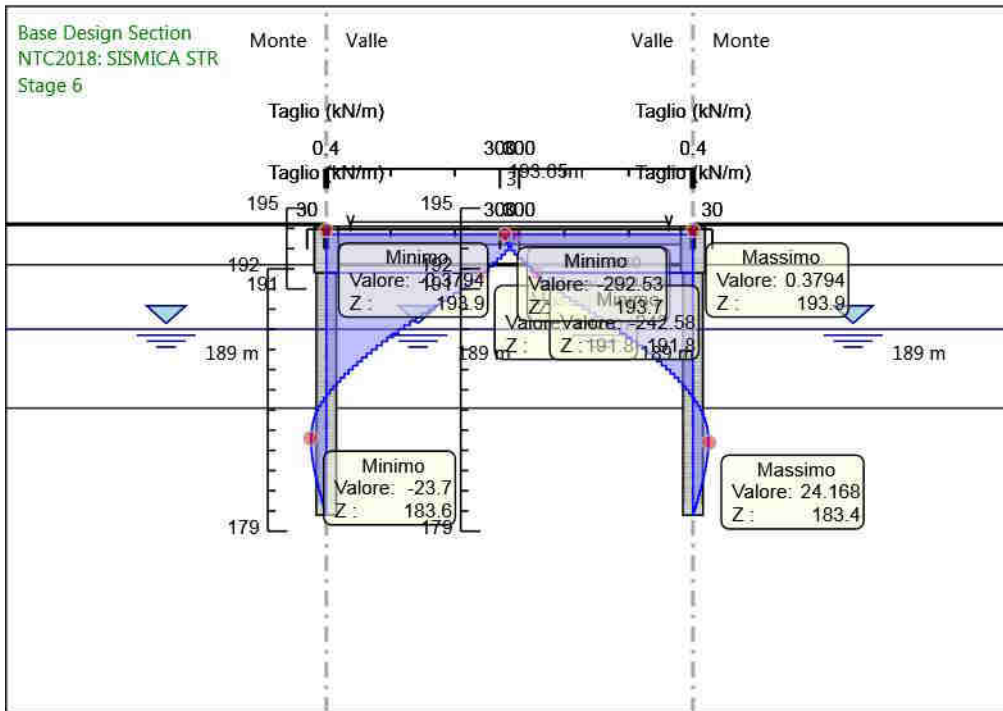
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 4  
Taglio

#### 4.4.37. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 5



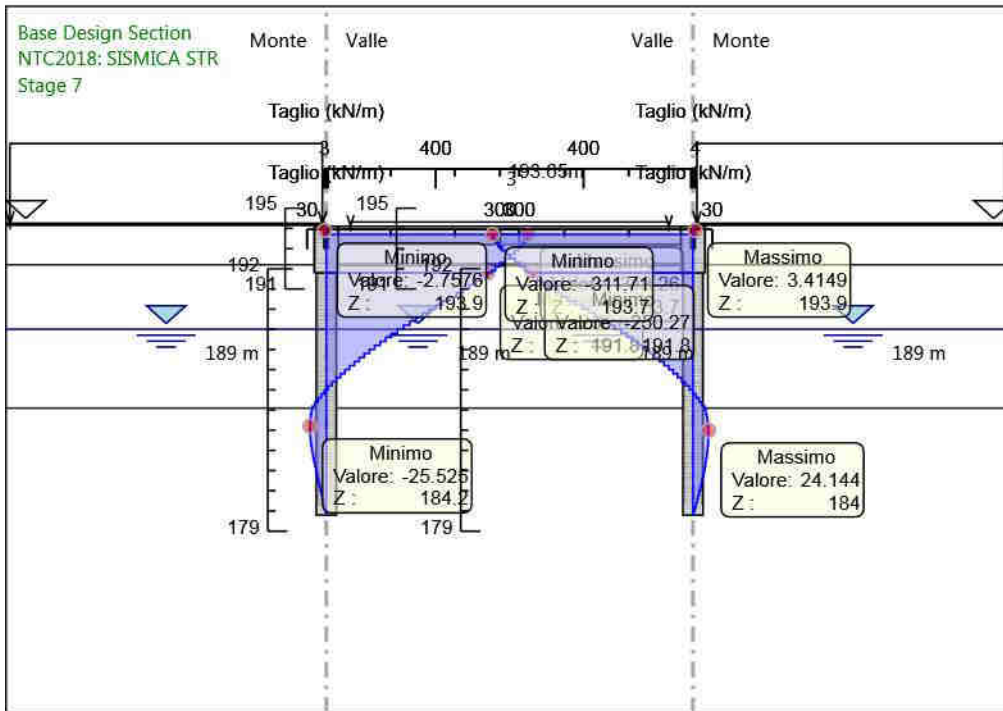
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 5  
Taglio

#### 4.4.38. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 6



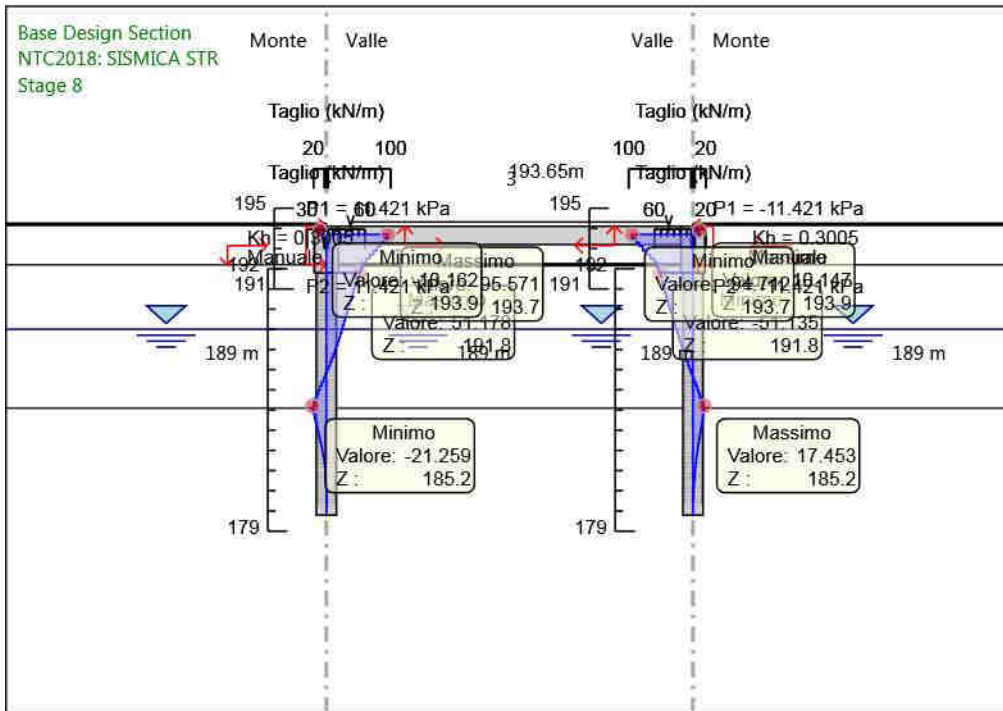
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 6  
Taglio

#### 4.4.39. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 7



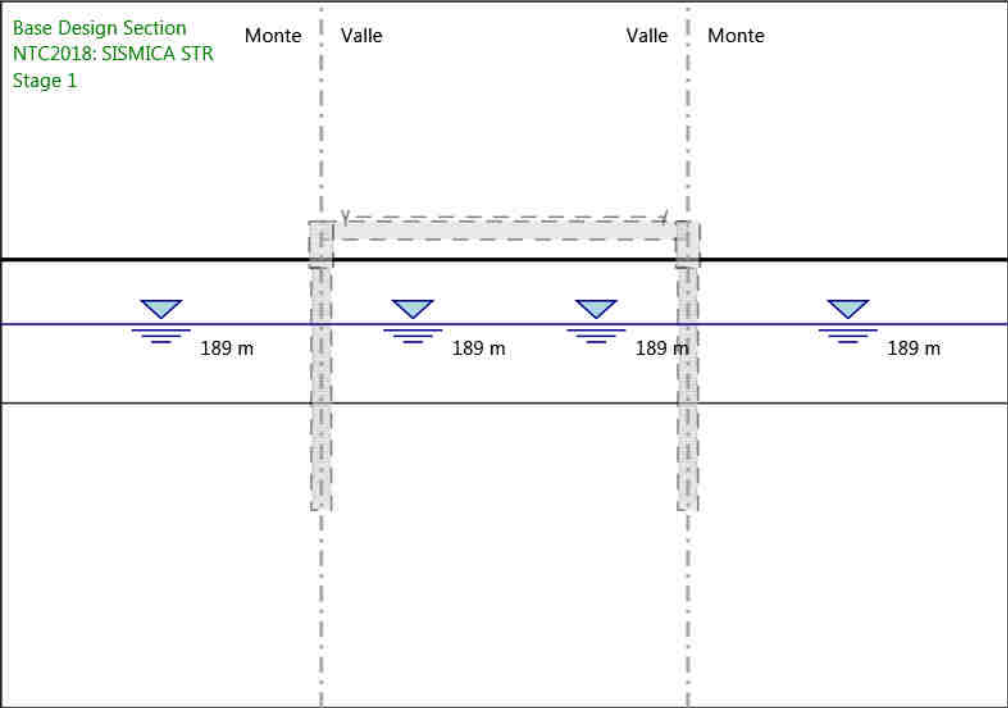
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 7  
Taglio

#### 4.4.40. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 8



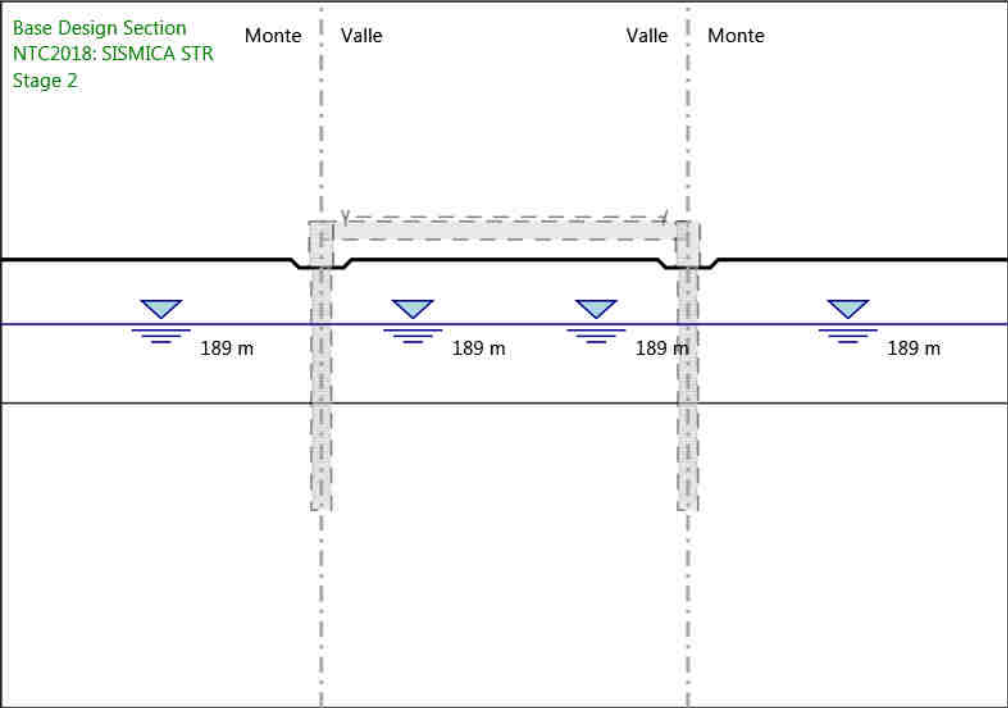
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 8  
Taglio

4.4.41. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 1



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 1  
Momento

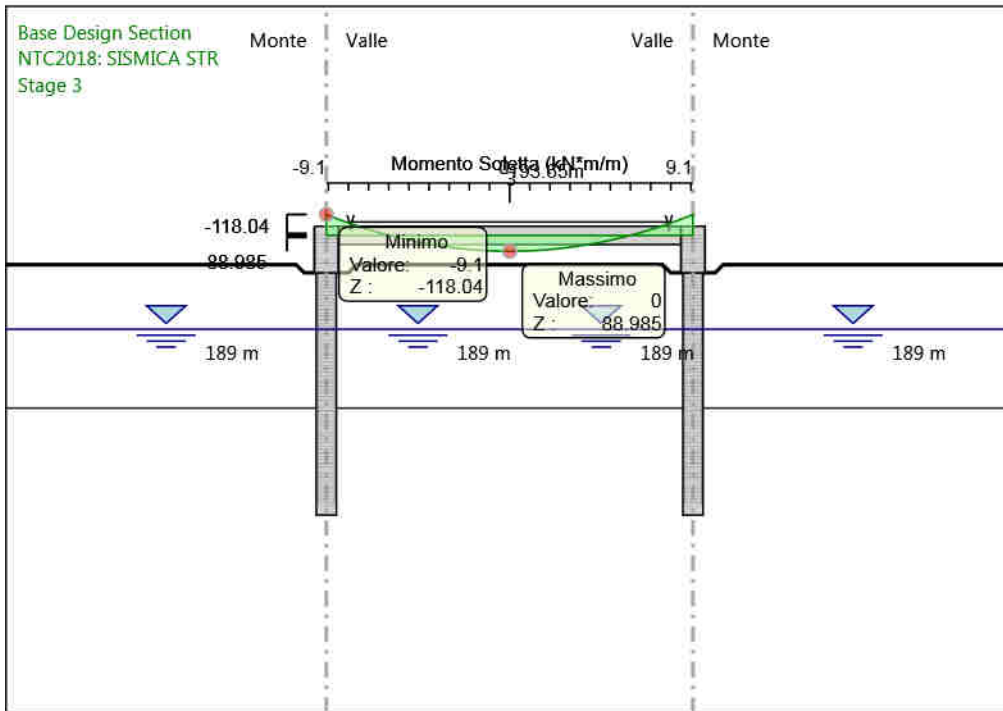
4.4.42. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 2



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 2  
Momento

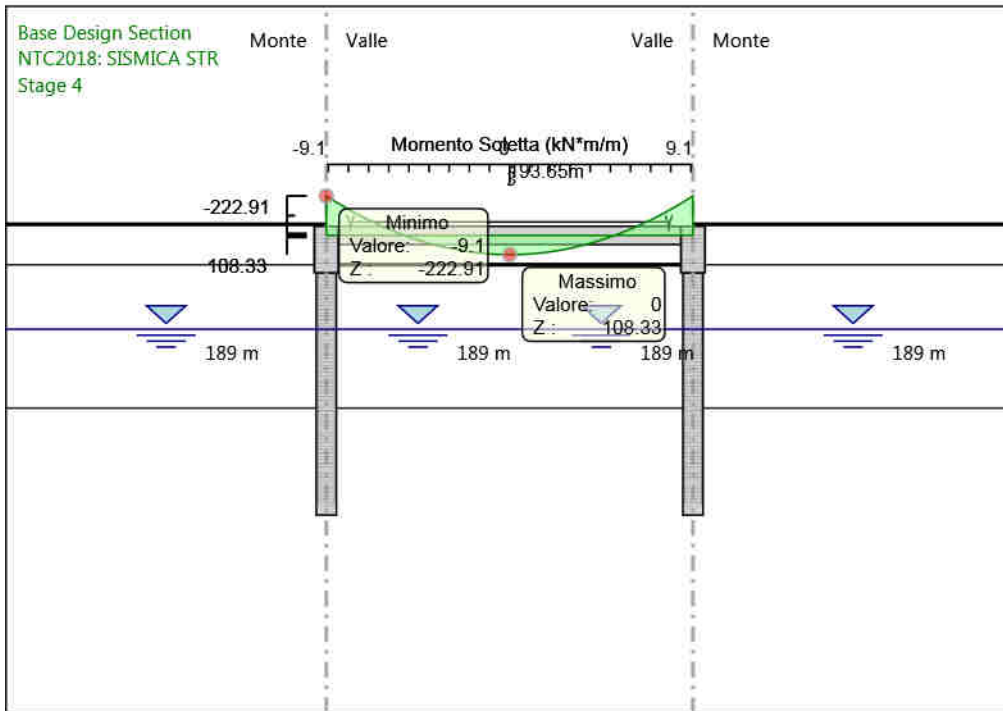


#### 4.4.43. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 3



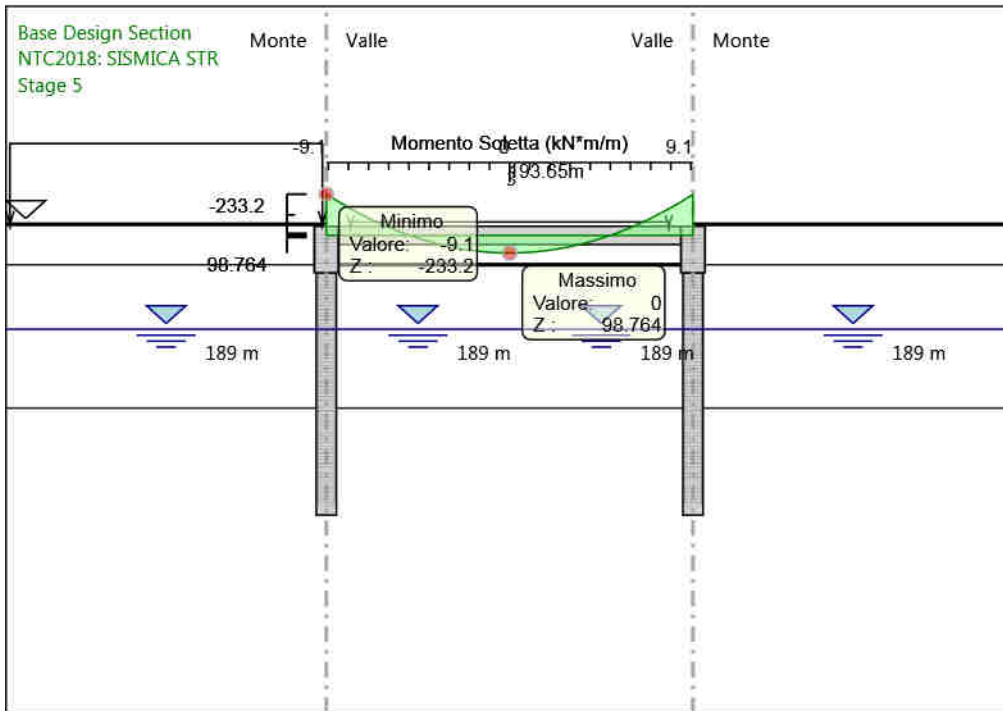
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 3  
Momento

#### 4.4.44. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 4



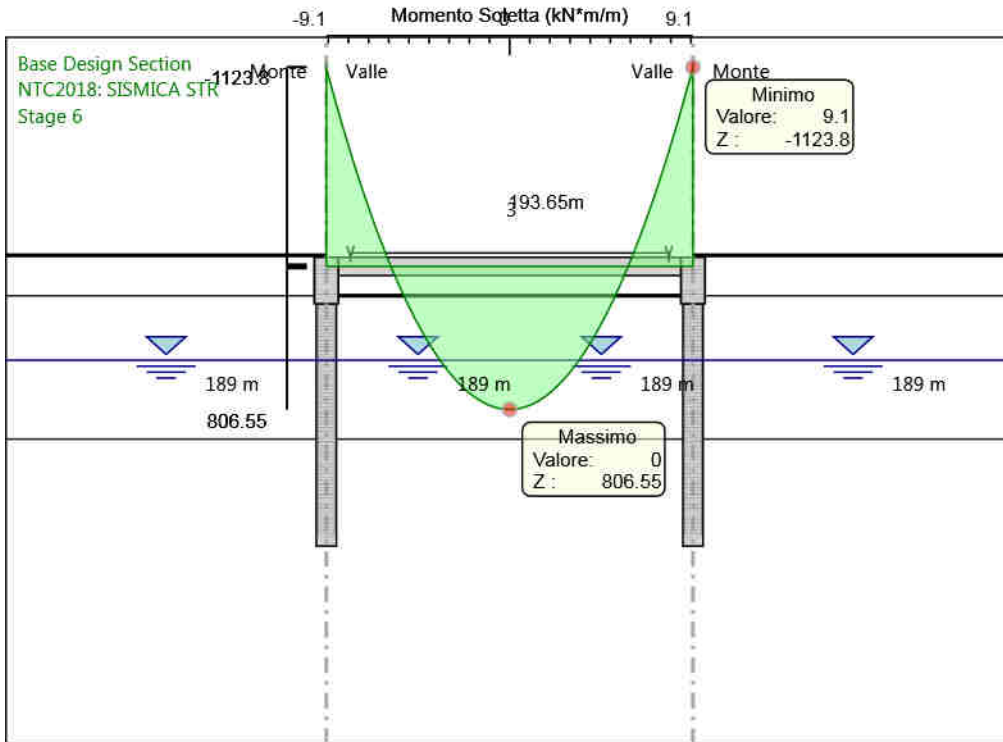
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 4  
Momento

#### 4.4.45. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 5



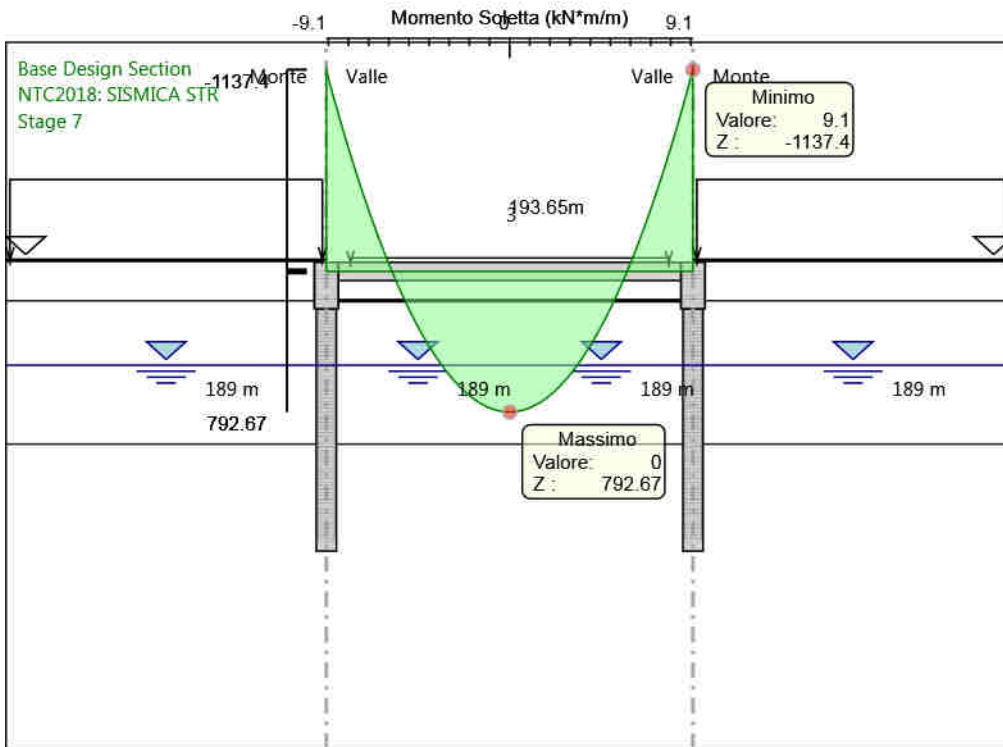
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 5  
Momento

#### 4.4.46. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 6



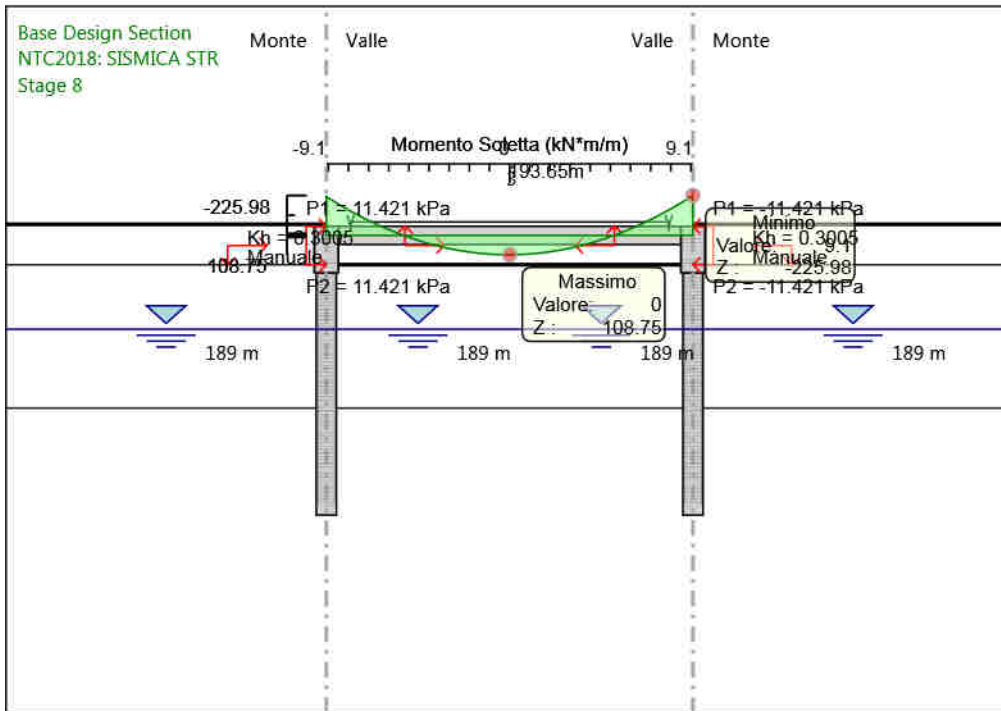
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 6  
Momento

#### 4.4.47. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 7



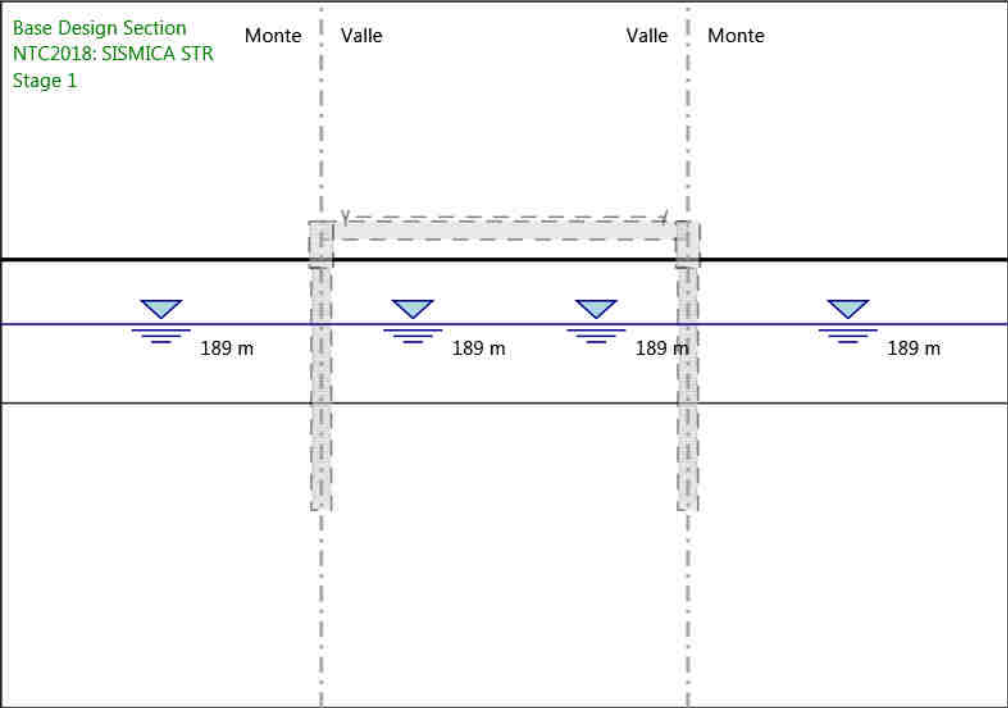
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 7  
Momento

#### 4.4.48. Grafico Risultati Momento NTC2018: SISMICA STR - Stage: Stage 8



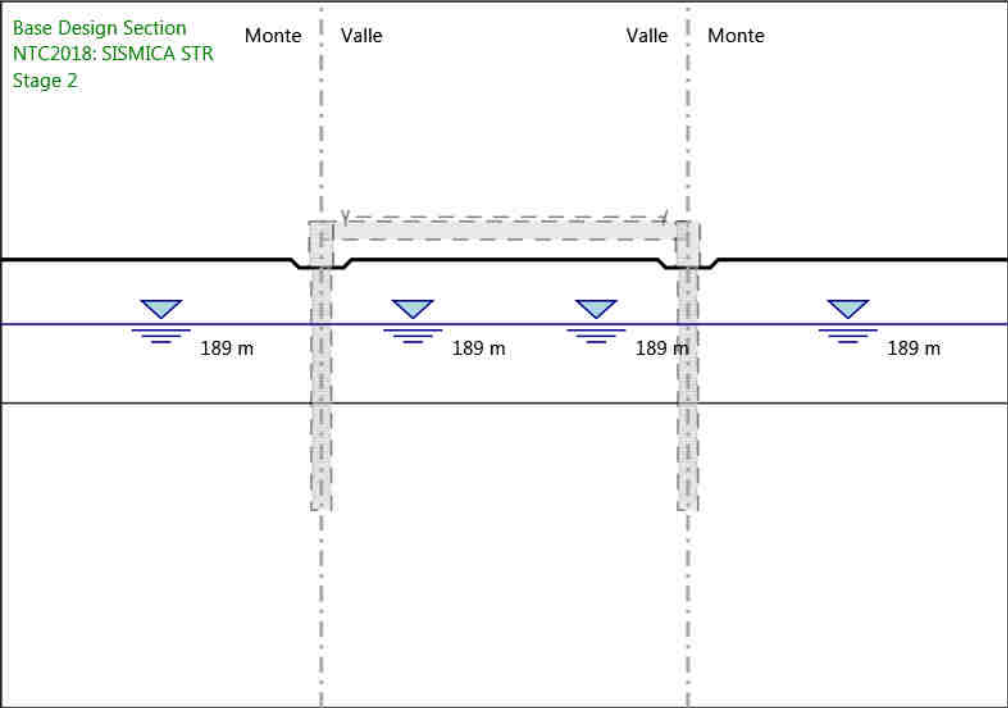
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 8  
Momento

4.4.49. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 1



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 1  
Taglio

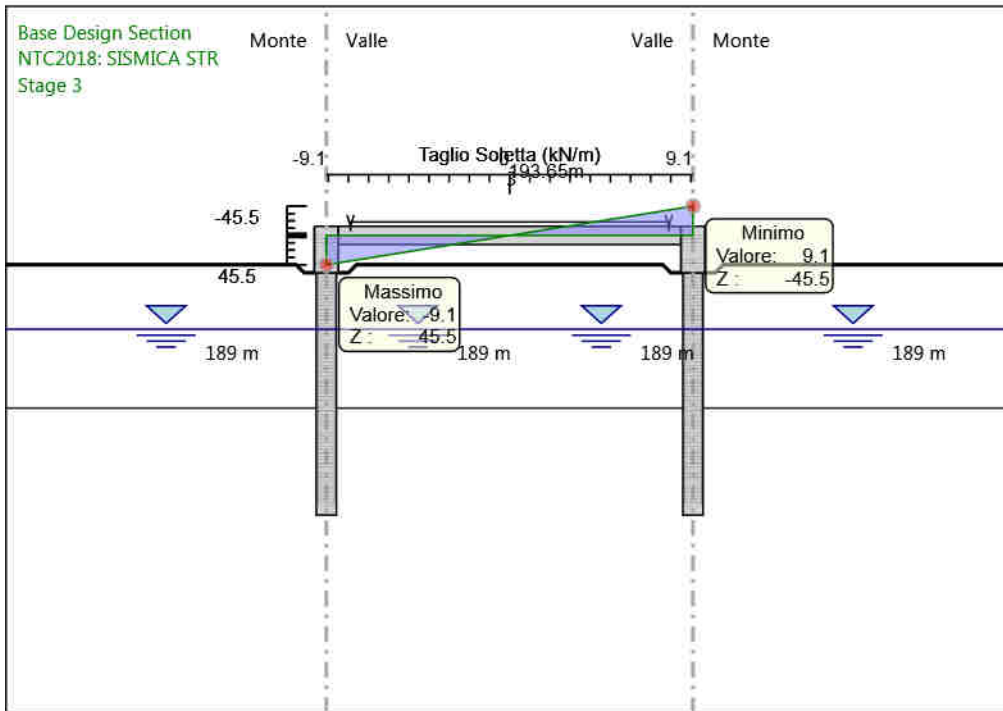
4.4.50. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 2



Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 2  
Taglio

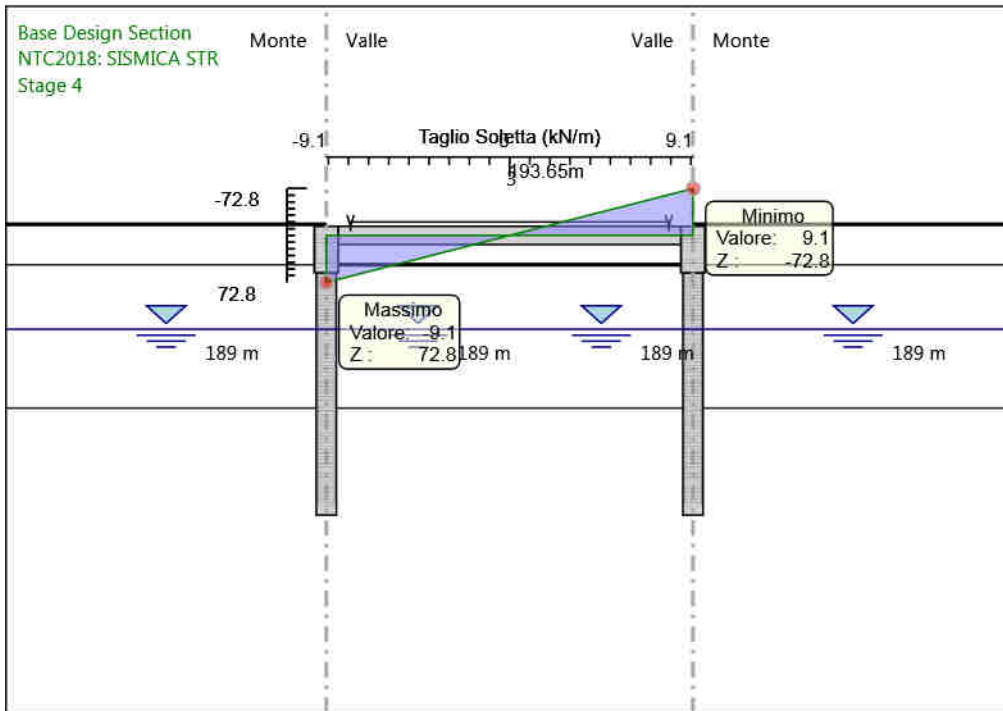


#### 4.4.51. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 3



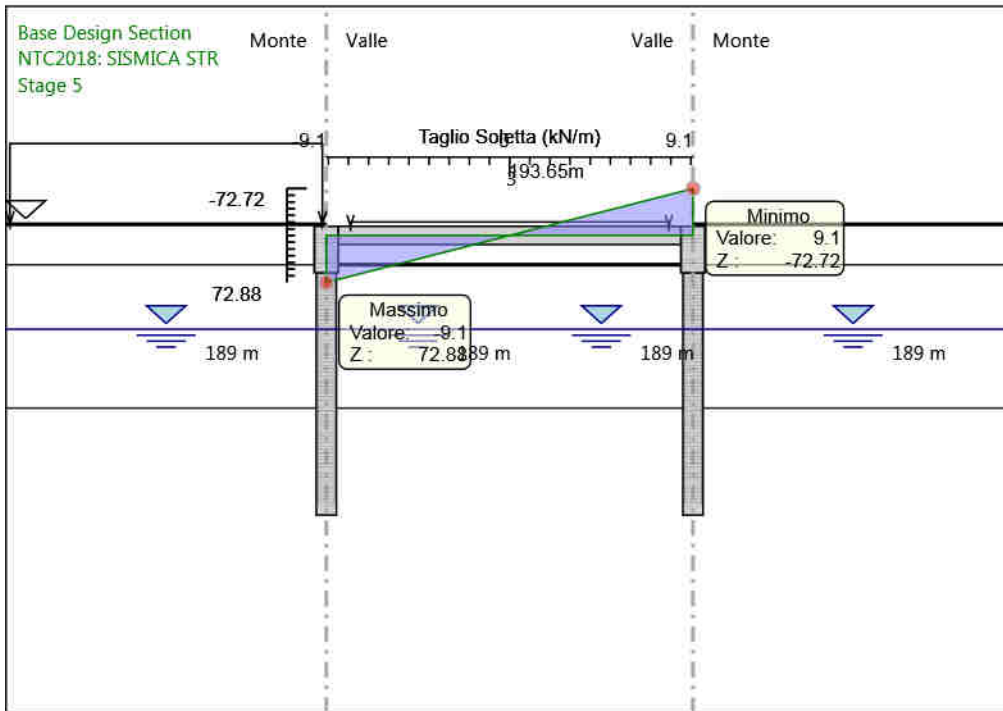
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 3  
Taglio

#### 4.4.52. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 4



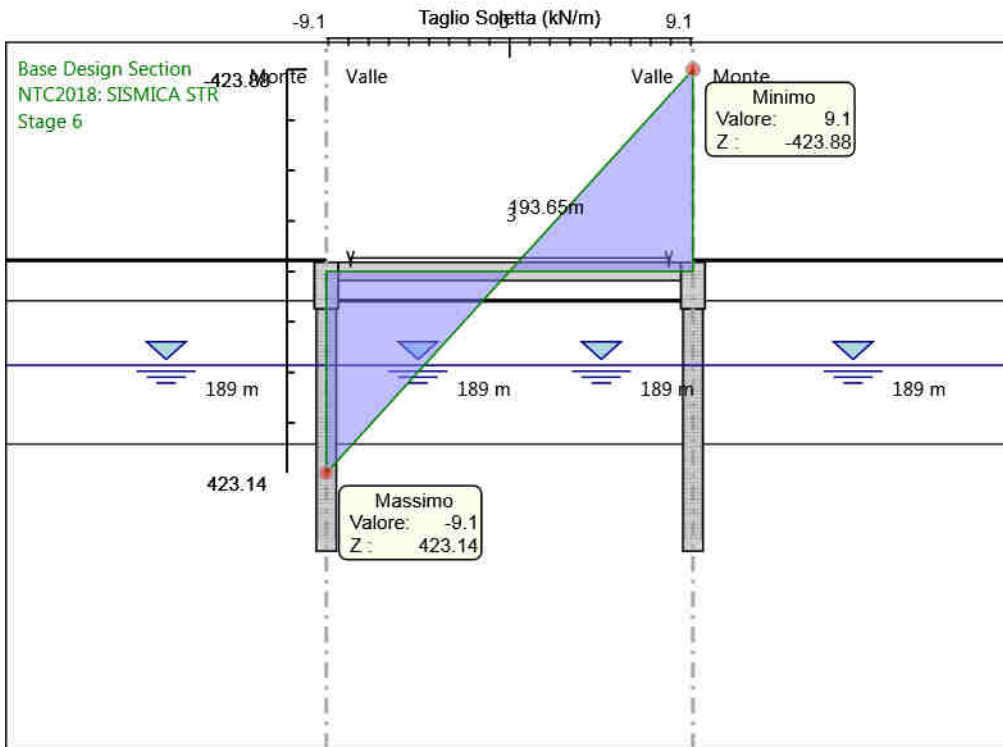
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 4  
Taglio

#### 4.4.53. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 5



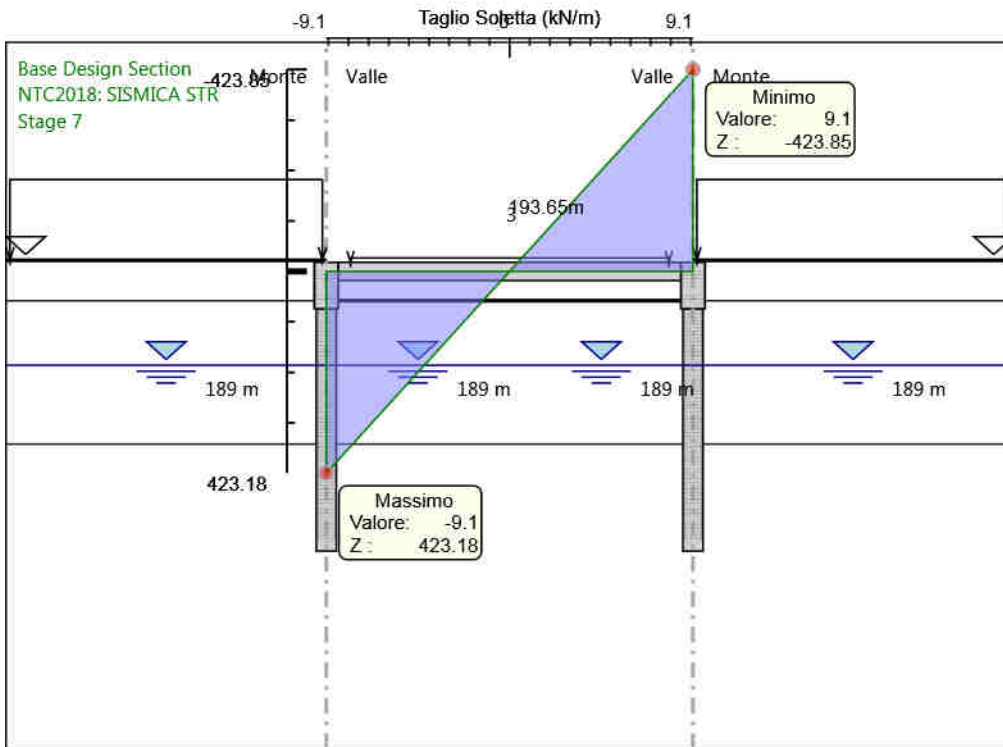
Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 5  
 Taglio

#### 4.4.54. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 6



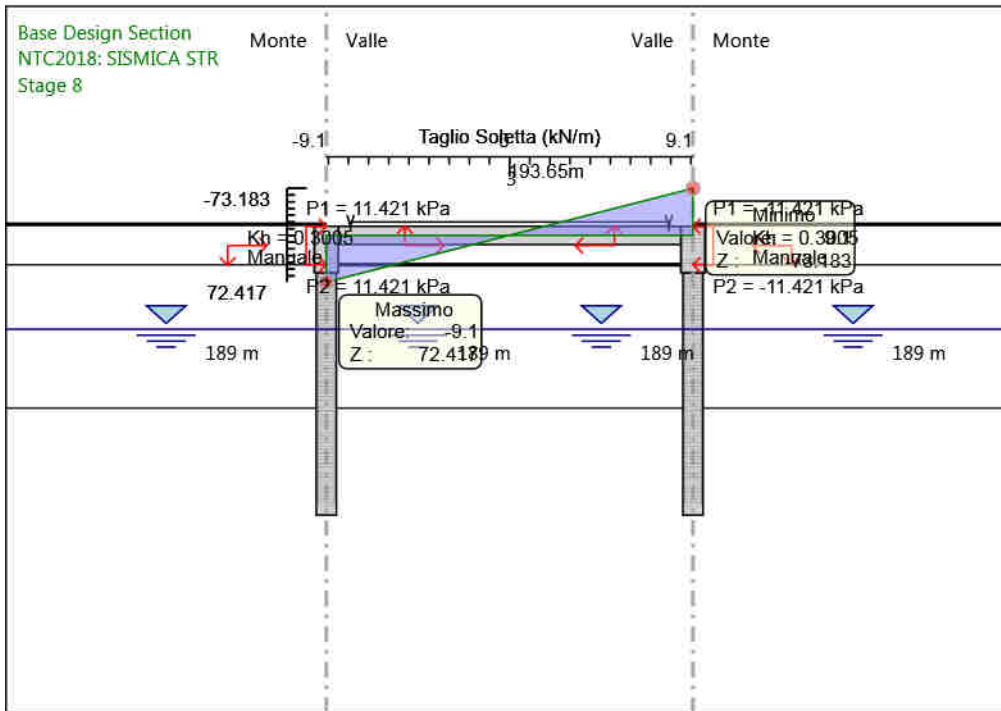
Design Assumption: NTC2018: SISMICA STR  
Stage: Stage 6  
Taglio

#### 4.4.55. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 7



Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 7  
 Taglio

#### 4.4.56. Grafico Risultati Taglio NTC2018: SISMICA STR - Stage: Stage 8



Design Assumption: NTC2018: SISMICA STR  
 Stage: Stage 8  
 Taglio

#### 4.4.57. Risultati Elementi strutturali - NTC2018: SISMICA STR

Design Assumption: NTC2018: SISMICA STR Stage	Tipo Risultato: Soletta Taglio-a (kN/m)	soletta				
		Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)	Surcharge (kPa)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	45.5	45.5	118.0405	-118.0405	-27.3682	5
Stage 4	72.8	72.8	222.9081	-222.9081	-81.35649	8
Stage 5	72.87991	72.72009	233.2031	-231.7488	-98.27435	8
Stage 6	423.144	423.884	1117.076	-1123.81	-293.8333	46.54
Stage 7	423.1808	423.8472	1131.291	-1137.355	-317.9001	46.54
Stage 8	72.41666	73.18334	219.0062	-225.983	-111.3734	8

## 4.5. Risultati NTC2018: SISMICA GEO

### 4.5.1. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 1

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0



Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

#### 4.5.2. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 1

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	191.8	0	0
Stage 1	191.6	0	0
Stage 1	191.4	0	0
Stage 1	191.2	0	0
Stage 1	191	0	0
Stage 1	190.8	0	0
Stage 1	190.6	0	0
Stage 1	190.4	0	0
Stage 1	190.2	0	0
Stage 1	190	0	0
Stage 1	189.8	0	0
Stage 1	189.6	0	0
Stage 1	189.4	0	0
Stage 1	189.2	0	0
Stage 1	189	0	0
Stage 1	188.8	0	0
Stage 1	188.6	0	0
Stage 1	188.4	0	0
Stage 1	188.2	0	0
Stage 1	188	0	0
Stage 1	187.8	0	0
Stage 1	187.6	0	0
Stage 1	187.4	0	0
Stage 1	187.2	0	0
Stage 1	187	0	0
Stage 1	186.8	0	0
Stage 1	186.6	0	0
Stage 1	186.4	0	0
Stage 1	186.2	0	0
Stage 1	186	0	0
Stage 1	185.8	0	0
Stage 1	185.6	0	0
Stage 1	185.4	0	0
Stage 1	185.2	0	0
Stage 1	185	0	0
Stage 1	184.8	0	0
Stage 1	184.6	0	0
Stage 1	184.4	0	0
Stage 1	184.2	0	0
Stage 1	184	0	0
Stage 1	183.8	0	0
Stage 1	183.6	0	0
Stage 1	183.4	0	0
Stage 1	183.2	0	0
Stage 1	183	0	0
Stage 1	182.8	0	0
Stage 1	182.6	0	0
Stage 1	182.4	0	0
Stage 1	182.2	0	0
Stage 1	182	0	0
Stage 1	181.8	0	0
Stage 1	181.6	0	0
Stage 1	181.4	0	0
Stage 1	181.2	0	0
Stage 1	181	0	0
Stage 1	180.8	0	0
Stage 1	180.6	0	0
Stage 1	180.4	0	0
Stage 1	180.2	0	0
Stage 1	180	0	0
Stage 1	179.8	0	0

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	194.1	0	0
Stage 1	193.9	0	0
Stage 1	193.7	0	0
Stage 1	193.5	0	0
Stage 1	193.3	0	0
Stage 1	193.1	0	0
Stage 1	192.9	0	0
Stage 1	192.7	0	0
Stage 1	192.5	0	0
Stage 1	192.3	0	0
Stage 1	192.1	0	0
Stage 1	191.9	0	0
Stage 1	191.8	0	0

### 4.5.3. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 2

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.5.4. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 2

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	191.8	0	0
Stage 2	191.6	0	0
Stage 2	191.4	0	0
Stage 2	191.2	0	0
Stage 2	191	0	0
Stage 2	190.8	0	0
Stage 2	190.6	0	0
Stage 2	190.4	0	0
Stage 2	190.2	0	0
Stage 2	190	0	0
Stage 2	189.8	0	0
Stage 2	189.6	0	0
Stage 2	189.4	0	0
Stage 2	189.2	0	0
Stage 2	189	0	0
Stage 2	188.8	0	0
Stage 2	188.6	0	0
Stage 2	188.4	0	0
Stage 2	188.2	0	0
Stage 2	188	0	0
Stage 2	187.8	0	0
Stage 2	187.6	0	0
Stage 2	187.4	0	0
Stage 2	187.2	0	0
Stage 2	187	0	0
Stage 2	186.8	0	0
Stage 2	186.6	0	0
Stage 2	186.4	0	0
Stage 2	186.2	0	0
Stage 2	186	0	0
Stage 2	185.8	0	0
Stage 2	185.6	0	0
Stage 2	185.4	0	0
Stage 2	185.2	0	0
Stage 2	185	0	0
Stage 2	184.8	0	0
Stage 2	184.6	0	0
Stage 2	184.4	0	0
Stage 2	184.2	0	0
Stage 2	184	0	0
Stage 2	183.8	0	0
Stage 2	183.6	0	0
Stage 2	183.4	0	0
Stage 2	183.2	0	0
Stage 2	183	0	0
Stage 2	182.8	0	0
Stage 2	182.6	0	0
Stage 2	182.4	0	0
Stage 2	182.2	0	0
Stage 2	182	0	0
Stage 2	181.8	0	0
Stage 2	181.6	0	0
Stage 2	181.4	0	0
Stage 2	181.2	0	0
Stage 2	181	0	0
Stage 2	180.8	0	0
Stage 2	180.6	0	0
Stage 2	180.4	0	0
Stage 2	180.2	0	0
Stage 2	180	0	0
Stage 2	179.8	0	0

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	194.1	0	0
Stage 2	193.9	0	0
Stage 2	193.7	0	0
Stage 2	193.5	0	0
Stage 2	193.3	0	0
Stage 2	193.1	0	0
Stage 2	192.9	0	0
Stage 2	192.7	0	0
Stage 2	192.5	0	0
Stage 2	192.3	0	0
Stage 2	192.1	0	0
Stage 2	191.9	0	0
Stage 2	191.8	0	0

#### 4.5.5. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 3

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	-66.04	26.86
Stage 3	191.6	-60.67	26.86
Stage 3	191.4	-55.51	25.8
Stage 3	191.2	-50.56	24.72
Stage 3	191	-45.84	23.63
Stage 3	190.8	-41.34	22.52
Stage 3	190.6	-37.06	21.39
Stage 3	190.4	-33	20.27
Stage 3	190.2	-29.17	19.14
Stage 3	190	-25.57	18.03
Stage 3	189.8	-22.18	16.92
Stage 3	189.6	-19.02	15.84
Stage 3	189.4	-16.06	14.77
Stage 3	189.2	-13.32	13.73
Stage 3	189	-10.78	12.71
Stage 3	188.8	-8.43	11.72
Stage 3	188.6	-6.28	10.76
Stage 3	188.4	-4.31	9.83
Stage 3	188.2	-2.52	8.94
Stage 3	188	-0.91	8.08
Stage 3	187.8	0.54	7.25
Stage 3	187.6	1.83	6.46
Stage 3	187.4	2.98	5.7
Stage 3	187.2	3.97	4.98
Stage 3	187	4.83	4.27
Stage 3	186.8	5.55	3.62
Stage 3	186.6	6.15	3.02
Stage 3	186.4	6.65	2.47
Stage 3	186.2	7.04	1.96
Stage 3	186	7.34	1.51
Stage 3	185.8	7.56	1.1
Stage 3	185.6	7.71	0.73
Stage 3	185.4	7.79	0.41
Stage 3	185.2	7.81	0.12
Stage 3	185	7.79	-0.13
Stage 3	184.8	7.67	-0.57
Stage 3	184.6	7.48	-0.94
Stage 3	184.4	7.23	-1.26
Stage 3	184.2	6.93	-1.52
Stage 3	184	6.58	-1.73
Stage 3	183.8	6.2	-1.9
Stage 3	183.6	5.79	-2.03
Stage 3	183.4	5.37	-2.12
Stage 3	183.2	4.93	-2.18
Stage 3	183	4.49	-2.21
Stage 3	182.8	4.05	-2.21
Stage 3	182.6	3.62	-2.18
Stage 3	182.4	3.19	-2.13
Stage 3	182.2	2.78	-2.06
Stage 3	182	2.38	-1.98
Stage 3	181.8	2.01	-1.87
Stage 3	181.6	1.66	-1.75
Stage 3	181.4	1.33	-1.62
Stage 3	181.2	1.04	-1.47
Stage 3	181	0.78	-1.31
Stage 3	180.8	0.55	-1.14
Stage 3	180.6	0.36	-0.96
Stage 3	180.4	0.2	-0.76
Stage 3	180.2	0.09	-0.56
Stage 3	180	0.02	-0.34
Stage 3	179.8	0	-0.12



Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	-118.04	0
Stage 3	193.5	-112.57	27.37
Stage 3	193.3	-107.09	27.37
Stage 3	193.1	-101.62	27.37
Stage 3	192.9	-96.15	27.37
Stage 3	192.7	-90.67	27.37
Stage 3	192.5	-85.2	27.37
Stage 3	192.3	-79.73	27.37
Stage 3	192.1	-74.25	27.37
Stage 3	191.9	-68.78	27.37
Stage 3	191.8	-66.04	27.37

#### 4.5.6. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 3

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	191.8	66.04	-26.86
Stage 3	191.6	60.67	-26.86
Stage 3	191.4	55.51	-25.8
Stage 3	191.2	50.56	-24.72
Stage 3	191	45.84	-23.63
Stage 3	190.8	41.34	-22.52
Stage 3	190.6	37.06	-21.39
Stage 3	190.4	33	-20.27
Stage 3	190.2	29.17	-19.14
Stage 3	190	25.57	-18.03
Stage 3	189.8	22.18	-16.92
Stage 3	189.6	19.02	-15.84
Stage 3	189.4	16.06	-14.77
Stage 3	189.2	13.32	-13.73
Stage 3	189	10.78	-12.71
Stage 3	188.8	8.43	-11.72
Stage 3	188.6	6.28	-10.76
Stage 3	188.4	4.31	-9.83
Stage 3	188.2	2.52	-8.94
Stage 3	188	0.91	-8.08
Stage 3	187.8	-0.54	-7.25
Stage 3	187.6	-1.83	-6.46
Stage 3	187.4	-2.98	-5.7
Stage 3	187.2	-3.97	-4.98
Stage 3	187	-4.83	-4.27
Stage 3	186.8	-5.55	-3.62
Stage 3	186.6	-6.15	-3.02
Stage 3	186.4	-6.65	-2.47
Stage 3	186.2	-7.04	-1.96
Stage 3	186	-7.34	-1.51
Stage 3	185.8	-7.56	-1.1
Stage 3	185.6	-7.71	-0.73
Stage 3	185.4	-7.79	-0.41
Stage 3	185.2	-7.81	-0.12
Stage 3	185	-7.79	0.13
Stage 3	184.8	-7.67	0.57
Stage 3	184.6	-7.48	0.94
Stage 3	184.4	-7.23	1.26
Stage 3	184.2	-6.93	1.52
Stage 3	184	-6.58	1.73
Stage 3	183.8	-6.2	1.9
Stage 3	183.6	-5.79	2.03
Stage 3	183.4	-5.37	2.12
Stage 3	183.2	-4.93	2.18
Stage 3	183	-4.49	2.21
Stage 3	182.8	-4.05	2.21
Stage 3	182.6	-3.62	2.18
Stage 3	182.4	-3.19	2.13
Stage 3	182.2	-2.78	2.06
Stage 3	182	-2.38	1.98
Stage 3	181.8	-2.01	1.87
Stage 3	181.6	-1.66	1.75
Stage 3	181.4	-1.33	1.62
Stage 3	181.2	-1.04	1.47
Stage 3	181	-0.78	1.31
Stage 3	180.8	-0.55	1.14
Stage 3	180.6	-0.36	0.96
Stage 3	180.4	-0.2	0.76
Stage 3	180.2	-0.09	0.56
Stage 3	180	-0.02	0.34
Stage 3	179.8	0	0.12

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	194.1	0	0
Stage 3	193.9	0	0
Stage 3	193.9	0	0
Stage 3	193.7	0	0
Stage 3	193.7	118.04	0
Stage 3	193.5	112.57	-27.37
Stage 3	193.3	107.09	-27.37
Stage 3	193.1	101.62	-27.37
Stage 3	192.9	96.15	-27.37
Stage 3	192.7	90.67	-27.37
Stage 3	192.5	85.2	-27.37
Stage 3	192.3	79.73	-27.37
Stage 3	192.1	74.25	-27.37
Stage 3	191.9	68.78	-27.37
Stage 3	191.8	66.04	-27.37

#### 4.5.7. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 4

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	-82.64	61.67
Stage 4	191.6	-70.31	61.67
Stage 4	191.4	-58.73	57.87
Stage 4	191.2	-47.9	54.16
Stage 4	191	-37.8	50.54
Stage 4	190.8	-28.39	47.02
Stage 4	190.6	-19.67	43.62
Stage 4	190.4	-11.6	40.32
Stage 4	190.2	-4.18	37.13
Stage 4	190	2.63	34.06
Stage 4	189.8	8.85	31.1
Stage 4	189.6	14.5	28.25
Stage 4	189.4	19.6	25.5
Stage 4	189.2	24.18	22.86
Stage 4	189	28.24	20.32
Stage 4	188.8	31.81	17.87
Stage 4	188.6	34.92	15.52
Stage 4	188.4	37.56	13.24
Stage 4	188.2	39.77	11.05
Stage 4	188	41.56	8.93
Stage 4	187.8	42.94	6.88
Stage 4	187.6	43.92	4.89
Stage 4	187.4	44.51	2.95
Stage 4	187.2	44.72	1.06
Stage 4	187	44.56	-0.79
Stage 4	186.8	44.04	-2.6
Stage 4	186.6	43.18	-4.33
Stage 4	186.4	41.98	-5.99
Stage 4	186.2	40.46	-7.59
Stage 4	186	38.63	-9.14
Stage 4	185.8	36.51	-10.64
Stage 4	185.6	34.09	-12.11
Stage 4	185.4	31.38	-13.54
Stage 4	185.2	28.39	-14.96
Stage 4	185	25.12	-16.35
Stage 4	184.8	22.07	-15.24
Stage 4	184.6	19.24	-14.13
Stage 4	184.4	16.64	-13.02
Stage 4	184.2	14.25	-11.91
Stage 4	184	12.09	-10.83
Stage 4	183.8	10.13	-9.77
Stage 4	183.6	8.39	-8.75
Stage 4	183.4	6.83	-7.76
Stage 4	183.2	5.47	-6.82
Stage 4	183	4.28	-5.93
Stage 4	182.8	3.27	-5.08
Stage 4	182.6	2.41	-4.3
Stage 4	182.4	1.69	-3.56
Stage 4	182.2	1.12	-2.89
Stage 4	182	0.66	-2.28
Stage 4	181.8	0.32	-1.73
Stage 4	181.6	0.07	-1.24
Stage 4	181.4	-0.1	-0.82
Stage 4	181.2	-0.19	-0.47
Stage 4	181	-0.23	-0.18
Stage 4	180.8	-0.22	0.04
Stage 4	180.6	-0.18	0.19
Stage 4	180.4	-0.13	0.27
Stage 4	180.2	-0.07	0.29
Stage 4	180	-0.02	0.24
Stage 4	179.8	0	0.11

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	-0.15
Stage 4	193.9	-0.03	-0.15
Stage 4	193.7	-0.18	-0.77
Stage 4	193.7	-223.09	-0.77
Stage 4	193.5	-207.13	79.8
Stage 4	193.3	-191.35	78.88
Stage 4	193.1	-175.79	77.83
Stage 4	192.9	-160.46	76.63
Stage 4	192.7	-145.42	75.22
Stage 4	192.5	-130.7	73.6
Stage 4	192.3	-116.35	71.76
Stage 4	192.1	-102.41	69.7
Stage 4	191.9	-89.08	66.63
Stage 4	191.8	-82.64	64.41

#### 4.5.8. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 4

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	191.8	82.64	-61.67
Stage 4	191.6	70.31	-61.67
Stage 4	191.4	58.73	-57.87
Stage 4	191.2	47.9	-54.16
Stage 4	191	37.8	-50.54
Stage 4	190.8	28.39	-47.02
Stage 4	190.6	19.67	-43.62
Stage 4	190.4	11.6	-40.32
Stage 4	190.2	4.18	-37.13
Stage 4	190	-2.63	-34.06
Stage 4	189.8	-8.85	-31.1
Stage 4	189.6	-14.5	-28.25
Stage 4	189.4	-19.6	-25.5
Stage 4	189.2	-24.18	-22.86
Stage 4	189	-28.24	-20.32
Stage 4	188.8	-31.81	-17.87
Stage 4	188.6	-34.92	-15.52
Stage 4	188.4	-37.56	-13.24
Stage 4	188.2	-39.77	-11.05
Stage 4	188	-41.56	-8.93
Stage 4	187.8	-42.94	-6.88
Stage 4	187.6	-43.92	-4.89
Stage 4	187.4	-44.51	-2.95
Stage 4	187.2	-44.72	-1.06
Stage 4	187	-44.56	0.79
Stage 4	186.8	-44.04	2.6
Stage 4	186.6	-43.18	4.33
Stage 4	186.4	-41.98	5.99
Stage 4	186.2	-40.46	7.59
Stage 4	186	-38.63	9.14
Stage 4	185.8	-36.51	10.64
Stage 4	185.6	-34.09	12.11
Stage 4	185.4	-31.38	13.54
Stage 4	185.2	-28.39	14.96
Stage 4	185	-25.12	16.35
Stage 4	184.8	-22.07	15.24
Stage 4	184.6	-19.24	14.13
Stage 4	184.4	-16.64	13.02
Stage 4	184.2	-14.25	11.91
Stage 4	184	-12.09	10.83
Stage 4	183.8	-10.13	9.77
Stage 4	183.6	-8.39	8.75
Stage 4	183.4	-6.83	7.76
Stage 4	183.2	-5.47	6.82
Stage 4	183	-4.28	5.93
Stage 4	182.8	-3.27	5.08
Stage 4	182.6	-2.41	4.3
Stage 4	182.4	-1.69	3.56
Stage 4	182.2	-1.12	2.89
Stage 4	182	-0.66	2.28
Stage 4	181.8	-0.32	1.73
Stage 4	181.6	-0.07	1.24
Stage 4	181.4	0.1	0.82
Stage 4	181.2	0.19	0.47
Stage 4	181	0.23	0.18
Stage 4	180.8	0.22	-0.04
Stage 4	180.6	0.18	-0.19
Stage 4	180.4	0.13	-0.27
Stage 4	180.2	0.07	-0.29
Stage 4	180	0.02	-0.24
Stage 4	179.8	0	-0.11

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	194.1	0	0.15
Stage 4	193.9	0.03	0.15
Stage 4	193.7	0.18	0.77
Stage 4	193.7	223.09	0.77
Stage 4	193.5	207.13	-79.8
Stage 4	193.3	191.35	-78.88
Stage 4	193.1	175.79	-77.83
Stage 4	192.9	160.46	-76.63
Stage 4	192.7	145.42	-75.22
Stage 4	192.5	130.7	-73.6
Stage 4	192.3	116.35	-71.76
Stage 4	192.1	102.41	-69.7
Stage 4	191.9	89.08	-66.63
Stage 4	191.8	82.64	-64.41

#### 4.5.9. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 5

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	-73.3	67.39
Stage 5	191.6	-59.82	67.39
Stage 5	191.4	-47.23	62.95
Stage 5	191.2	-35.51	58.64
Stage 5	191	-24.61	54.46
Stage 5	190.8	-14.53	50.42
Stage 5	190.6	-5.22	46.52
Stage 5	190.4	3.33	42.77
Stage 5	190.2	11.16	39.15
Stage 5	190	18.29	35.67
Stage 5	189.8	24.76	32.33
Stage 5	189.6	30.58	29.12
Stage 5	189.4	35.79	26.03
Stage 5	189.2	40.4	23.07
Stage 5	189	44.45	20.22
Stage 5	188.8	47.94	17.48
Stage 5	188.6	50.91	14.84
Stage 5	188.4	53.36	12.28
Stage 5	188.2	55.33	9.82
Stage 5	188	56.81	7.42
Stage 5	187.8	57.83	5.1
Stage 5	187.6	58.4	2.83
Stage 5	187.4	58.52	0.61
Stage 5	187.2	58.21	-1.57
Stage 5	187	57.46	-3.72
Stage 5	186.8	56.29	-5.84
Stage 5	186.6	54.71	-7.9
Stage 5	186.4	52.73	-9.9
Stage 5	186.2	50.36	-11.86
Stage 5	186	47.6	-13.79
Stage 5	185.8	44.47	-15.69
Stage 5	185.6	40.95	-17.58
Stage 5	185.4	37.06	-19.46
Stage 5	185.2	32.79	-21.34
Stage 5	185	28.15	-23.23
Stage 5	184.8	23.9	-21.24
Stage 5	184.6	20.04	-19.29
Stage 5	184.4	16.56	-17.39
Stage 5	184.2	13.45	-15.56
Stage 5	184	10.69	-13.8
Stage 5	183.8	8.27	-12.12
Stage 5	183.6	6.16	-10.52
Stage 5	183.4	4.36	-9.01
Stage 5	183.2	2.84	-7.6
Stage 5	183	1.58	-6.29
Stage 5	182.8	0.57	-5.08
Stage 5	182.6	-0.22	-3.96
Stage 5	182.4	-0.81	-2.96
Stage 5	182.2	-1.23	-2.05
Stage 5	182	-1.48	-1.26
Stage 5	181.8	-1.59	-0.57
Stage 5	181.6	-1.59	0.01
Stage 5	181.4	-1.5	0.48
Stage 5	181.2	-1.33	0.83
Stage 5	181	-1.11	1.08
Stage 5	180.8	-0.87	1.22
Stage 5	180.6	-0.62	1.25
Stage 5	180.4	-0.38	1.17
Stage 5	180.2	-0.19	0.98
Stage 5	180	-0.05	0.67
Stage 5	179.8	0	0.26



Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	-0.6
Stage 5	193.9	-0.12	-0.6
Stage 5	193.7	-0.52	-2.01
Stage 5	193.7	-233.72	-2.01
Stage 5	193.5	-214.79	94.64
Stage 5	193.3	-196.23	92.8
Stage 5	193.1	-178.09	90.74
Stage 5	192.9	-160.39	88.46
Stage 5	192.7	-143.2	85.97
Stage 5	192.5	-126.55	83.26
Stage 5	192.3	-110.48	80.33
Stage 5	192.1	-95.04	77.19
Stage 5	191.9	-80.37	73.38
Stage 5	191.8	-73.3	70.64

#### 4.5.10. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 5

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	191.8	74.38	-64.83
Stage 5	191.6	61.41	-64.83
Stage 5	191.4	49.33	-60.42
Stage 5	191.2	38.1	-56.15
Stage 5	191	27.69	-52.02
Stage 5	190.8	18.09	-48.03
Stage 5	190.6	9.25	-44.2
Stage 5	190.4	1.14	-40.53
Stage 5	190.2	-6.26	-37
Stage 5	190	-12.99	-33.63
Stage 5	189.8	-19.07	-30.4
Stage 5	189.6	-24.53	-27.32
Stage 5	189.4	-29.4	-24.37
Stage 5	189.2	-33.72	-21.56
Stage 5	189	-37.49	-18.87
Stage 5	188.8	-40.75	-16.31
Stage 5	188.6	-43.52	-13.85
Stage 5	188.4	-45.82	-11.51
Stage 5	188.2	-47.67	-9.26
Stage 5	188	-49.09	-7.1
Stage 5	187.8	-50.1	-5.02
Stage 5	187.6	-50.7	-3.02
Stage 5	187.4	-50.92	-1.07
Stage 5	187.2	-50.75	0.81
Stage 5	187	-50.23	2.64
Stage 5	186.8	-49.34	4.43
Stage 5	186.6	-48.11	6.13
Stage 5	186.4	-46.56	7.75
Stage 5	186.2	-44.7	9.32
Stage 5	186	-42.54	10.82
Stage 5	185.8	-40.08	12.28
Stage 5	185.6	-37.34	13.7
Stage 5	185.4	-34.32	15.08
Stage 5	185.2	-31.04	16.45
Stage 5	185	-27.48	17.79
Stage 5	184.8	-24.16	16.59
Stage 5	184.6	-21.08	15.37
Stage 5	184.4	-18.25	14.16
Stage 5	184.2	-15.66	12.97
Stage 5	184	-13.3	11.79
Stage 5	183.8	-11.17	10.65
Stage 5	183.6	-9.26	9.54
Stage 5	183.4	-7.57	8.47
Stage 5	183.2	-6.08	7.45
Stage 5	183	-4.78	6.48
Stage 5	182.8	-3.67	5.57
Stage 5	182.6	-2.73	4.72
Stage 5	182.4	-1.94	3.92
Stage 5	182.2	-1.3	3.19
Stage 5	182	-0.8	2.53
Stage 5	181.8	-0.41	1.93
Stage 5	181.6	-0.13	1.4
Stage 5	181.4	0.06	0.94
Stage 5	181.2	0.17	0.56
Stage 5	181	0.22	0.24
Stage 5	180.8	0.22	0
Stage 5	180.6	0.18	-0.17
Stage 5	180.4	0.13	-0.27
Stage 5	180.2	0.07	-0.29
Stage 5	180	0.02	-0.24
Stage 5	179.8	0	-0.11

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	194.1	0	0.58
Stage 5	193.9	0.12	0.58
Stage 5	193.7	0.52	2.02
Stage 5	193.7	232.27	2.02
Stage 5	193.5	213.36	-94.53
Stage 5	193.3	194.85	-92.54
Stage 5	193.1	176.8	-90.27
Stage 5	192.9	159.25	-87.73
Stage 5	192.7	142.28	-84.88
Stage 5	192.5	125.93	-81.74
Stage 5	192.3	110.27	-78.29
Stage 5	192.1	95.35	-74.63
Stage 5	191.9	81.18	-70.81
Stage 5	191.8	74.38	-68.08

#### 4.5.11. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 6

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	-596.15	242.07
Stage 6	191.6	-547.73	242.07
Stage 6	191.4	-500.91	234.13
Stage 6	191.2	-455.75	225.78
Stage 6	191	-412.34	217.04
Stage 6	190.8	-370.75	207.94
Stage 6	190.6	-331.05	198.51
Stage 6	190.4	-293.3	188.74
Stage 6	190.2	-257.57	178.66
Stage 6	190	-223.84	168.64
Stage 6	189.8	-192.09	158.75
Stage 6	189.6	-162.29	149.02
Stage 6	189.4	-134.39	139.47
Stage 6	189.2	-108.37	130.13
Stage 6	189	-84.17	120.97
Stage 6	188.8	-61.77	112.01
Stage 6	188.6	-41.13	103.25
Stage 6	188.4	-22.19	94.7
Stage 6	188.2	-4.92	86.38
Stage 6	188	10.74	78.29
Stage 6	187.8	24.83	70.43
Stage 6	187.6	37.39	62.82
Stage 6	187.4	48.48	55.43
Stage 6	187.2	58.14	48.29
Stage 6	187	66.41	41.37
Stage 6	186.8	73.35	34.7
Stage 6	186.6	79.01	28.3
Stage 6	186.4	83.44	22.16
Stage 6	186.2	86.7	16.28
Stage 6	186	88.83	10.66
Stage 6	185.8	89.91	5.39
Stage 6	185.6	90	0.44
Stage 6	185.4	89.16	-4.19
Stage 6	185.2	87.45	-8.53
Stage 6	185	84.93	-12.6
Stage 6	184.8	81.85	-15.4
Stage 6	184.6	78.31	-17.74
Stage 6	184.4	74.38	-19.63
Stage 6	184.2	70.15	-21.13
Stage 6	184	65.7	-22.25
Stage 6	183.8	61.1	-23.03
Stage 6	183.6	56.4	-23.51
Stage 6	183.4	51.66	-23.7
Stage 6	183.2	46.93	-23.64
Stage 6	183	42.26	-23.34
Stage 6	182.8	37.7	-22.83
Stage 6	182.6	33.27	-22.12
Stage 6	182.4	29.02	-21.24
Stage 6	182.2	24.98	-20.2
Stage 6	182	21.18	-19.02
Stage 6	181.8	17.64	-17.7
Stage 6	181.6	14.39	-16.25
Stage 6	181.4	11.45	-14.71
Stage 6	181.2	8.82	-13.12
Stage 6	181	6.52	-11.49
Stage 6	180.8	4.56	-9.82
Stage 6	180.6	2.94	-8.11
Stage 6	180.4	1.66	-6.37
Stage 6	180.2	0.74	-4.59
Stage 6	180	0.19	-2.78
Stage 6	179.8	0	-0.94

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	-0.05
Stage 6	193.9	-0.01	-0.05
Stage 6	193.7	-0.09	-0.38
Stage 6	193.7	-1117.16	-0.38
Stage 6	193.5	-1058.6	292.79
Stage 6	193.3	-1000.45	290.76
Stage 6	193.1	-942.99	287.33
Stage 6	192.9	-886.36	283.12
Stage 6	192.7	-830.74	278.11
Stage 6	192.5	-776.27	272.33
Stage 6	192.3	-723.12	265.79
Stage 6	192.1	-671.41	258.53
Stage 6	191.9	-620.91	252.5
Stage 6	191.8	-596.15	247.65

#### 4.5.12. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 6

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	191.8	603.9	-242.58
Stage 6	191.6	555.39	-242.58
Stage 6	191.4	508.35	-235.16
Stage 6	191.2	462.9	-227.27
Stage 6	191	419.11	-218.93
Stage 6	190.8	377.08	-210.18
Stage 6	190.6	336.87	-201.03
Stage 6	190.4	298.58	-191.49
Stage 6	190.2	262.26	-181.58
Stage 6	190	227.97	-171.43
Stage 6	189.8	195.7	-161.37
Stage 6	189.6	165.41	-151.44
Stage 6	189.4	137.08	-141.67
Stage 6	189.2	110.66	-132.09
Stage 6	189	86.12	-122.7
Stage 6	188.8	63.41	-113.53
Stage 6	188.6	42.51	-104.58
Stage 6	188.4	23.33	-95.88
Stage 6	188.2	5.85	-87.42
Stage 6	188	-9.99	-79.21
Stage 6	187.8	-24.24	-71.25
Stage 6	187.6	-36.95	-63.55
Stage 6	187.4	-48.17	-56.1
Stage 6	187.2	-57.95	-48.9
Stage 6	187	-66.34	-41.95
Stage 6	186.8	-73.4	-35.26
Stage 6	186.6	-79.17	-28.85
Stage 6	186.4	-83.71	-22.72
Stage 6	186.2	-87.08	-16.86
Stage 6	186	-89.35	-11.34
Stage 6	185.8	-90.59	-6.2
Stage 6	185.6	-90.87	-1.41
Stage 6	185.4	-90.26	3.05
Stage 6	185.2	-88.83	7.19
Stage 6	185	-86.62	11.03
Stage 6	184.8	-83.77	14.24
Stage 6	184.6	-80.39	16.93
Stage 6	184.4	-76.56	19.15
Stage 6	184.2	-72.38	20.92
Stage 6	184	-67.92	22.27
Stage 6	183.8	-63.27	23.24
Stage 6	183.6	-58.5	23.87
Stage 6	183.4	-53.67	24.17
Stage 6	183.2	-48.83	24.17
Stage 6	183	-44.05	23.9
Stage 6	182.8	-39.38	23.38
Stage 6	182.6	-34.85	22.62
Stage 6	182.4	-30.51	21.71
Stage 6	182.2	-26.38	20.67
Stage 6	182	-22.48	19.51
Stage 6	181.8	-18.83	18.24
Stage 6	181.6	-15.45	16.88
Stage 6	181.4	-12.37	15.43
Stage 6	181.2	-9.59	13.9
Stage 6	181	-7.13	12.28
Stage 6	180.8	-5.01	10.59
Stage 6	180.6	-3.25	8.83
Stage 6	180.4	-1.85	6.99
Stage 6	180.2	-0.83	5.08
Stage 6	180	-0.21	3.1
Stage 6	179.8	0	1.06

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 6	194.1	0	0.05
Stage 6	193.9	0.01	0.05
Stage 6	193.7	0.09	0.38
Stage 6	193.7	1123.9	0.38
Stage 6	193.5	1065.39	-292.53
Stage 6	193.3	1007.36	-290.14
Stage 6	193.1	949.99	-286.84
Stage 6	192.9	893.46	-282.67
Stage 6	192.7	837.93	-277.62
Stage 6	192.5	783.59	-271.72
Stage 6	192.3	730.59	-265
Stage 6	192.1	679.09	-257.47
Stage 6	191.9	628.67	-252.11
Stage 6	191.8	603.9	-247.72

#### 4.5.13. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 7

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	-582.69	250.82
Stage 7	191.6	-532.53	250.82
Stage 7	191.4	-484.18	241.77
Stage 7	191.2	-437.7	232.38
Stage 7	191	-393.16	222.68
Stage 7	190.8	-350.63	212.68
Stage 7	190.6	-310.14	202.41
Stage 7	190.4	-271.77	191.88
Stage 7	190.2	-235.55	181.09
Stage 7	190	-201.47	170.4
Stage 7	189.8	-169.49	159.9
Stage 7	189.6	-139.57	149.59
Stage 7	189.4	-111.67	139.51
Stage 7	189.2	-85.74	129.67
Stage 7	189	-61.73	120.03
Stage 7	188.8	-39.61	110.61
Stage 7	188.6	-19.34	101.42
Stage 7	188.4	-0.85	92.45
Stage 7	188.2	15.9	83.71
Stage 7	188	30.94	75.22
Stage 7	187.8	44.33	66.95
Stage 7	187.6	56.11	58.92
Stage 7	187.4	66.34	51.12
Stage 7	187.2	75.05	43.54
Stage 7	187	82.28	36.17
Stage 7	186.8	88.08	29.02
Stage 7	186.6	92.51	22.13
Stage 7	186.4	95.6	15.47
Stage 7	186.2	97.41	9.04
Stage 7	186	97.98	2.85
Stage 7	185.8	97.41	-2.88
Stage 7	185.6	95.77	-8.17
Stage 7	185.4	93.16	-13.06
Stage 7	185.2	89.65	-17.57
Stage 7	185	85.3	-21.72
Stage 7	184.8	80.66	-23.2
Stage 7	184.6	75.81	-24.28
Stage 7	184.4	70.8	-25.01
Stage 7	184.2	65.72	-25.41
Stage 7	184	60.62	-25.52
Stage 7	183.8	55.54	-25.37
Stage 7	183.6	50.55	-24.98
Stage 7	183.4	45.67	-24.38
Stage 7	183.2	40.95	-23.59
Stage 7	183	36.43	-22.63
Stage 7	182.8	32.12	-21.52
Stage 7	182.6	28.06	-20.32
Stage 7	182.4	24.25	-19.05
Stage 7	182.2	20.7	-17.75
Stage 7	182	17.42	-16.41
Stage 7	181.8	14.41	-15.03
Stage 7	181.6	11.69	-13.64
Stage 7	181.4	9.24	-12.23
Stage 7	181.2	7.08	-10.81
Stage 7	181	5.2	-9.38
Stage 7	180.8	3.61	-7.94
Stage 7	180.6	2.31	-6.5
Stage 7	180.4	1.3	-5.06
Stage 7	180.2	0.58	-3.61
Stage 7	180	0.14	-2.17
Stage 7	179.8	0	-0.72



Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	-0.96
Stage 7	193.9	-0.19	-0.96
Stage 7	193.7	-0.74	-2.76
Stage 7	193.7	-1132.04	-2.76
Stage 7	193.5	-1069.38	313.26
Stage 7	193.3	-1007.4	309.92
Stage 7	193.1	-946.43	304.86
Stage 7	192.9	-886.59	299.2
Stage 7	192.7	-828.01	292.89
Stage 7	192.5	-770.82	285.98
Stage 7	192.3	-715.12	278.48
Stage 7	192.1	-661.04	270.42
Stage 7	191.9	-608.42	263.07
Stage 7	191.8	-582.69	257.3

#### 4.5.14. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 7

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	191.8	592.49	-250.27
Stage 7	191.6	542.44	-250.27
Stage 7	191.4	494.08	-241.78
Stage 7	191.2	447.51	-232.89
Stage 7	191	402.78	-223.63
Stage 7	190.8	359.97	-214.02
Stage 7	190.6	319.16	-204.08
Stage 7	190.4	280.4	-193.81
Stage 7	190.2	243.75	-183.24
Stage 7	190	209.26	-172.47
Stage 7	189.8	176.89	-161.85
Stage 7	189.6	146.6	-151.41
Stage 7	189.4	118.37	-141.17
Stage 7	189.2	92.14	-131.15
Stage 7	189	67.87	-121.36
Stage 7	188.8	45.5	-111.82
Stage 7	188.6	25	-102.54
Stage 7	188.4	6.3	-93.52
Stage 7	188.2	-10.65	-84.77
Stage 7	188	-25.91	-76.28
Stage 7	187.8	-39.52	-68.06
Stage 7	187.6	-51.54	-60.1
Stage 7	187.4	-62.02	-52.4
Stage 7	187.2	-71.01	-44.96
Stage 7	187	-78.56	-37.76
Stage 7	186.8	-84.73	-30.81
Stage 7	186.6	-89.56	-24.15
Stage 7	186.4	-93.11	-17.76
Stage 7	186.2	-95.43	-11.63
Stage 7	186	-96.6	-5.82
Stage 7	185.8	-96.67	-0.38
Stage 7	185.6	-95.73	4.73
Stage 7	185.4	-93.83	9.51
Stage 7	185.2	-91.03	14
Stage 7	185	-87.38	18.21
Stage 7	184.8	-83.34	20.21
Stage 7	184.6	-78.99	21.74
Stage 7	184.4	-74.43	22.82
Stage 7	184.2	-69.73	23.5
Stage 7	184	-64.94	23.94
Stage 7	183.8	-60.11	24.14
Stage 7	183.6	-55.29	24.13
Stage 7	183.4	-50.51	23.92
Stage 7	183.2	-45.8	23.52
Stage 7	183	-41.21	22.97
Stage 7	182.8	-36.75	22.28
Stage 7	182.6	-32.46	21.45
Stage 7	182.4	-28.36	20.5
Stage 7	182.2	-24.47	19.44
Stage 7	182	-20.82	18.29
Stage 7	181.8	-17.41	17.05
Stage 7	181.6	-14.26	15.73
Stage 7	181.4	-11.39	14.34
Stage 7	181.2	-8.82	12.88
Stage 7	181	-6.55	11.35
Stage 7	180.8	-4.59	9.76
Stage 7	180.6	-2.97	8.11
Stage 7	180.4	-1.69	6.41
Stage 7	180.2	-0.76	4.65
Stage 7	180	-0.19	2.83
Stage 7	179.8	0	0.96

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 7	194.1	0	1.08
Stage 7	193.9	0.22	1.08
Stage 7	193.7	0.9	3.41
Stage 7	193.7	1138.26	3.41
Stage 7	193.5	1075.91	-311.71
Stage 7	193.3	1014.39	-307.62
Stage 7	193.1	953.83	-302.79
Stage 7	192.9	894.38	-297.25
Stage 7	192.7	836.18	-291
Stage 7	192.5	779.37	-284.06
Stage 7	192.3	724.08	-276.45
Stage 7	192.1	670.44	-268.21
Stage 7	191.9	618.12	-261.57
Stage 7	191.8	592.49	-256.28

#### 4.5.15. Tabella Risultati Paratia NTC2018: SISMICA GEO - Left Wall - Stage: Stage 8

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	-83.66	51.18
Stage 8	191.6	-73.42	51.18
Stage 8	191.4	-63.67	48.79
Stage 8	191.2	-54.35	46.59
Stage 8	191	-45.44	44.54
Stage 8	190.8	-36.92	42.6
Stage 8	190.6	-28.77	40.73
Stage 8	190.4	-20.99	38.91
Stage 8	190.2	-13.62	36.84
Stage 8	190	-6.66	34.81
Stage 8	189.8	-0.09	32.87
Stage 8	189.6	6.11	30.99
Stage 8	189.4	11.94	29.15
Stage 8	189.2	17.41	27.34
Stage 8	189	22.51	25.51
Stage 8	188.8	27.24	23.63
Stage 8	188.6	31.58	21.7
Stage 8	188.4	35.52	19.72
Stage 8	188.2	39.05	17.67
Stage 8	188	42.16	15.55
Stage 8	187.8	44.83	13.35
Stage 8	187.6	47.05	11.07
Stage 8	187.4	48.79	8.71
Stage 8	187.2	50.04	6.25
Stage 8	187	50.78	3.7
Stage 8	186.8	50.99	1.07
Stage 8	186.6	50.67	-1.61
Stage 8	186.4	49.81	-4.33
Stage 8	186.2	48.38	-7.12
Stage 8	186	46.4	-9.92
Stage 8	185.8	43.89	-12.53
Stage 8	185.6	40.9	-14.95
Stage 8	185.4	37.46	-17.21
Stage 8	185.2	33.6	-19.3
Stage 8	185	29.35	-21.26
Stage 8	184.8	25.39	-19.79
Stage 8	184.6	21.73	-18.31
Stage 8	184.4	18.36	-16.82
Stage 8	184.2	15.3	-15.34
Stage 8	184	12.52	-13.87
Stage 8	183.8	10.04	-12.43
Stage 8	183.6	7.83	-11.01
Stage 8	183.4	5.91	-9.63
Stage 8	183.2	4.25	-8.29
Stage 8	183	2.85	-7
Stage 8	182.8	1.7	-5.75
Stage 8	182.6	0.78	-4.59
Stage 8	182.4	0.07	-3.54
Stage 8	182.2	-0.45	-2.61
Stage 8	182	-0.81	-1.78
Stage 8	181.8	-1.02	-1.07
Stage 8	181.6	-1.11	-0.46
Stage 8	181.4	-1.1	0.04
Stage 8	181.2	-1.02	0.43
Stage 8	181	-0.88	0.71
Stage 8	180.8	-0.7	0.89
Stage 8	180.6	-0.51	0.97
Stage 8	180.4	-0.32	0.94
Stage 8	180.2	-0.16	0.8
Stage 8	180	-0.04	0.56
Stage 8	179.8	0	0.22

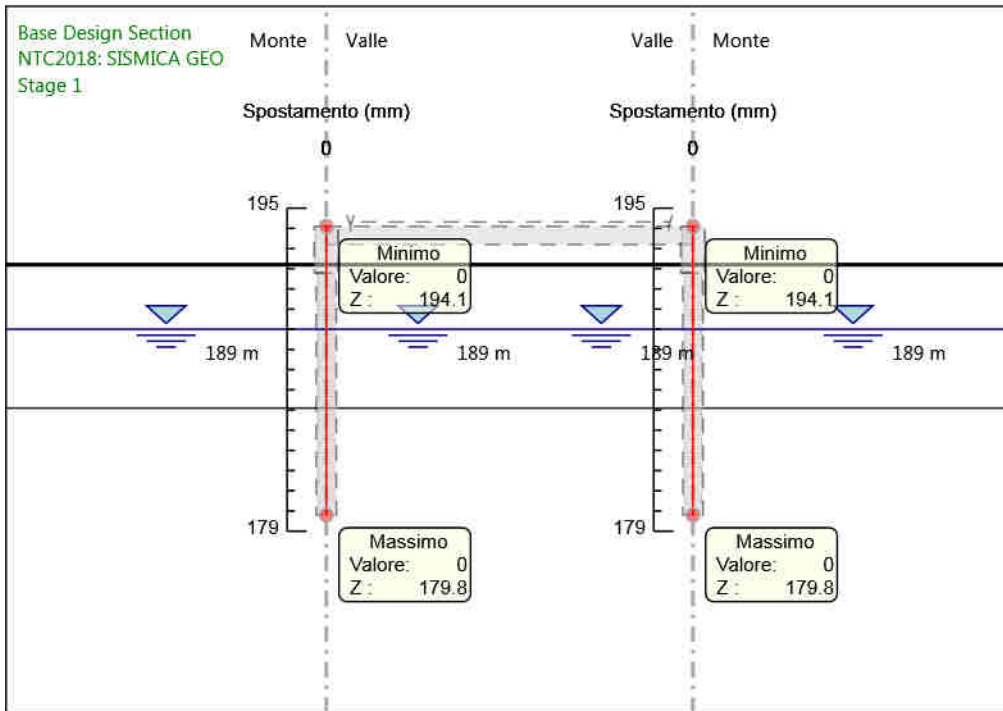
Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	-3.21
Stage 8	193.9	-0.64	-3.21
Stage 8	193.7	-2.67	-10.16
Stage 8	193.7	-221.68	-10.16
Stage 8	193.5	-202.57	95.57
Stage 8	193.3	-184.54	90.15
Stage 8	193.1	-167.62	84.6
Stage 8	192.9	-151.77	79.21
Stage 8	192.7	-137.05	73.6
Stage 8	192.5	-123.5	67.78
Stage 8	192.3	-111.15	61.73
Stage 8	192.1	-99.84	56.55
Stage 8	191.9	-88.96	54.4
Stage 8	191.8	-83.66	53.02

#### 4.5.16. Tabella Risultati Paratia NTC2018: SISMICA GEO - Right wall - Stage: Stage 8

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	191.8	92.91	-51.14
Stage 8	191.6	82.68	-51.14
Stage 8	191.4	72.85	-49.15
Stage 8	191.2	63.39	-47.3
Stage 8	191	54.29	-45.53
Stage 8	190.8	45.53	-43.8
Stage 8	190.6	37.11	-42.09
Stage 8	190.4	29.03	-40.36
Stage 8	190.2	21.33	-38.54
Stage 8	190	14.03	-36.47
Stage 8	189.8	7.14	-34.45
Stage 8	189.6	0.65	-32.47
Stage 8	189.4	-5.45	-30.51
Stage 8	189.2	-11.17	-28.57
Stage 8	189	-16.49	-26.62
Stage 8	188.8	-21.42	-24.67
Stage 8	188.6	-25.96	-22.69
Stage 8	188.4	-30.1	-20.7
Stage 8	188.2	-33.83	-18.67
Stage 8	188	-37.15	-16.6
Stage 8	187.8	-40.05	-14.48
Stage 8	187.6	-42.51	-12.32
Stage 8	187.4	-44.53	-10.1
Stage 8	187.2	-46.1	-7.82
Stage 8	187	-47.19	-5.48
Stage 8	186.8	-47.81	-3.1
Stage 8	186.6	-47.95	-0.69
Stage 8	186.4	-47.61	1.73
Stage 8	186.2	-46.77	4.17
Stage 8	186	-45.46	6.55
Stage 8	185.8	-43.69	8.87
Stage 8	185.6	-41.47	11.11
Stage 8	185.4	-38.81	13.28
Stage 8	185.2	-35.73	15.39
Stage 8	185	-32.24	17.45
Stage 8	184.8	-28.91	16.65
Stage 8	184.6	-25.76	15.78
Stage 8	184.4	-22.79	14.84
Stage 8	184.2	-20.02	13.85
Stage 8	184	-17.46	12.82
Stage 8	183.8	-15.11	11.75
Stage 8	183.6	-12.98	10.65
Stage 8	183.4	-11.06	9.6
Stage 8	183.2	-9.34	8.6
Stage 8	183	-7.8	7.66
Stage 8	182.8	-6.45	6.77
Stage 8	182.6	-5.26	5.94
Stage 8	182.4	-4.23	5.16
Stage 8	182.2	-3.34	4.44
Stage 8	182	-2.59	3.77
Stage 8	181.8	-1.96	3.16
Stage 8	181.6	-1.44	2.6
Stage 8	181.4	-1.02	2.09
Stage 8	181.2	-0.69	1.64
Stage 8	181	-0.44	1.25
Stage 8	180.8	-0.26	0.91
Stage 8	180.6	-0.14	0.62
Stage 8	180.4	-0.06	0.39
Stage 8	180.2	-0.02	0.21
Stage 8	180	0	0.08
Stage 8	179.8	0	0.01

Design Assumption: NTC2018: SISMICA GEO Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 8	194.1	0	3.21
Stage 8	193.9	0.64	3.21
Stage 8	193.7	2.67	10.15
Stage 8	193.7	228.65	10.15
Stage 8	193.5	209.71	-94.71
Stage 8	193.3	192	-88.57
Stage 8	193.1	175.34	-83.27
Stage 8	192.9	159.77	-77.88
Stage 8	192.7	145.31	-72.27
Stage 8	192.5	132.02	-66.45
Stage 8	192.3	119.94	-60.4
Stage 8	192.1	108.9	-55.22
Stage 8	191.9	98.17	-53.63
Stage 8	191.8	92.91	-52.63

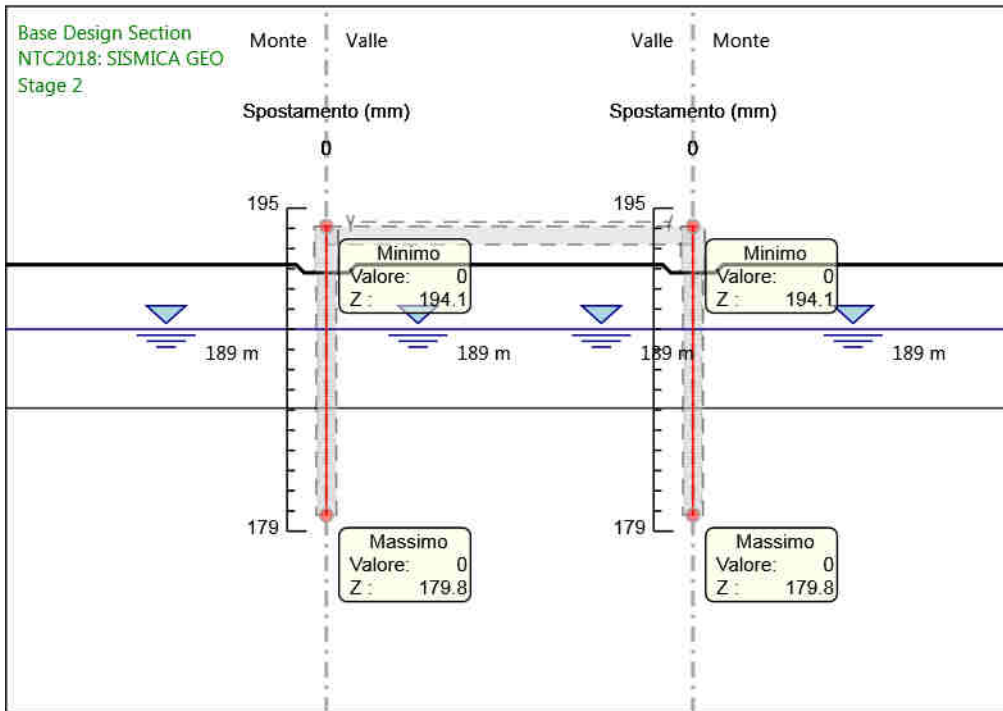
#### 4.5.17. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 1



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 1  
Spostamento

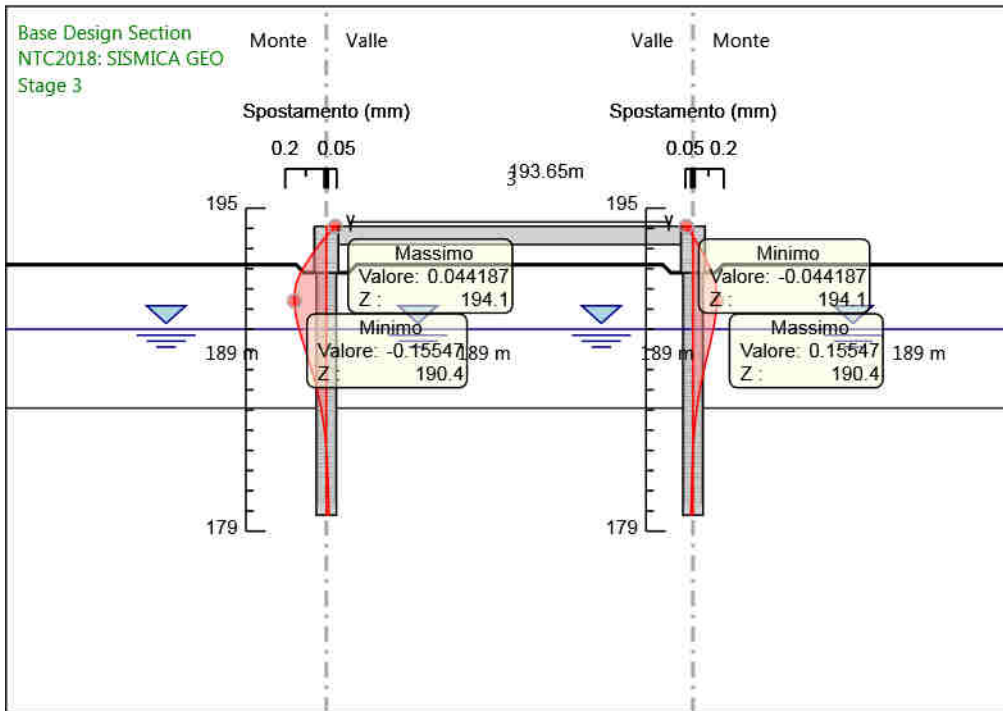


#### 4.5.18. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 2



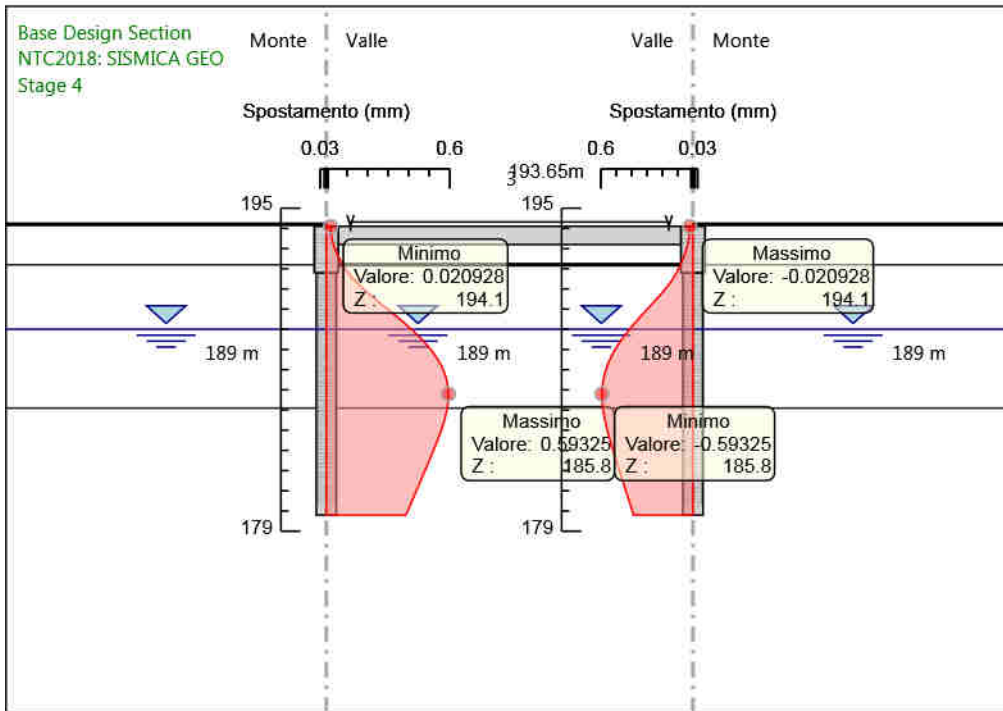
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 2  
Spostamento

#### 4.5.19. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 3



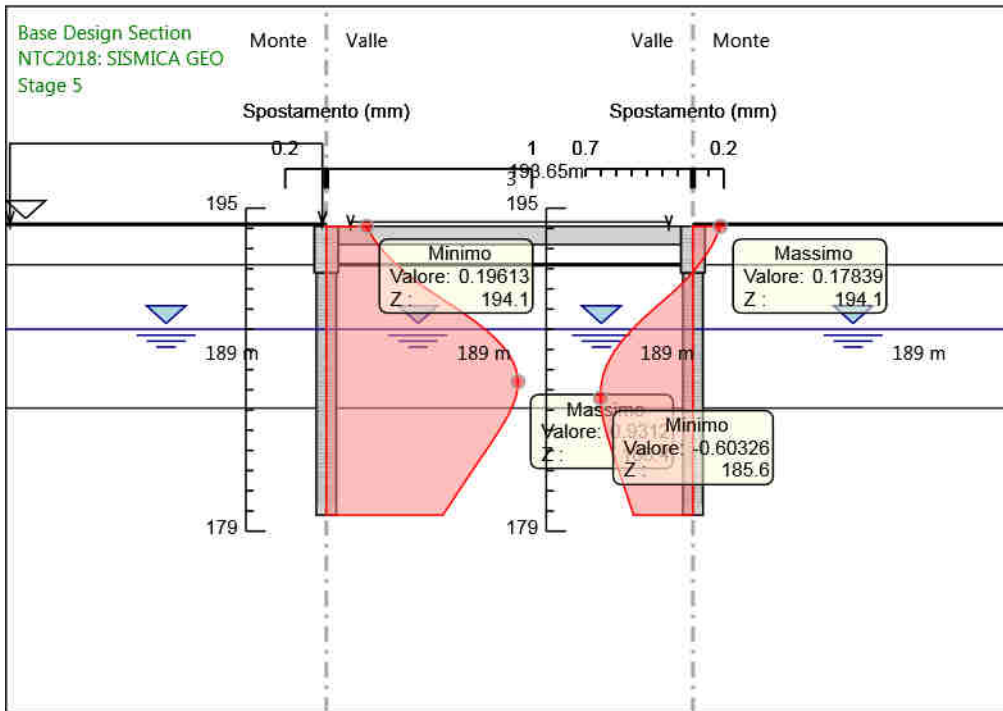
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 3  
Spostamento

#### 4.5.20. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 4



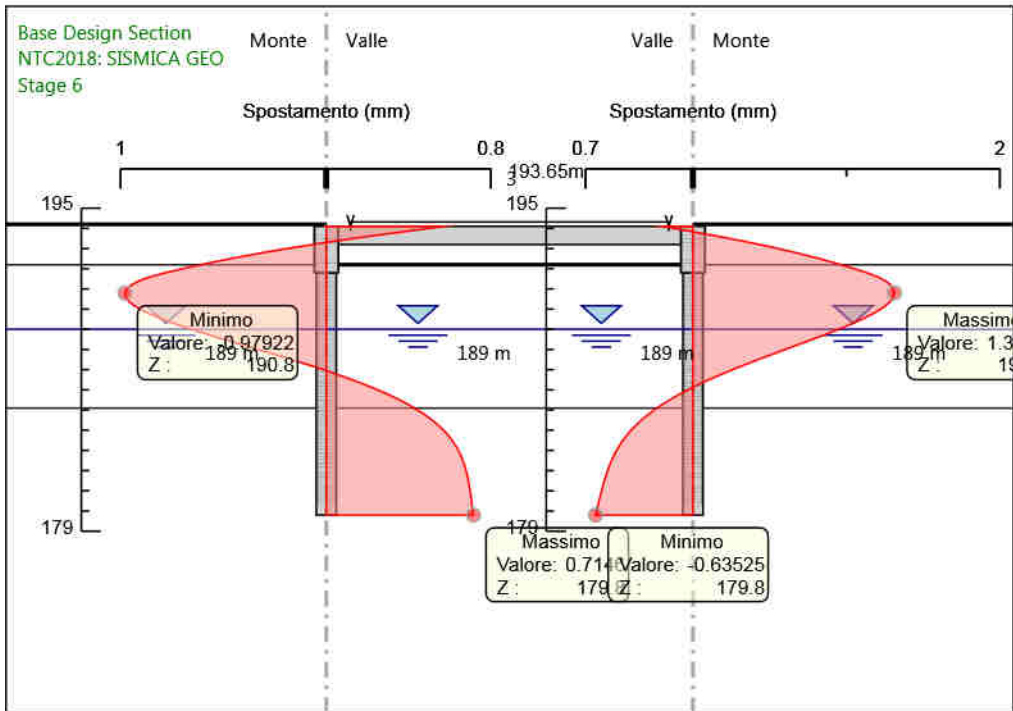
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 4  
Spostamento

#### 4.5.21. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 5



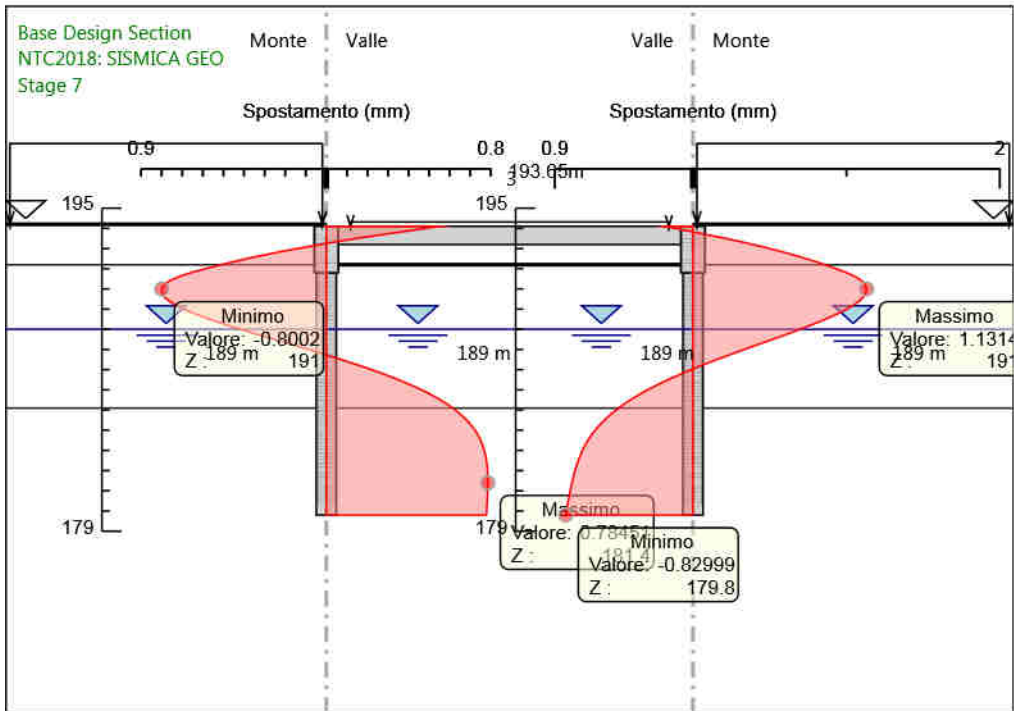
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 5  
Spostamento

#### 4.5.22. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 6



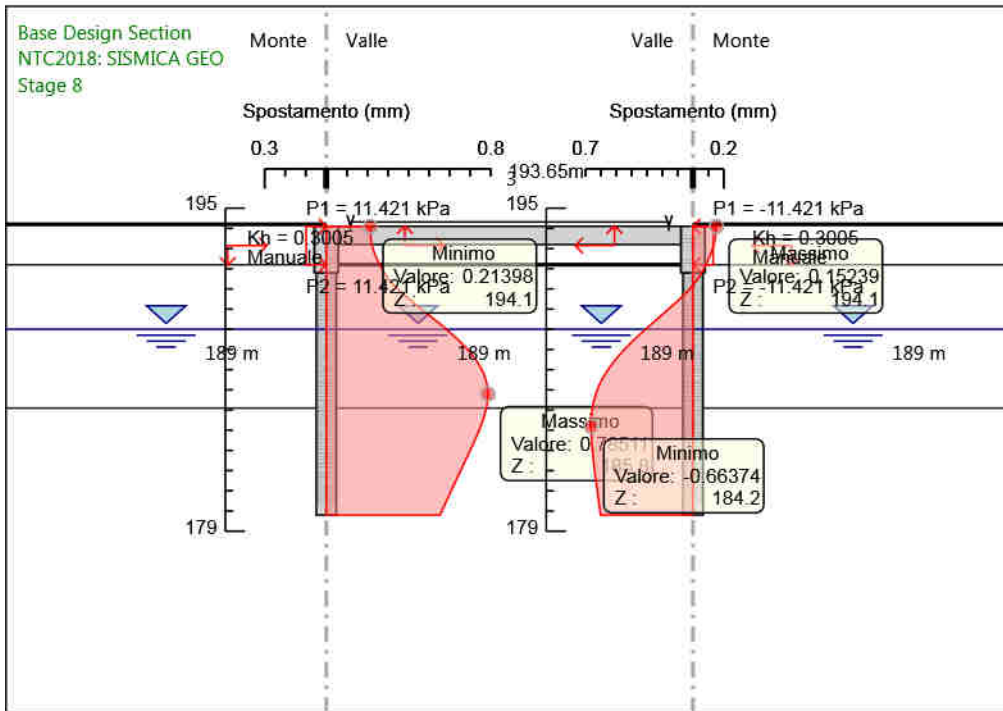
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 6  
Spostamento

#### 4.5.23. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 7



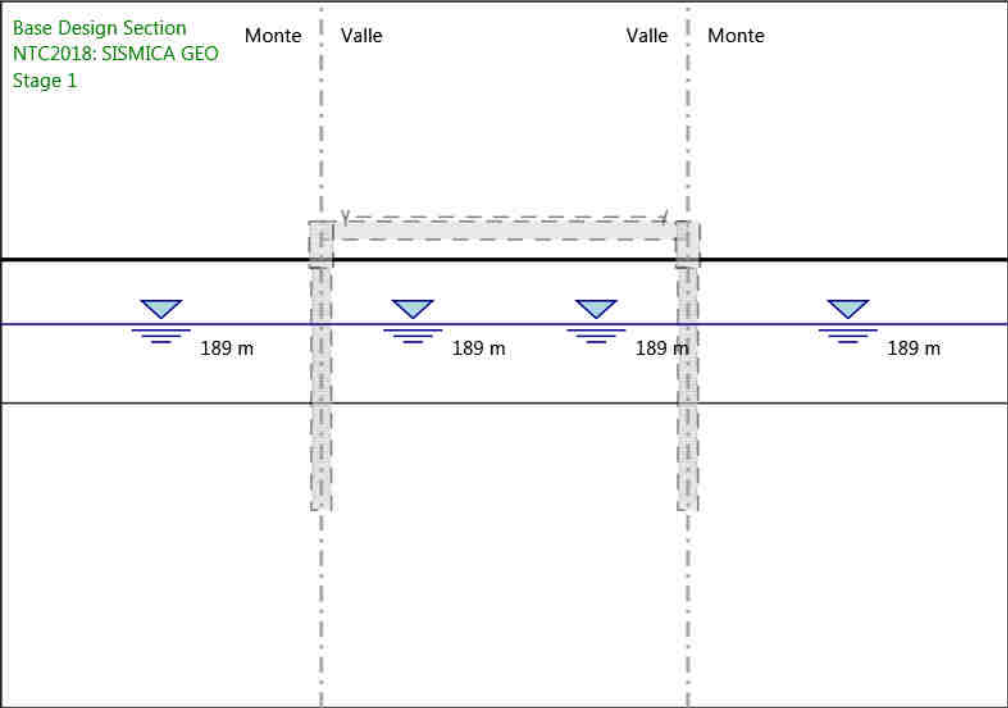
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 7  
Spostamento

#### 4.5.24. Grafico Spostamento NTC2018: SISMICA GEO - Stage: Stage 8



Design Assumption: NTC2018: SISMICA GEO  
 Stage: Stage 8  
 Spostamento

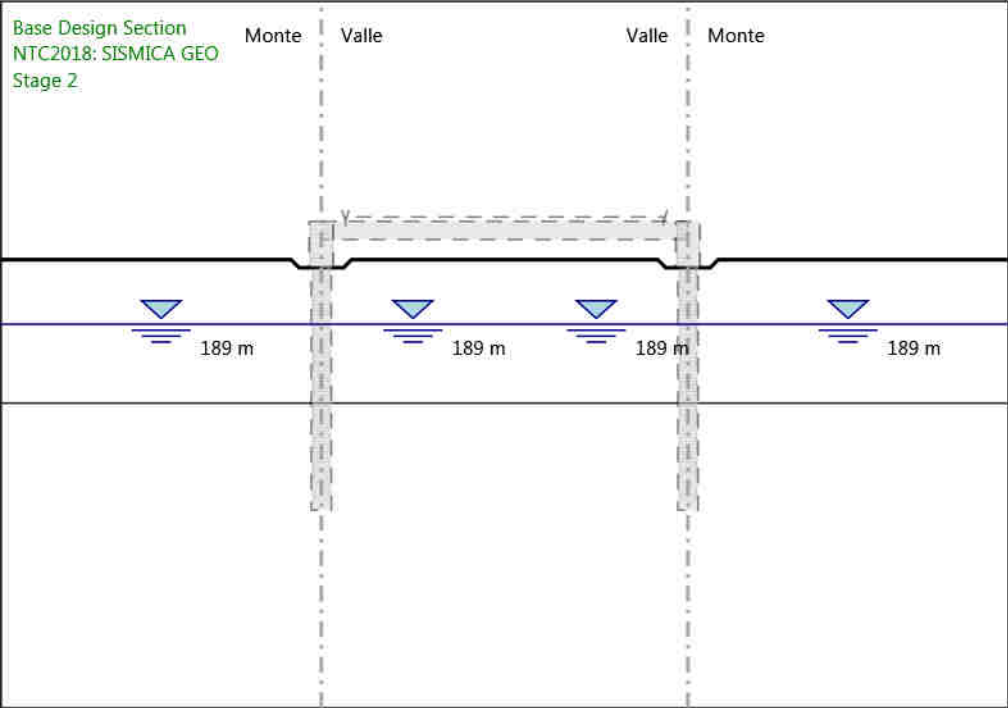
4.5.25. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 1



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 1  
Momento

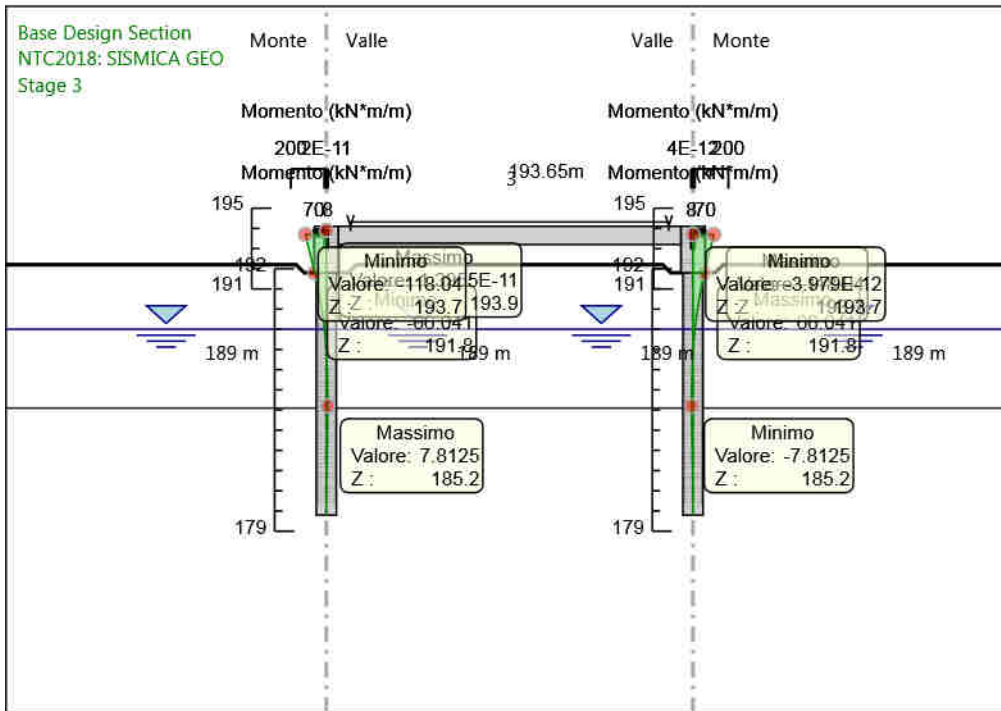


4.5.26. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 2



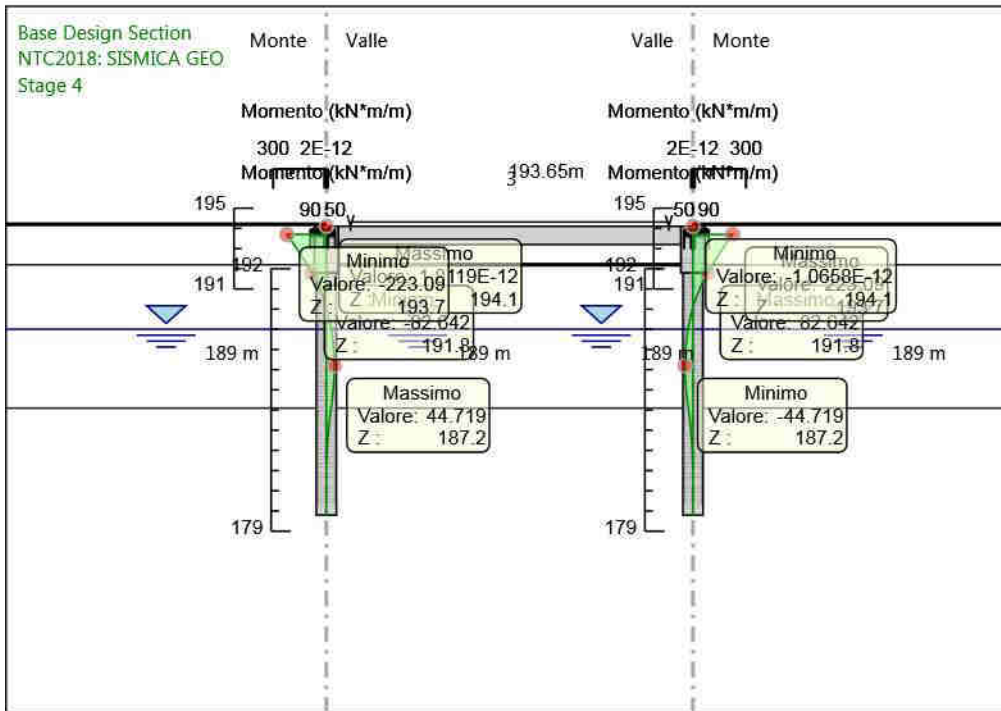
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 2  
Momento

#### 4.5.27. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 3



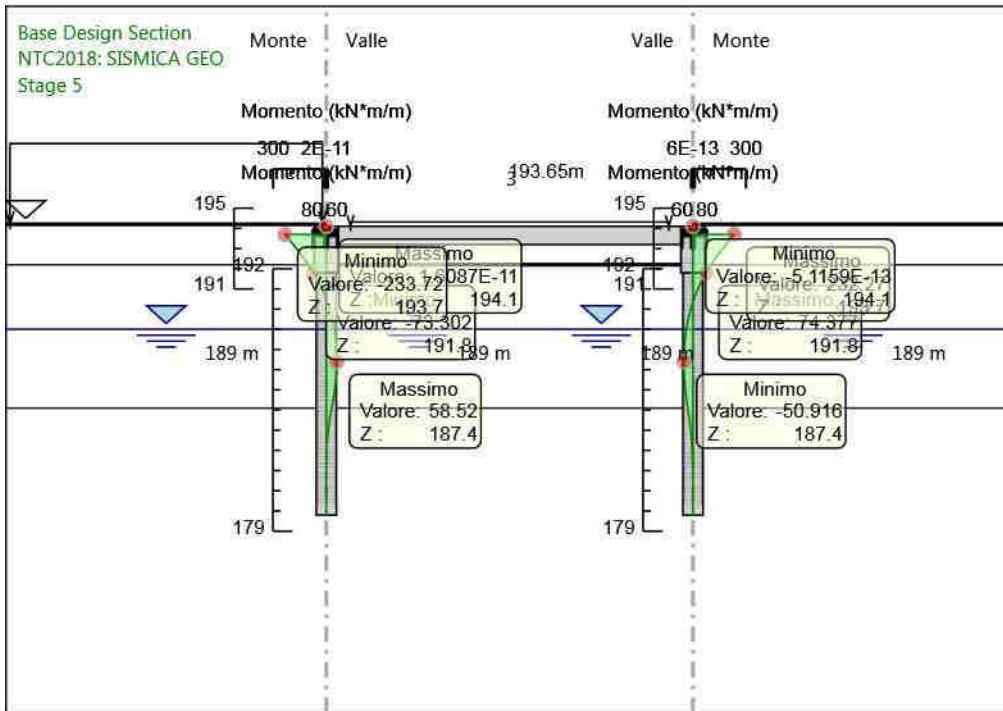
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 3  
Momento

#### 4.5.28. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 4



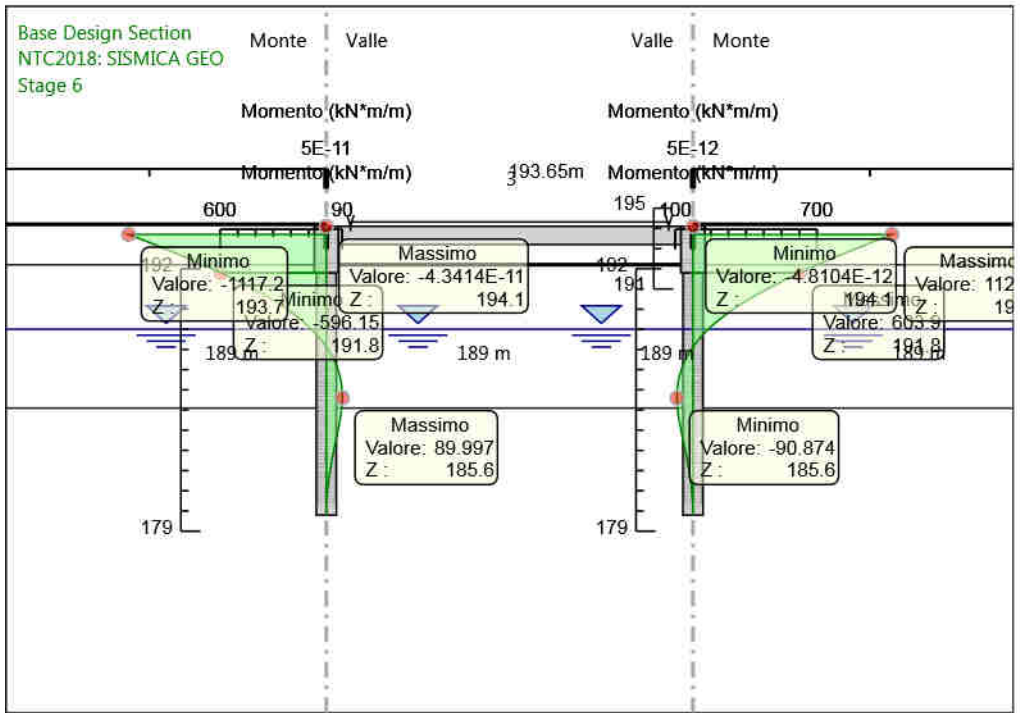
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 4  
Momento

#### 4.5.29. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 5



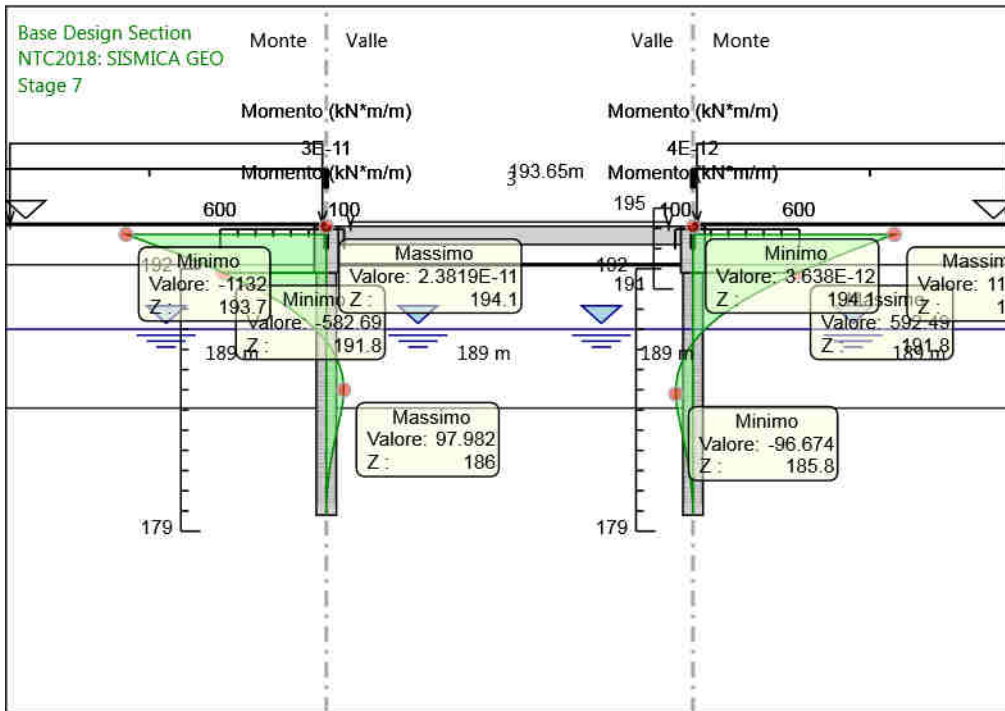
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 5  
Momento

### 4.5.30. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 6



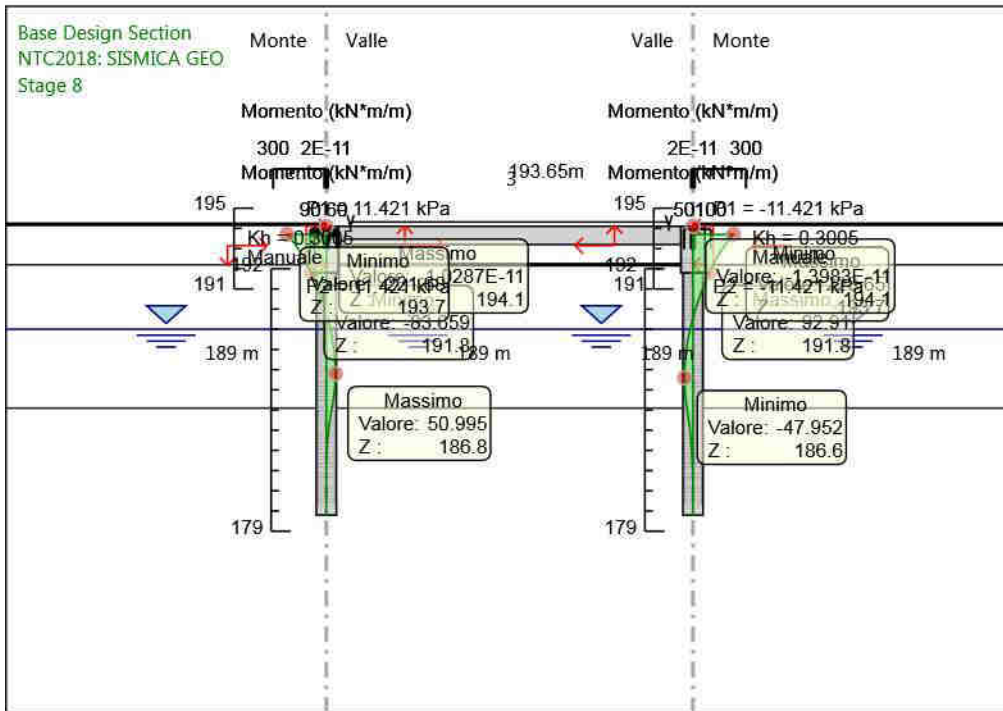
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 6  
Momento

#### 4.5.31. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 7



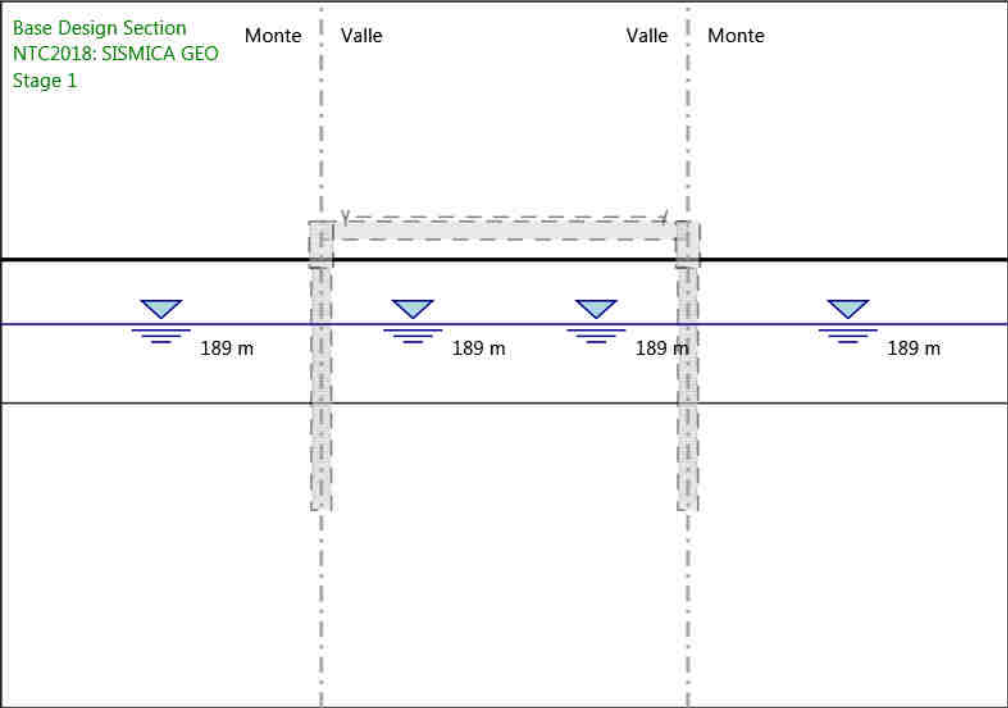
Design Assumption: NTC2018: SISMICA GEO  
 Stage: Stage 7  
 Momento

### 4.5.32. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 8



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 8  
Momento

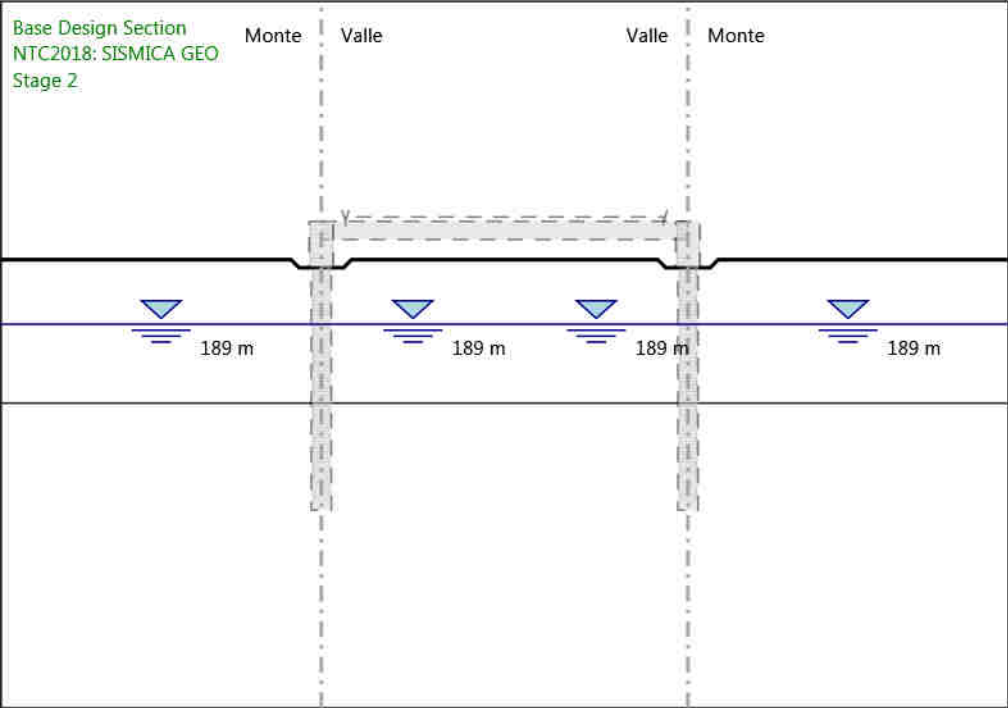
4.5.33. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 1



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 1  
Taglio

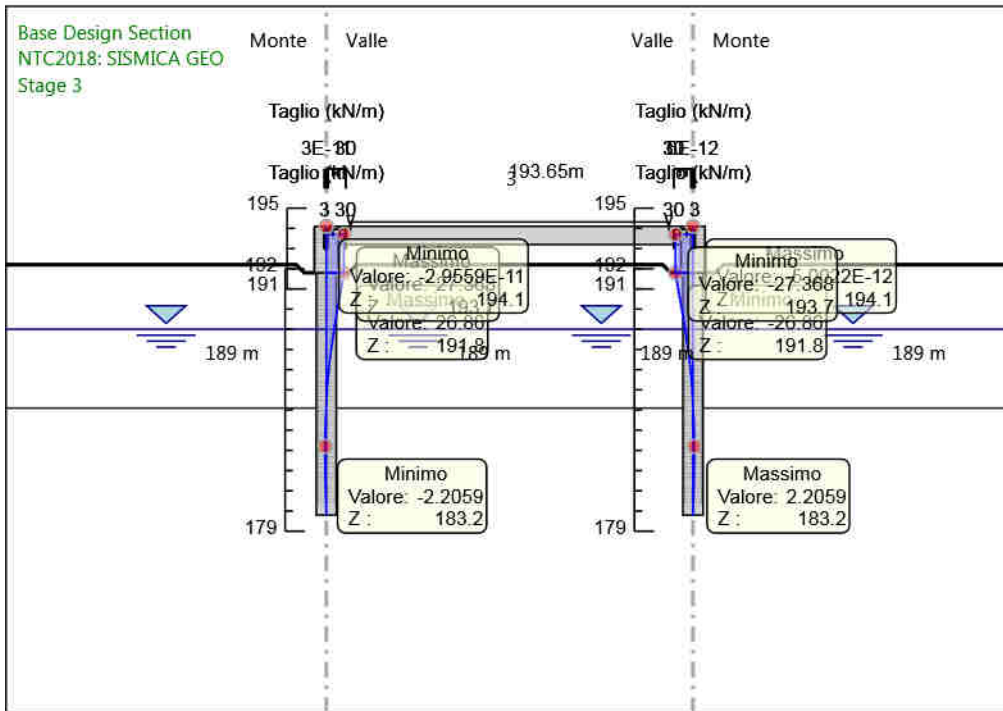


4.5.34. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 2



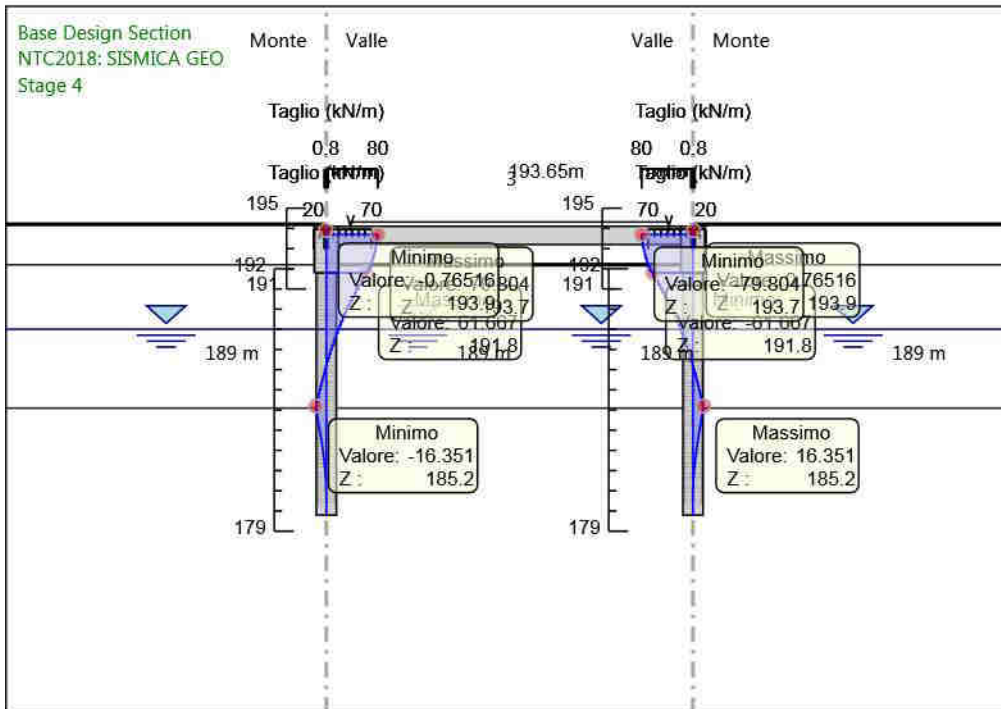
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 2  
Taglio

#### 4.5.35. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 3



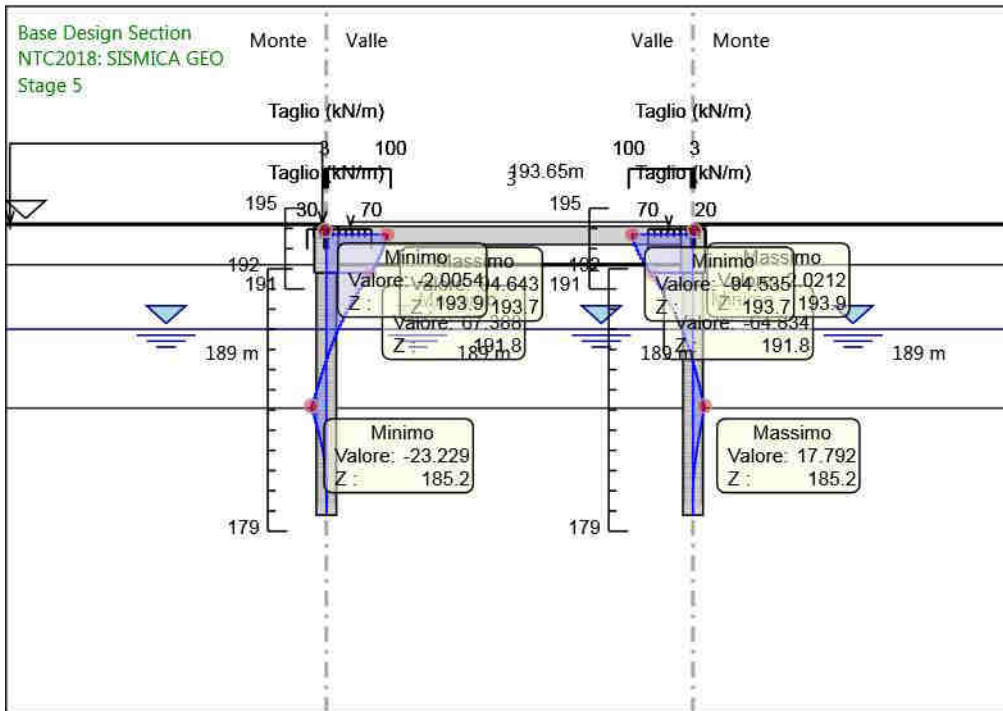
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 3  
Taglio

#### 4.5.36. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 4



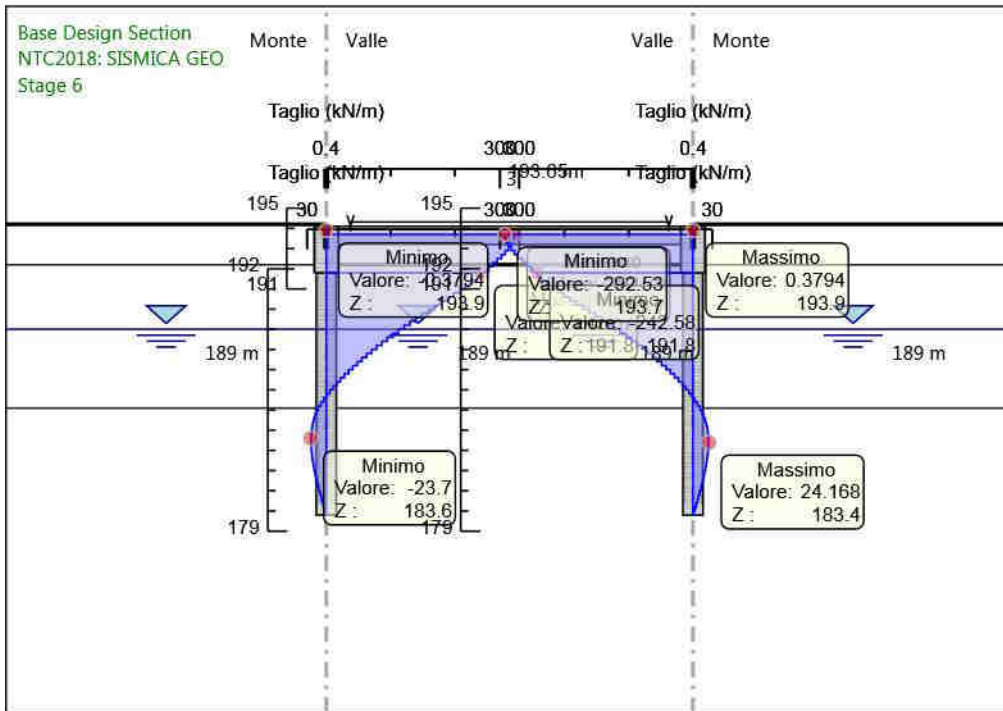
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 4  
Taglio

#### 4.5.37. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 5



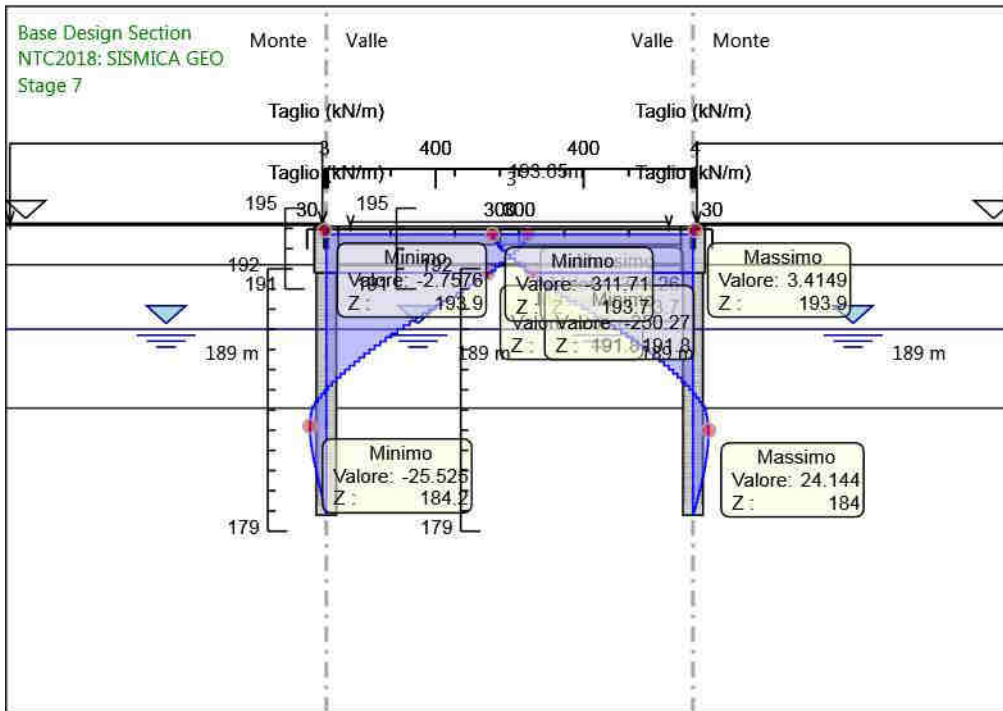
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 5  
Taglio

#### 4.5.38. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 6



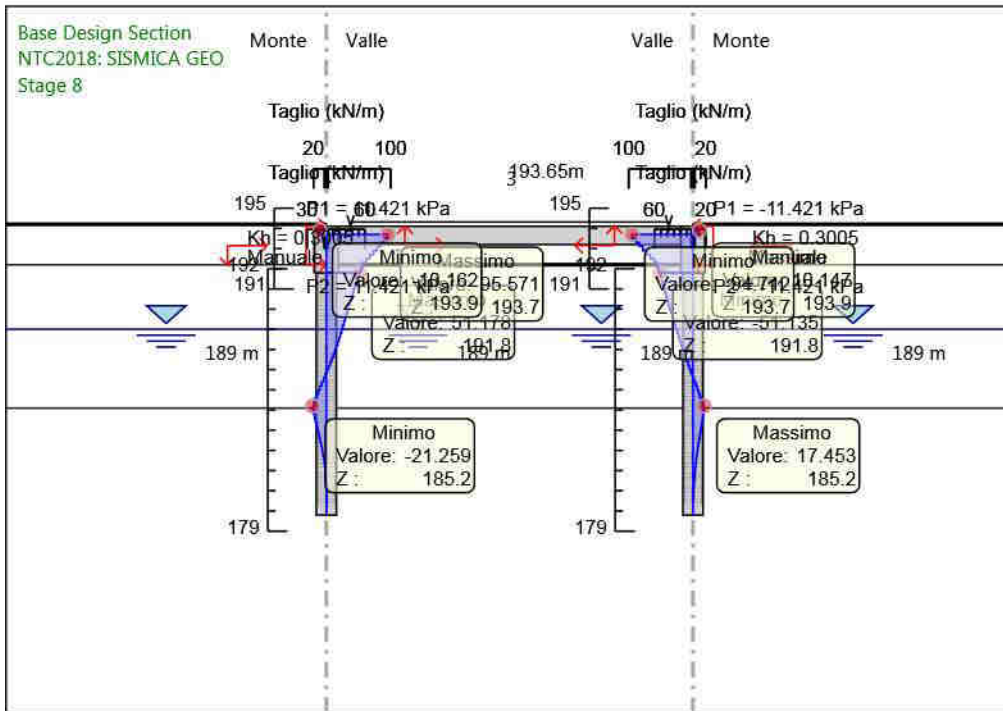
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 6  
Taglio

#### 4.5.39. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 7



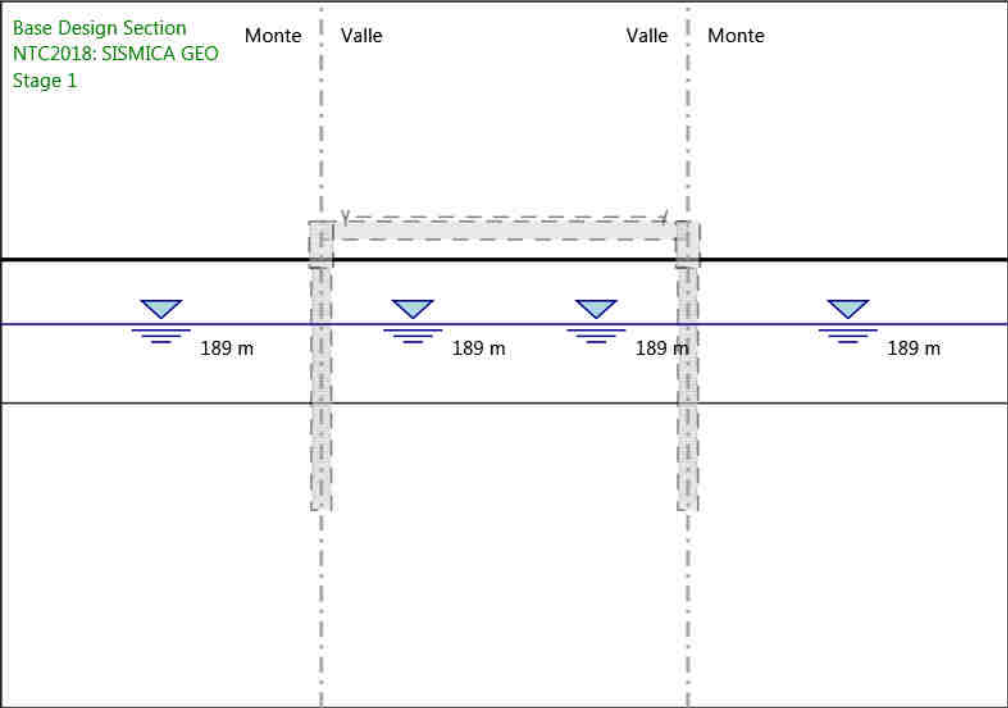
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 7  
Taglio

#### 4.5.40. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 8



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 8  
Taglio

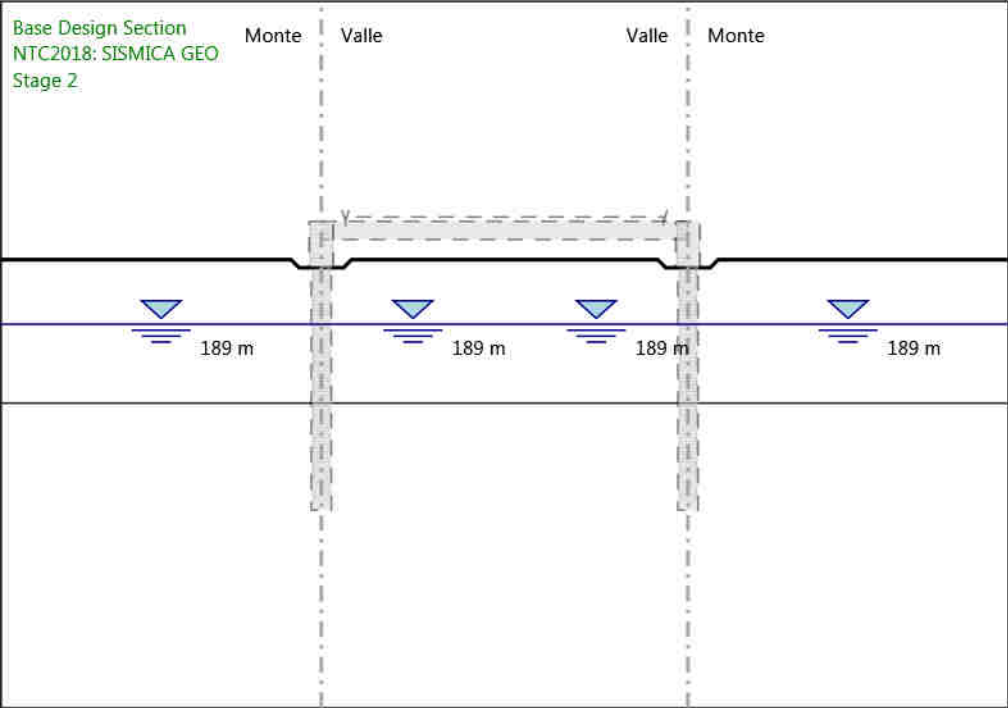
4.5.41. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 1



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 1  
Momento

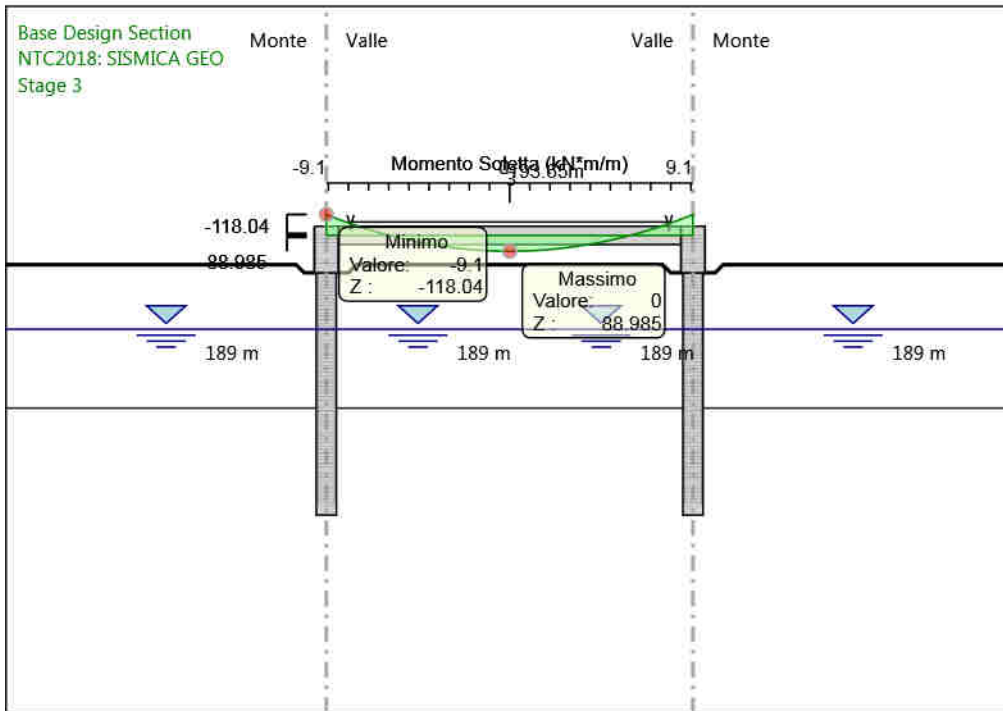


4.5.42. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 2



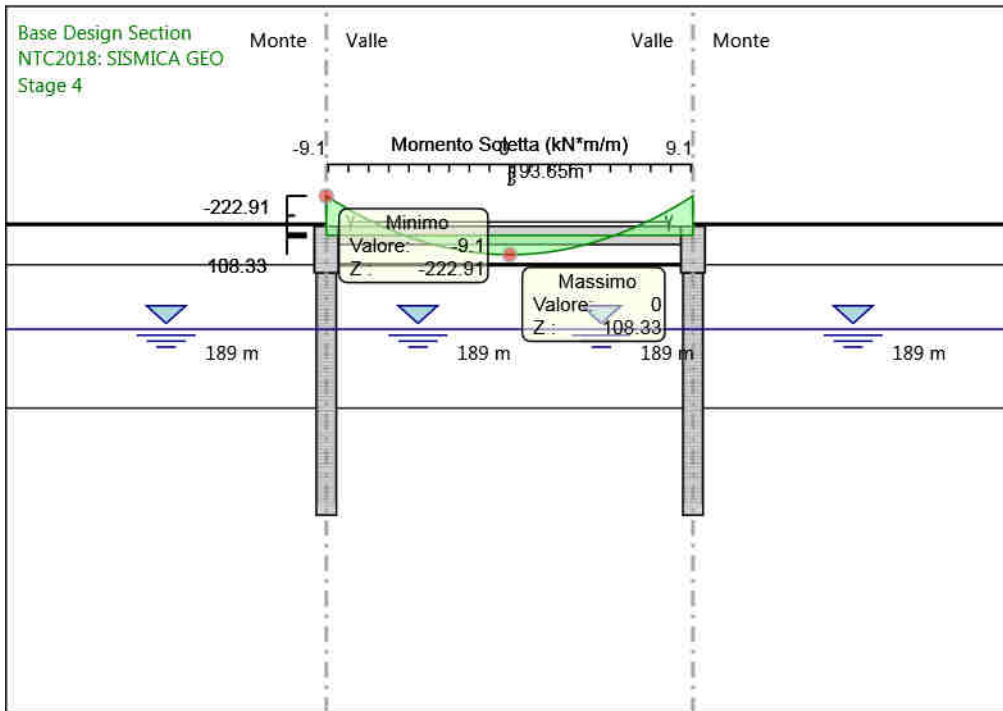
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 2  
Momento

#### 4.5.43. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 3



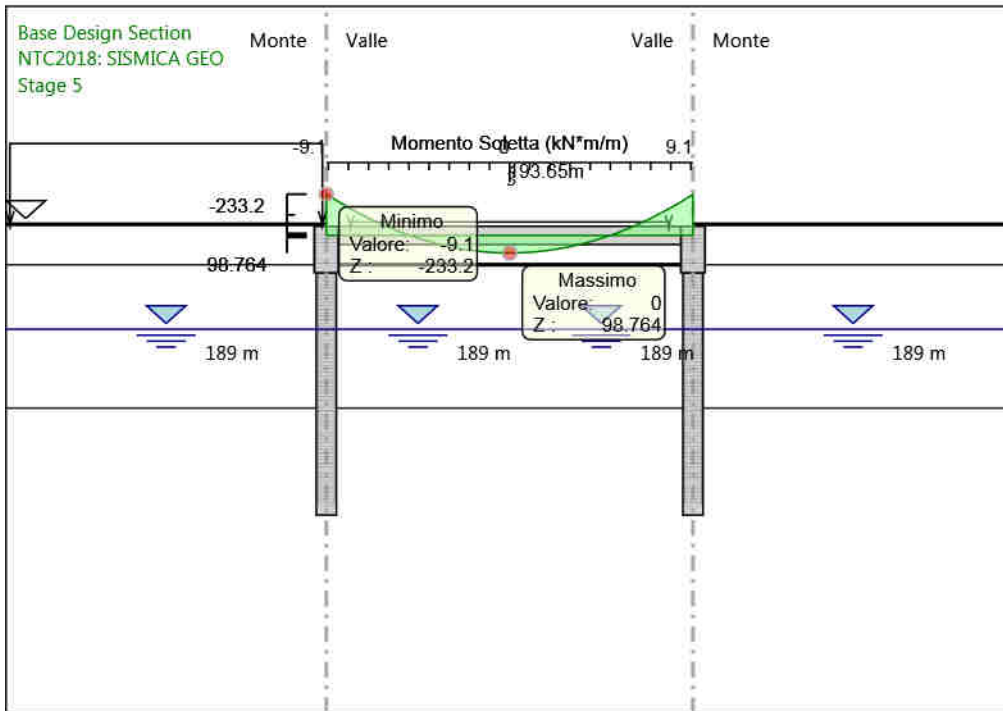
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 3  
Momento

#### 4.5.44. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 4



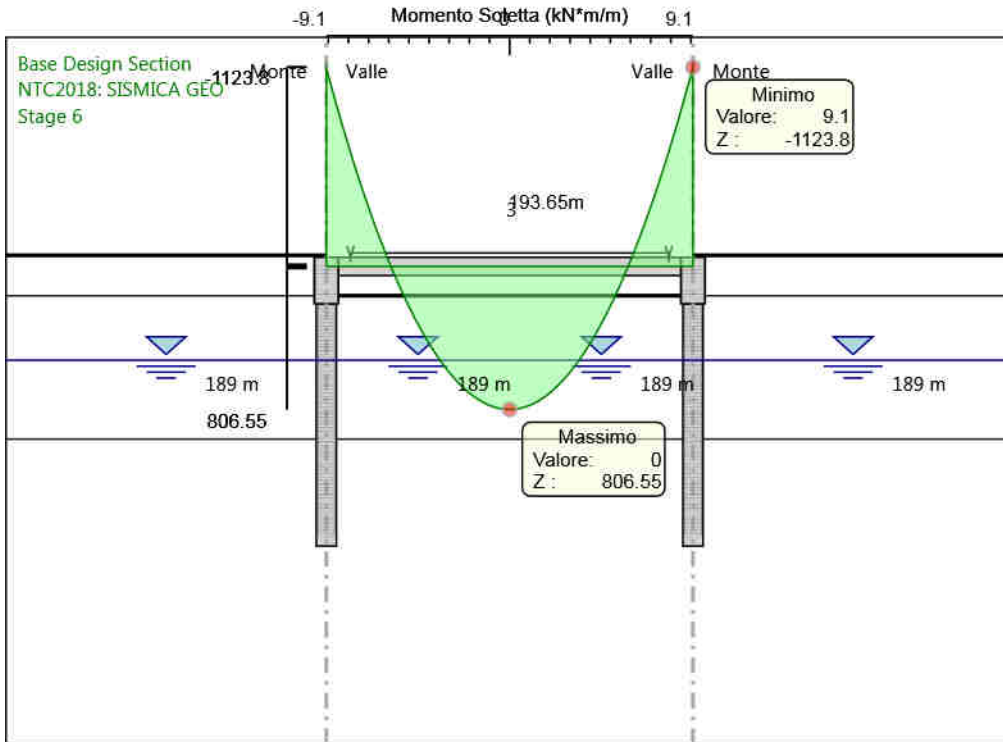
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 4  
Momento

#### 4.5.45. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 5



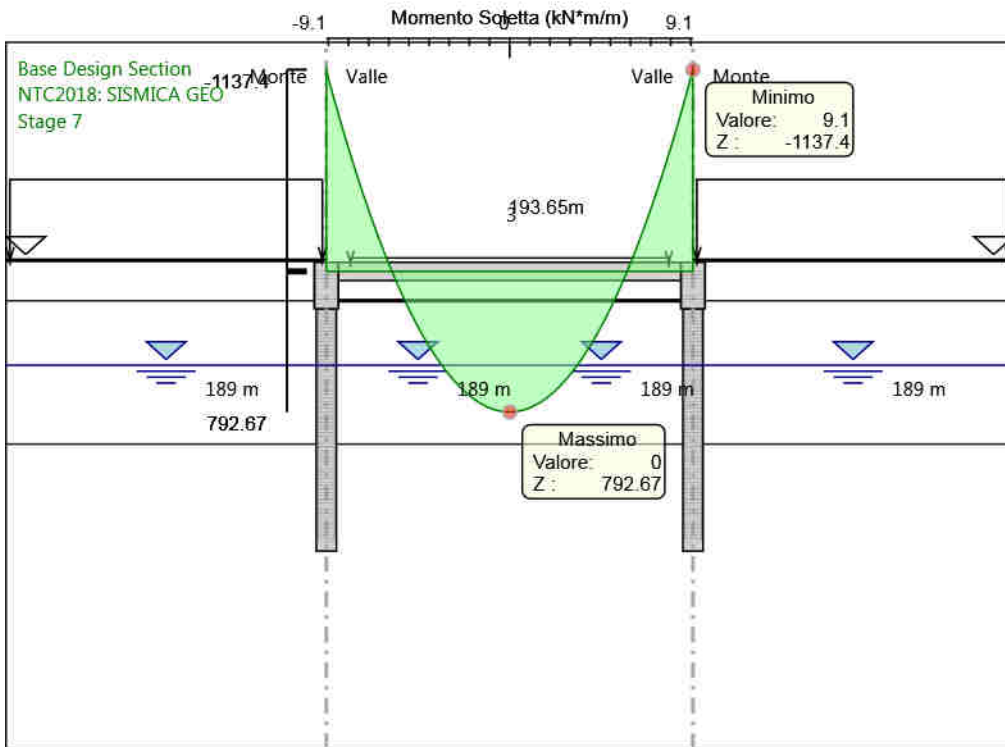
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 5  
Momento

4.5.46. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 6



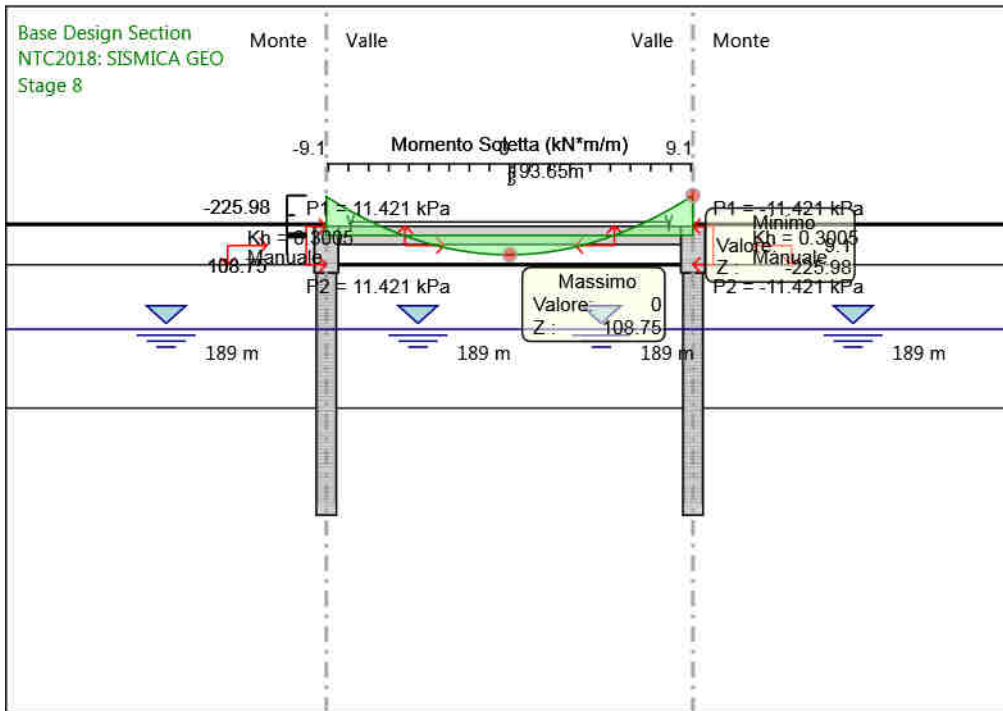
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 6  
Momento

#### 4.5.47. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 7



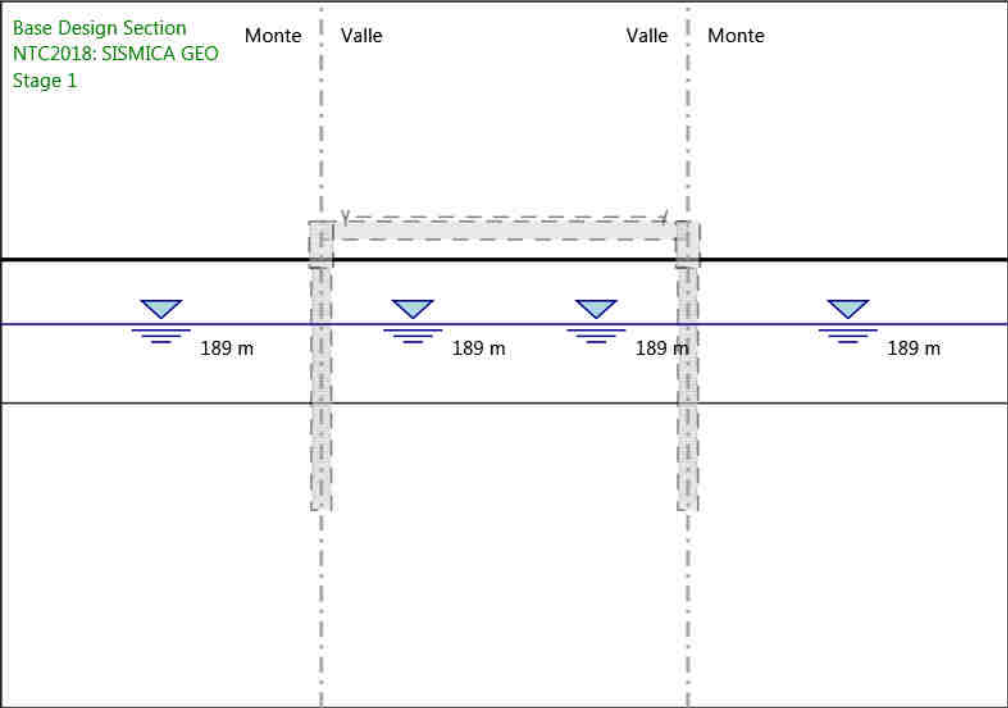
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 7  
Momento

#### 4.5.48. Grafico Risultati Momento NTC2018: SISMICA GEO - Stage: Stage 8



Design Assumption: NTC2018: SISMICA GEO  
 Stage: Stage 8  
 Momento

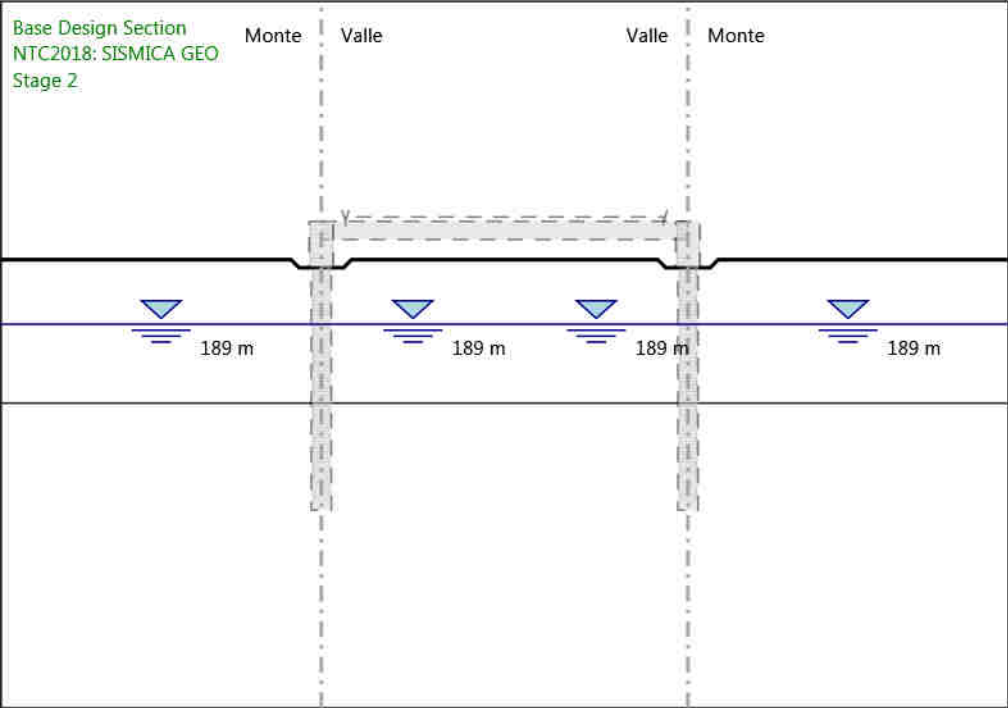
4.5.49. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 1



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 1  
Taglio

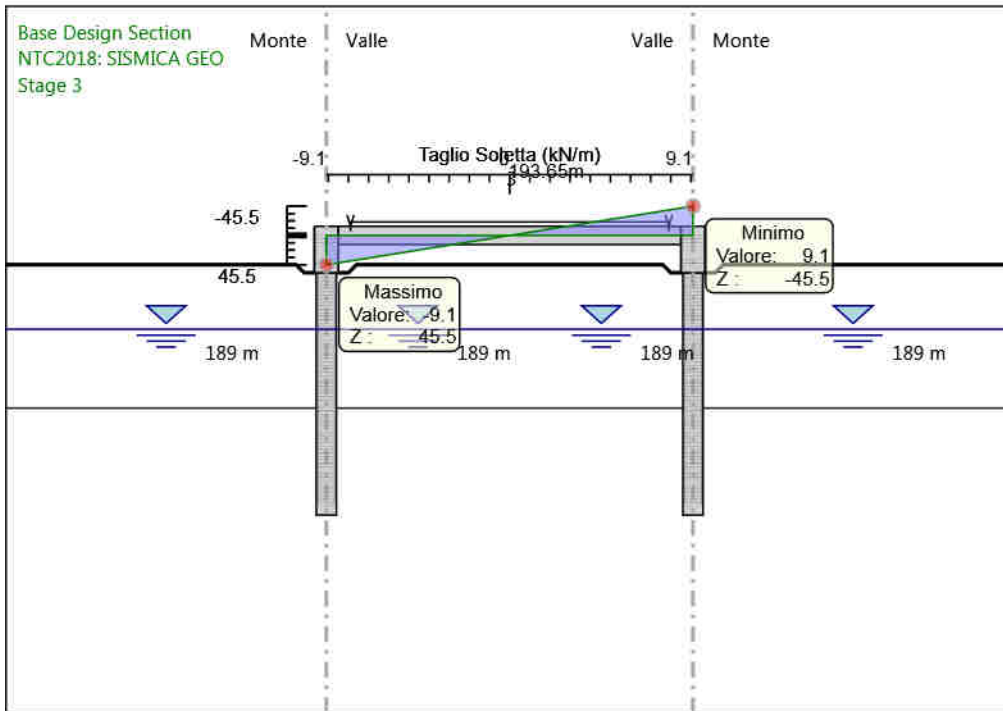


4.5.50. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 2



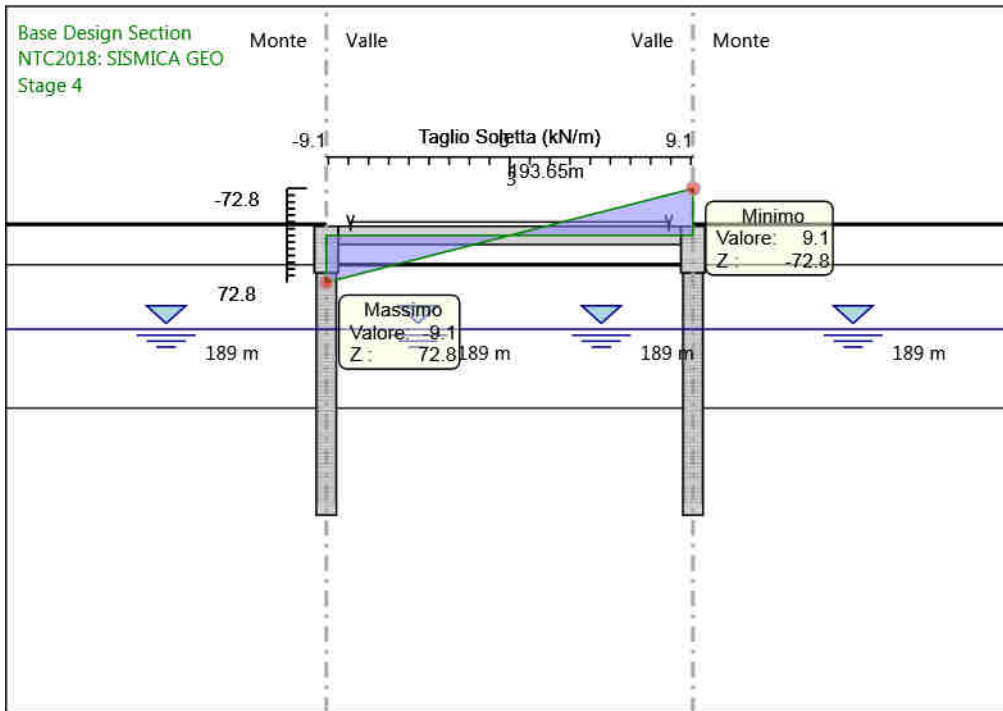
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 2  
Taglio

#### 4.5.51. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 3



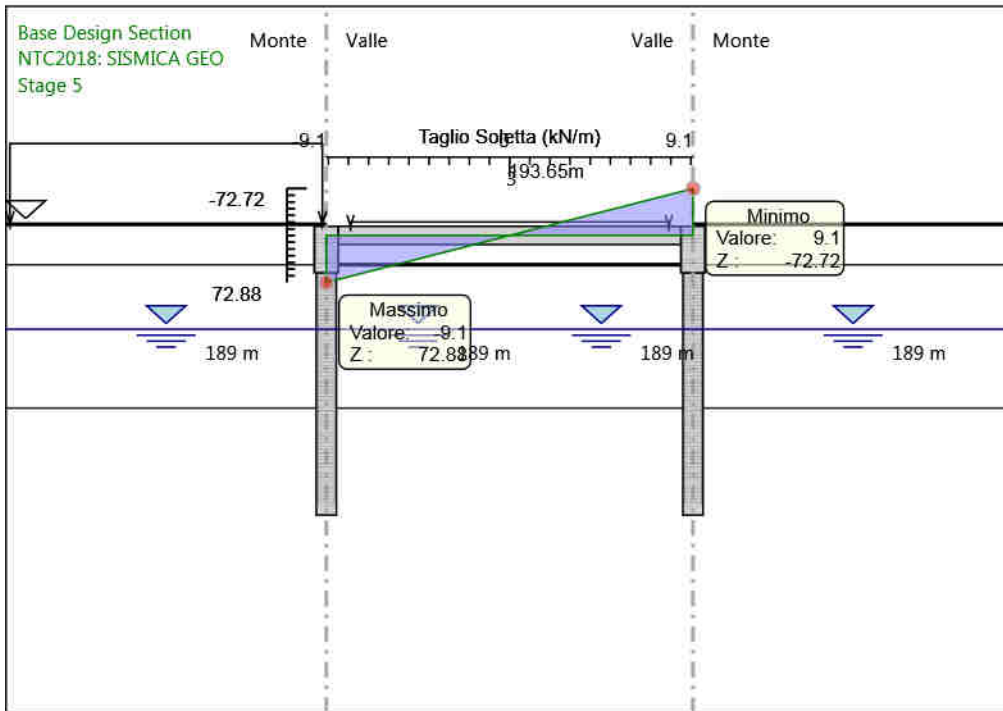
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 3  
Taglio

#### 4.5.52. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 4



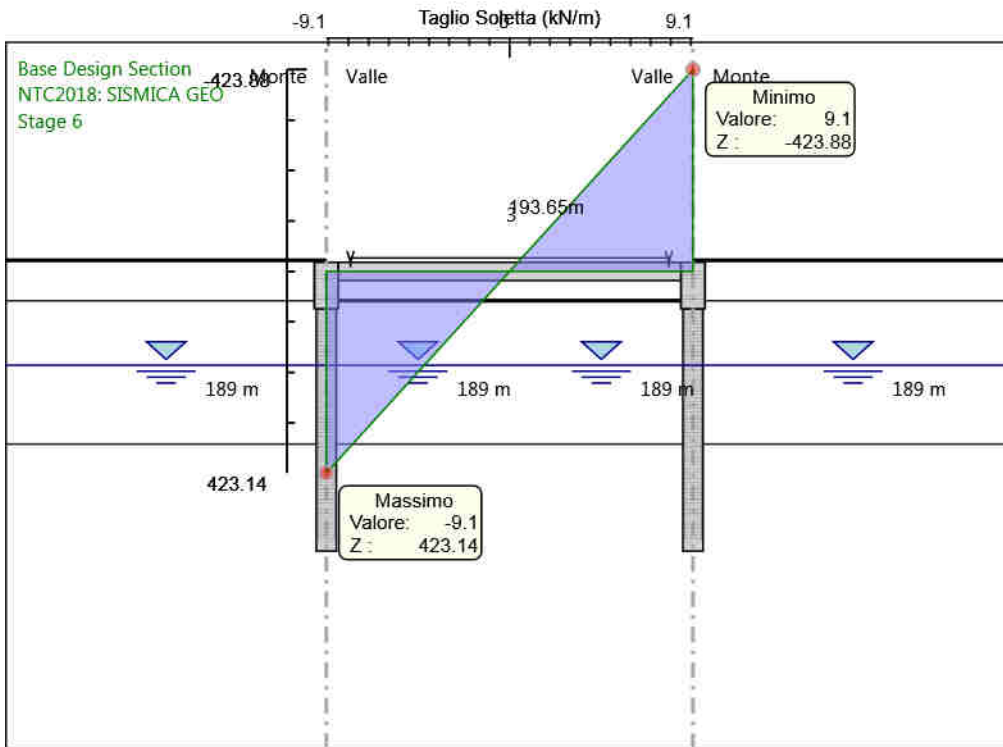
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 4  
Taglio

#### 4.5.53. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 5



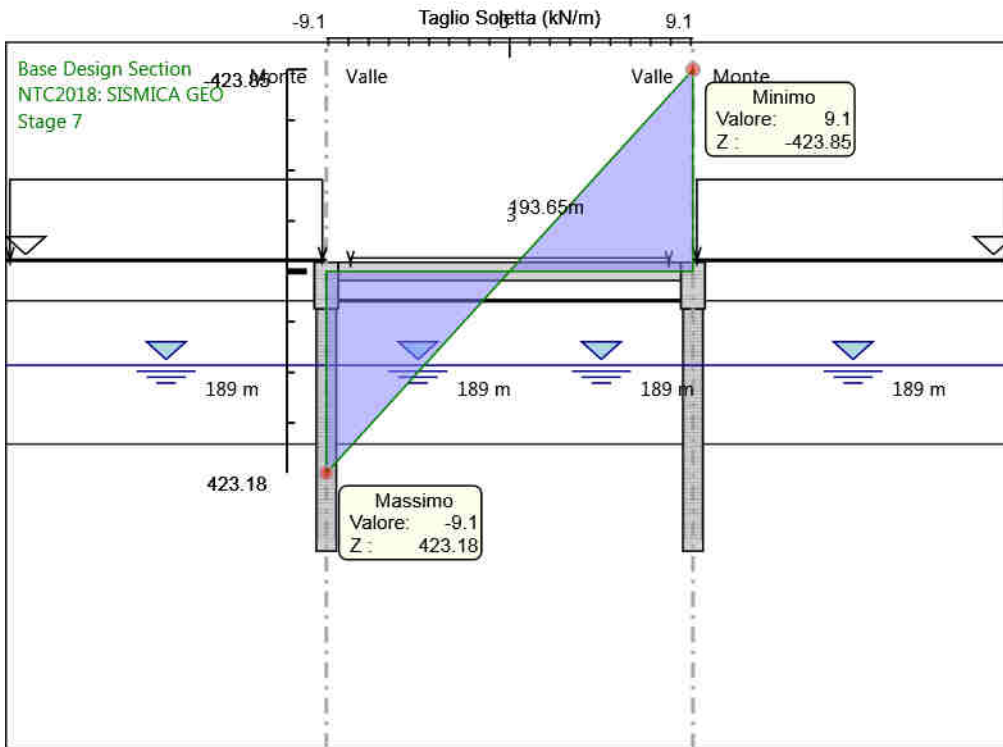
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 5  
Taglio

#### 4.5.54. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 6



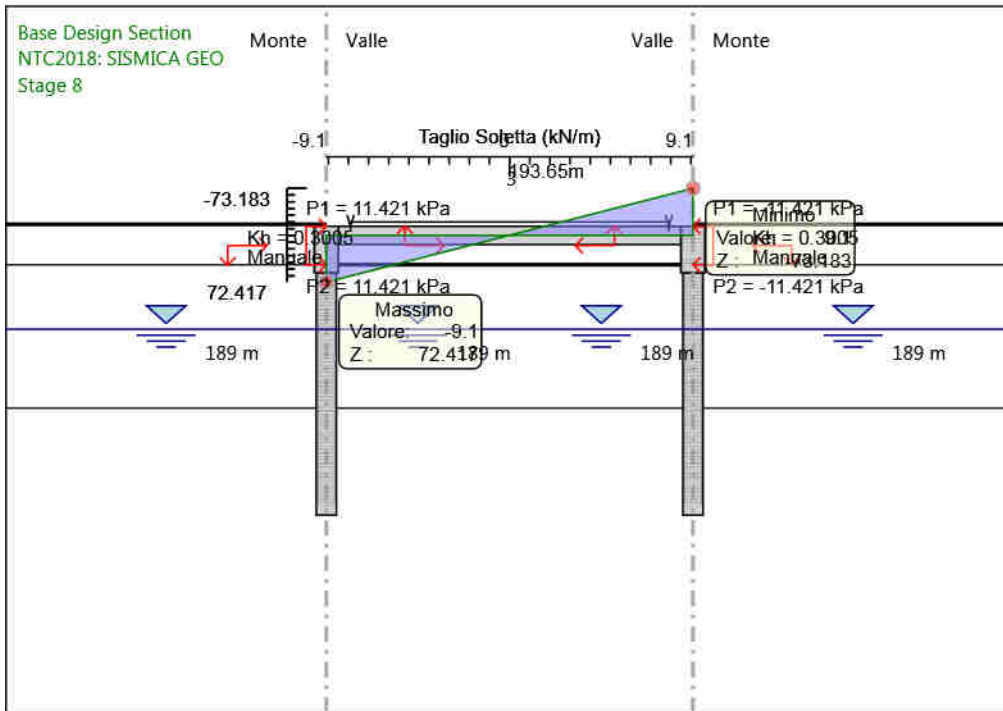
Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 6  
Taglio

#### 4.5.55. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 7



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 7  
Taglio

#### 4.5.56. Grafico Risultati Taglio NTC2018: SISMICA GEO - Stage: Stage 8



Design Assumption: NTC2018: SISMICA GEO  
Stage: Stage 8  
Taglio

#### 4.5.57. Risultati Elementi strutturali - NTC2018: SISMICA GEO

Design Assumption: NTC2018: SISMICA GEO Stage	Tipo Risultato: Soletta Taglio-a (kN/m)	soletta				
		Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)	Surcharge (kPa)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	45.5	45.5	118.0405	-118.0405	-27.3682	5
Stage 4	72.8	72.8	222.9081	-222.9081	-81.35649	8
Stage 5	72.87991	72.72009	233.2031	-231.7488	-98.27435	8
Stage 6	423.144	423.884	1117.076	-1123.81	-293.8333	46.54
Stage 7	423.1808	423.8472	1131.291	-1137.355	-317.9001	46.54
Stage 8	72.41666	73.18334	219.0062	-225.983	-111.3734	8



## ***5. Normative adottate per le verifiche degli Elementi Strutturali***

### **Normative Verifiche**

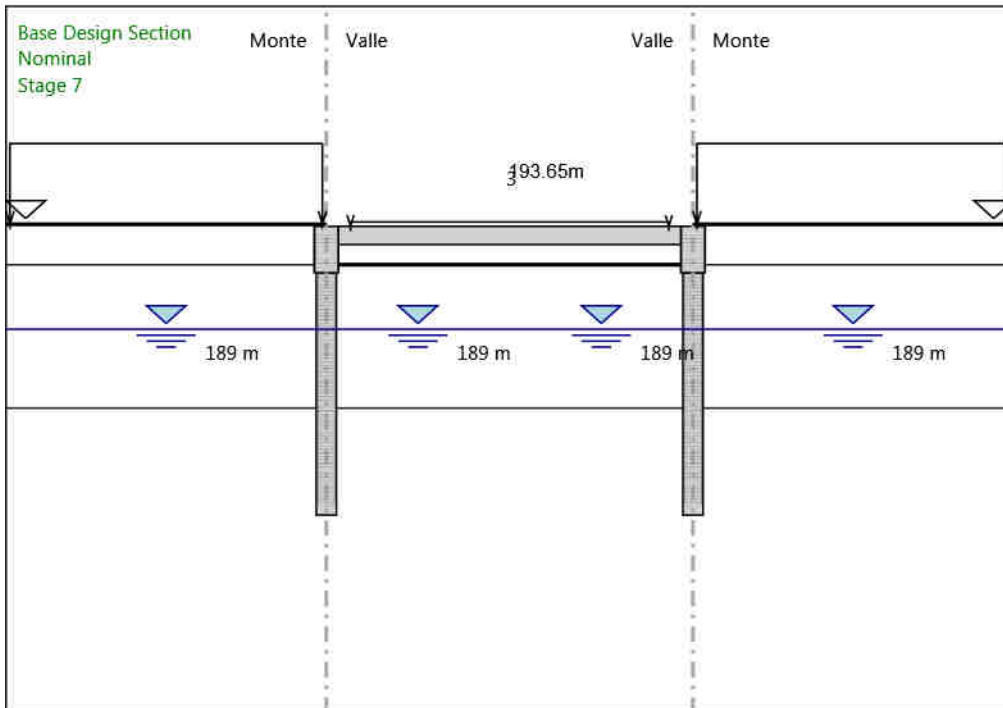
Calcestruzzo	NTC
Acciaio	NTC
Tirante	NONE

## 5.1. Riepilogo Stage / Design Assumption per Inviluppo

Design Assumption	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8
NTC2018: SLE (Rara/Frequente/Quasi Permanente)								
NTC2018: A1+M1+R1 (R3 per tiranti)	V	V	V	V	V	V	V	V
NTC2018: A2+M2+R1	V	V	V	V	V	V	V	V
NTC2018: SISMICA STR	V	V	V	V	V	V	V	V
NTC2018: SISMICA GEO	V	V	V	V	V	V	V	V

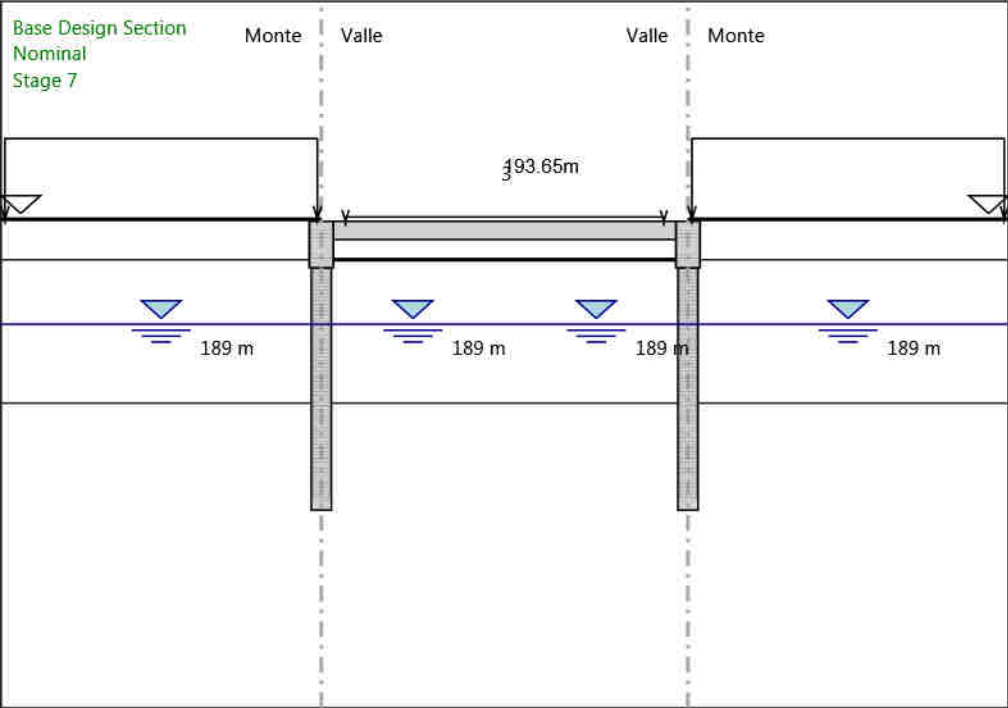
## 5.2. Risultati Cover

### 5.2.3. Grafico Involuppi Tasso di Sfruttamento Calcestruzzo - Cover



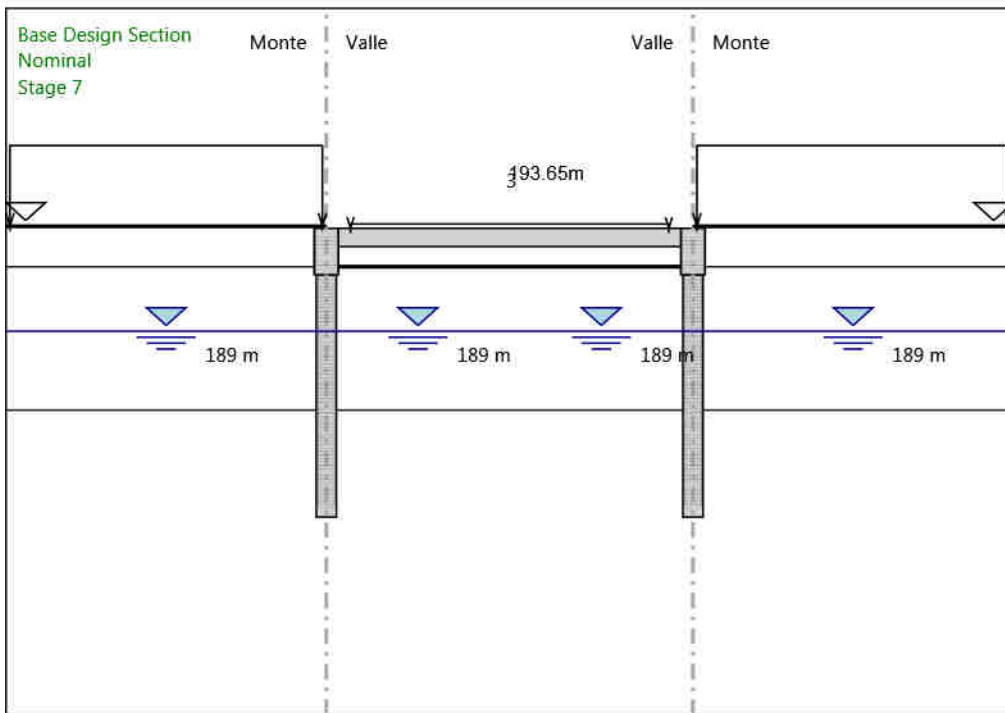
Involuppi  
Tasso di Sfruttamento Calcestruzzo - Cover

5.2.7. Grafico Involuppi Tasso di Sfruttamento Armature - Cover



Involuppi  
Tasso di Sfruttamento Armature - Cover

### 5.2.11. Grafico Involuppi Apertura Fessure - Cover



Involuppi  
Apertura Fessure - Cover

### 5.2.13. Tabella Inviluppi Tasso di Sfruttamento a Momento - Caver : LEFT

Inviluppi Tasso di Sfruttamento a Momento - Caver	LEFT
Z (m)	Tasso di Sfruttamento a Momento - Caver
191.8	0.856
191.6	0.789
191.4	0.724
191.2	0.661
191	0.601
190.8	0.543
190.6	0.487
190.4	0.434
190.2	0.384
190	0.336
189.8	0.291
189.6	0.248
189.4	0.209
189.2	0.172
189	0.137
188.8	0.106
188.6	0.08
188.4	0.066
188.2	0.068
188	0.07
187.8	0.072
187.6	0.073
187.4	0.077
187.2	0.091
187	0.102
186.8	0.112
186.6	0.119
186.4	0.125
186.2	0.129
186	0.131
185.8	0.132
185.6	0.131
185.4	0.129
185.2	0.125
185	0.12
184.8	0.115
184.6	0.111
184.4	0.106
184.2	0.101
184	0.095
183.8	0.089
183.6	0.082
183.4	0.076
183.2	0.069
183	0.062
182.8	0.056
182.6	0.049
182.4	0.043
182.2	0.037
182	0.032
181.8	0.027
181.6	0.022
181.4	0.017
181.2	0.013
181	0.01
180.8	0.01
180.6	0.01
180.4	0.01

Involuppi Tasso di Sfruttamento a Momento - Caver		LEFT
Z (m)	Tasso di Sfruttamento a Momento - Caver	
194.1		0.01
193.9		0.01
193.7		0.858
193.5		0.812
193.3		0.766
193.1		0.721
192.9		0.677
192.7		0.636
192.5		0.595
192.3		0.556
192.1		0.517
191.9		0.48
191.8		0.461

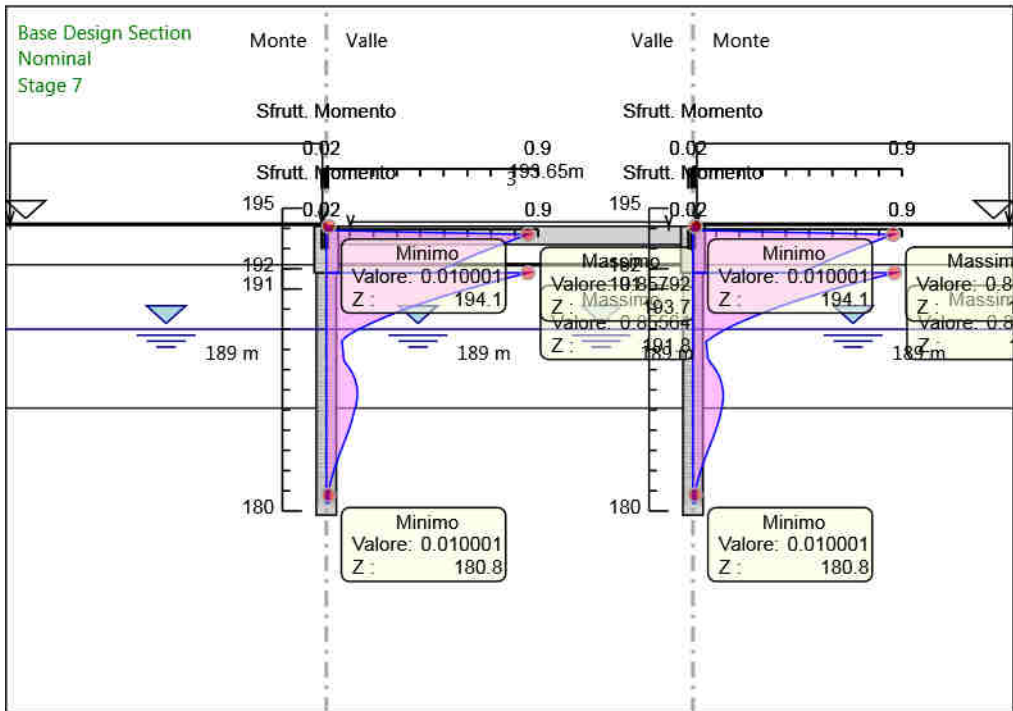
### 5.2.14. Tabella Inviluppi Tasso di Sfruttamento a Momento - Caver : RIGHT

Inviluppi Tasso di Sfruttamento a Momento - Caver		RIGHT
Z (m)	Tasso di Sfruttamento a Momento - Caver	
191.8	0.867	
191.6	0.8	
191.4	0.735	
191.2	0.672	
191	0.611	
190.8	0.552	
190.6	0.496	
190.4	0.442	
190.2	0.391	
190	0.342	
189.8	0.296	
189.6	0.253	
189.4	0.213	
189.2	0.175	
189	0.14	
188.8	0.109	
188.6	0.082	
188.4	0.057	
188.2	0.059	
188	0.061	
187.8	0.062	
187.6	0.063	
187.4	0.072	
187.2	0.086	
187	0.097	
186.8	0.107	
186.6	0.115	
186.4	0.121	
186.2	0.126	
186	0.129	
185.8	0.13	
185.6	0.13	
185.4	0.129	
185.2	0.126	
185	0.122	
184.8	0.118	
184.6	0.114	
184.4	0.109	
184.2	0.104	
184	0.098	
183.8	0.092	
183.6	0.085	
183.4	0.078	
183.2	0.072	
183	0.065	
182.8	0.058	
182.6	0.052	
182.4	0.045	
182.2	0.039	
182	0.034	
181.8	0.028	
181.6	0.023	
181.4	0.019	
181.2	0.015	
181	0.011	
180.8	0.01	
180.6	0.01	
180.4	0.01	



Inviluppi Tasso di Sfruttamento a Momento - Caver	RIGHT
Z (m)	Tasso di Sfruttamento a Momento - Caver
194.1	0.01
193.9	0.01
193.7	0.862
193.5	0.816
193.3	0.771
193.1	0.726
192.9	0.682
192.7	0.641
192.5	0.6
192.3	0.561
192.1	0.523
191.9	0.485
191.8	0.467

### 5.2.15. Grafico Involuppi Tasso di Sfruttamento a Momento - Caver



Involuppi  
Tasso di Sfruttamento a Momento - Caver

### 5.2.17. Tabella Inviluppi Tasso di Sfruttamento a Taglio - Caver : LEFT

Inviluppi Tasso di Sfruttamento a Taglio - Caver	LEFT
Z (m)	Tasso di Sfruttamento a Taglio - Caver
191.8	0.816
191.6	0.816
191.4	0.788
191.2	0.76
191	0.73
190.8	0.699
190.6	0.668
190.4	0.636
190.2	0.603
190	0.569
189.8	0.535
189.6	0.502
189.4	0.469
189.2	0.438
189	0.408
188.8	0.378
188.6	0.35
188.4	0.322
188.2	0.294
188	0.268
187.8	0.242
187.6	0.218
187.4	0.194
187.2	0.17
187	0.148
186.8	0.126
186.6	0.106
186.4	0.086
186.2	0.067
186	0.051
185.8	0.051
185.6	0.057
185.4	0.062
185.2	0.068
185	0.068
184.8	0.071
184.6	0.075
184.4	0.078
184.2	0.08
184	0.081
183.8	0.081
183.6	0.081
183.4	0.08
183.2	0.079
183	0.078
182.8	0.077
182.6	0.075
182.4	0.073
182.2	0.07
182	0.066
181.8	0.062
181.6	0.057
181.4	0.052
181.2	0.046
181	0.041
180.8	0.035
180.6	0.029
180.4	0.023

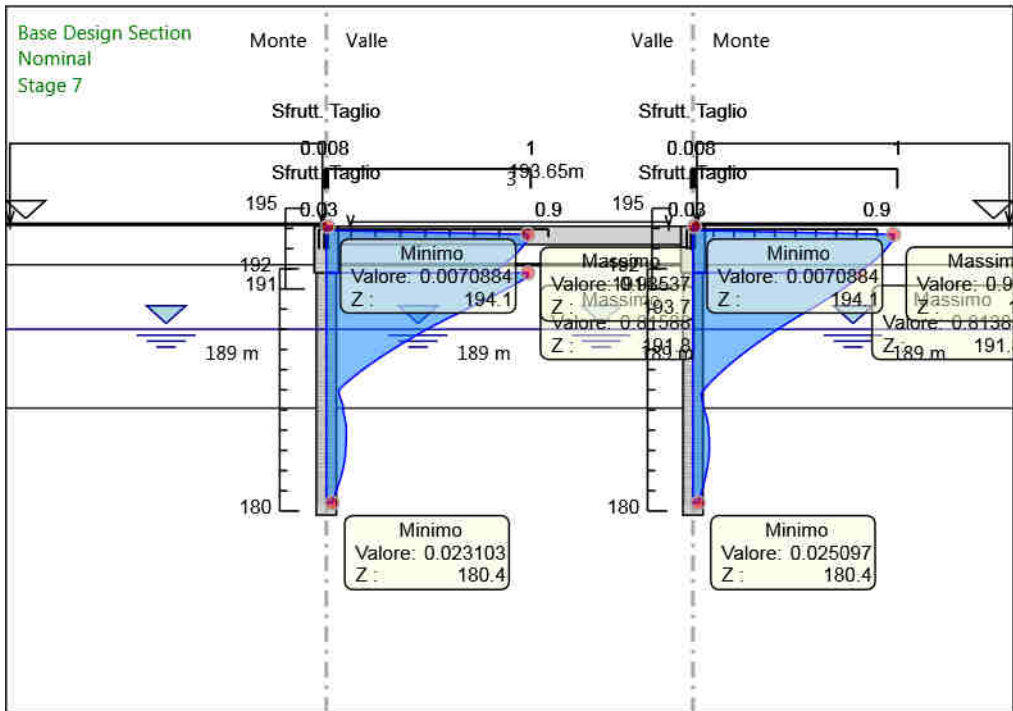
Involuppi Tasso di Sfruttamento a Taglio - Caver		LEFT
Z (m)	Tasso di Sfruttamento a Taglio - Caver	
194.1	0.007	
193.9	0.022	
193.7	0.985	
193.5	0.985	
193.3	0.975	
193.1	0.96	
192.9	0.943	
192.7	0.924	
192.5	0.903	
192.3	0.88	
192.1	0.855	
191.9	0.833	
191.8	0.816	

### 5.2.18. Tabella Inviluppi Tasso di Sfruttamento a Taglio - Caver : RIGHT

Inviluppi Tasso di Sfruttamento a Taglio - Caver	RIGHT
Z (m)	Tasso di Sfruttamento a Taglio - Caver
191.8	0.814
191.6	0.814
191.4	0.788
191.2	0.761
191	0.733
190.8	0.703
190.6	0.673
190.4	0.642
190.2	0.609
190	0.576
189.8	0.542
189.6	0.508
189.4	0.476
189.2	0.445
189	0.414
188.8	0.384
188.6	0.355
188.4	0.326
188.2	0.299
188	0.272
187.8	0.246
187.6	0.221
187.4	0.196
187.2	0.173
187	0.15
186.8	0.129
186.6	0.108
186.4	0.088
186.2	0.07
186	0.054
185.8	0.04
185.6	0.044
185.4	0.048
185.2	0.052
185	0.055
184.8	0.063
184.6	0.068
184.4	0.072
184.2	0.075
184	0.077
183.8	0.078
183.6	0.079
183.4	0.08
183.2	0.08
183	0.08
182.8	0.079
182.6	0.077
182.4	0.074
182.2	0.071
182	0.068
181.8	0.063
181.6	0.059
181.4	0.054
181.2	0.049
181	0.044
180.8	0.038
180.6	0.032
180.4	0.025

Involuppi Tasso di Sfruttamento a Taglio - Caver	RIGHT
Z (m)	Tasso di Sfruttamento a Taglio - Caver
194.1	0.007
193.9	0.022
193.7	0.981
193.5	0.981
193.3	0.969
193.1	0.955
192.9	0.938
192.7	0.919
192.5	0.897
192.3	0.874
192.1	0.848
191.9	0.828
191.8	0.812

### 5.2.19. Grafico Involuppi Tasso di Sfruttamento a Taglio - Caver



Involuppi  
Tasso di Sfruttamento a Taglio - Caver





## 6. Allegati

### 6.1. Design Assumption : Nominal - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: Nominal
* Time:giovedì 22 ottobre 2020 11:09:29
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.271 LeftWall_32
```

```

CHANGE rilevato_11963_11964_0 U-KP=5.879 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KP=5.879 LeftWall_32
CHANGE unitab_2_159_0 U-FRICT=30 LeftWall_32
CHANGE unitab_2_159_0 D-FRICT=30 LeftWall_32
CHANGE unitab_2_159_0 U-KA=0.333 LeftWall_32
CHANGE unitab_2_159_0 U-KP=4.288 LeftWall_32
CHANGE unitab_2_159_0 D-KA=0.333 LeftWall_32
CHANGE unitab_2_159_0 D-KP=4.288 LeftWall_32
CHANGE unitafaa_158_8_0 U-FRICT=28 LeftWall_32
CHANGE unitafaa_158_8_0 D-FRICT=28 LeftWall_32
CHANGE unitafaa_158_8_0 U-KA=0.361 LeftWall_32
CHANGE unitafaa_158_8_0 U-KP=3.812 LeftWall_32
CHANGE unitafaa_158_8_0 D-KA=0.361 LeftWall_32
CHANGE unitafaa_158_8_0 D-KP=3.812 LeftWall_32
CHANGE rilevato_11963_11964_0 U-FRICT=35 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-FRICT=35 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KA=0.271 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KP=5.879 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KA=0.271 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KP=5.879 Rightwall_1021
CHANGE unitab_2_159_0 U-FRICT=30 Rightwall_1021
CHANGE unitab_2_159_0 D-FRICT=30 Rightwall_1021
CHANGE unitab_2_159_0 U-KA=0.333 Rightwall_1021
CHANGE unitab_2_159_0 U-KP=4.288 Rightwall_1021
CHANGE unitab_2_159_0 D-KA=0.333 Rightwall_1021
CHANGE unitab_2_159_0 D-KP=4.288 Rightwall_1021
CHANGE unitafaa_158_8_0 U-FRICT=28 Rightwall_1021
CHANGE unitafaa_158_8_0 D-FRICT=28 Rightwall_1021
CHANGE unitafaa_158_8_0 U-KA=0.361 Rightwall_1021
CHANGE unitafaa_158_8_0 U-KP=3.812 Rightwall_1021
CHANGE unitafaa_158_8_0 D-KA=0.361 Rightwall_1021
CHANGE unitafaa_158_8_0 D-KP=3.812 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-COHE=0 LeftWall_32
CHANGE rilevato_11963_11964_0 U-ADHES=0 LeftWall_32
CHANGE rilevato_11963_11964_0 D-COHE=0 LeftWall_32
CHANGE rilevato_11963_11964_0 D-ADHES=0 LeftWall_32
CHANGE rilevato_11963_11964_0 U-COHE=0 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-ADHES=0 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-COHE=0 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-ADHES=0 Rightwall_1021
CHANGE unitab_2_159_0 U-COHE=15 LeftWall_32
CHANGE unitab_2_159_0 U-ADHES=0 LeftWall_32
CHANGE unitab_2_159_0 D-COHE=15 LeftWall_32
CHANGE unitab_2_159_0 D-ADHES=0 LeftWall_32
CHANGE unitab_2_159_0 U-COHE=15 Rightwall_1021
CHANGE unitab_2_159_0 U-ADHES=0 Rightwall_1021
CHANGE unitab_2_159_0 D-COHE=15 Rightwall_1021
CHANGE unitab_2_159_0 D-ADHES=0 Rightwall_1021
CHANGE unitafaa_158_8_0 U-COHE=30 LeftWall_32
CHANGE unitafaa_158_8_0 U-ADHES=0 LeftWall_32
CHANGE unitafaa_158_8_0 D-COHE=30 LeftWall_32
CHANGE unitafaa_158_8_0 D-ADHES=0 LeftWall_32
CHANGE unitafaa_158_8_0 U-COHE=30 Rightwall_1021
CHANGE unitafaa_158_8_0 U-ADHES=0 Rightwall_1021
CHANGE unitafaa_158_8_0 D-COHE=30 Rightwall_1021
CHANGE unitafaa_158_8_0 D-ADHES=0 Rightwall_1021
SETWALL LeftWall_32
GEOM 192.2 192.2
WATER 189 0 179.8 0 0
SETWALL Rightwall_1021
GEOM 192.2 192.2
WATER 189 0 179.8 0 0
ENDSTEP

STEP Stage2_180
CHANGE unitab_2_159_0 U-KA=0.362 LeftWall_32
CHANGE unitab_2_159_0 U-KP=4.71 LeftWall_32
CHANGE unitab_2_159_0 D-KA=0.362 LeftWall_32
CHANGE unitab_2_159_0 D-KP=4.71 LeftWall_32
CHANGE unitafaa_158_8_0 U-KA=0.382 LeftWall_32
CHANGE unitafaa_158_8_0 U-KP=4.039 LeftWall_32
CHANGE unitafaa_158_8_0 D-KA=0.382 LeftWall_32
CHANGE unitafaa_158_8_0 D-KP=4 LeftWall_32
CHANGE unitab_2_159_0 U-KA=0.362 Rightwall_1021
CHANGE unitab_2_159_0 U-KP=4.71 Rightwall_1021
CHANGE unitab_2_159_0 D-KA=0.362 Rightwall_1021
CHANGE unitab_2_159_0 D-KP=4.71 Rightwall_1021
CHANGE unitafaa_158_8_0 U-KA=0.382 Rightwall_1021
CHANGE unitafaa_158_8_0 U-KP=4.039 Rightwall_1021
CHANGE unitafaa_158_8_0 D-KA=0.382 Rightwall_1021
CHANGE unitafaa_158_8_0 D-KP=4 Rightwall_1021
SETWALL LeftWall_32
GEOM 191.8 191.8
WATER 189 0 179.8 0 0
SETWALL Rightwall_1021
GEOM 191.8 191.8
WATER 189 0 179.8 0 0
ENDSTEP

STEP Stage3_1983
SETWALL LeftWall_32

```

GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
CHANGE rilevato\_11963\_11964\_0 U-KAED=0.5107 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KAEW=0.8661 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPED=5.535 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPEW=3.819 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAED=0.4504 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAEW=1.275 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPED=3.677 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAED=0.6085 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAEW=1.055 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPED=3.926 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPEW=2.457 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAED=0.5379 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAEW=1.247 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPED=2.551 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KAED=0.6533 LeftWall\_32

```

CHANGE unitaFAA_158_8_0 U-KAEW=1.15 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KPED=3.444 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KPEW=2.037 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KAED=0.5778 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KAEW=1.224 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitab_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitab_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitab_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitab_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitab_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitab_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitab_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitab_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KAEW=1.224 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall LeftWall_32
*   min elevation = 192.2
*   max elevation = 194.1
*   average gamma = 20
*   amax/g = 0.300542004
*   deltaQ = 21.6991326888001
DLOAD step LeftWall_32 192.2 11.42 194.1 11.42
* Include pressure contribution from wall: LeftWall_32
* Include wall contribution
DLOAD step LeftWall_32 192.2 9.015 194.1 9.015
SETWALL Rightwall_1021
GEOM 194.2 192.2
SURCHARGE 0 0 0 0
WATER 189 0 179.8 0 0
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPED=5.535 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPED=3.677 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitab_2_159_0 U-KAED=0.6085 LeftWall_32
CHANGE unitab_2_159_0 U-KAEW=1.055 LeftWall_32
CHANGE unitab_2_159_0 U-KPED=3.926 LeftWall_32
CHANGE unitab_2_159_0 U-KPEW=2.457 LeftWall_32
CHANGE unitab_2_159_0 D-KAED=0.5379 LeftWall_32
CHANGE unitab_2_159_0 D-KAEW=1.247 LeftWall_32
CHANGE unitab_2_159_0 D-KPED=2.551 LeftWall_32
CHANGE unitab_2_159_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KAED=0.6533 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KAEW=1.15 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KPED=3.444 LeftWall_32
CHANGE unitaFAA_158_8_0 U-KPEW=2.037 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KAED=0.5778 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KAEW=1.224 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitaFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitab_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitab_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitab_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitab_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitab_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitab_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitab_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitab_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitaFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitaFAA_158_8_0 D-KAEW=1.224 Rightwall_1021

```

```
CHANGE unitàFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitàFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall Rightwall_1021
*   min elevation = 192.2
*   max elevation = 194.1
*   average gamma = 20
*   amax/g = 0.300542004
*   deltaQ = 21.6991326888001
DLOAD step Rightwall_1021 192.2 -11.42 194.1 -11.42
* Include pressure contribution from wall: Rightwall_1021
* Include wall contribution
DLOAD step Rightwall_1021 192.2 -9.015 194.1 -9.015
VARIABLE soletta_3680 3
ENDSTEP
```

## 6.2. Design Assumption : NTC2018: SLE (Rara/Frequente/Quasi Permanente) - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: NTC2018: SLE (Rara/Frequente/Quasi Permanente)
* Time:giovedì 22 ottobre 2020 11:09:30
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KP=5.879 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.271 LeftWall_32
```

CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-FRICT=30 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-FRICT=30 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KP=5.879 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage2\_180

CHANGE unitab\_2\_159\_0 U-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.71 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.71 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=4 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.71 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.71 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=4 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage3\_1983

SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0

SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP



## 6.3. Design Assumption : NTC2018: A1+M1+R1 (R3 per tiranti) - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: NTC2018: A1+M1+R1 (R3 per tiranti)
* Time:giovedì 22 ottobre 2020 11:09:30
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KP=5.879 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.271 LeftWall_32
```

CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-FRICT=30 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-FRICT=30 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KP=5.879 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage2\_180

CHANGE unitab\_2\_159\_0 U-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.71 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.71 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=4 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.71 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.71 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=4 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage3\_1983

SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0

SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.462  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.462  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 47.93  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 47.93  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.462  
ENDSTEP

## 6.4. Design Assumption : NTC2018: A2+M2+R1 - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: NTC2018: A2+M2+R1
* Time:giovedì 22 ottobre 2020 11:09:31
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=29.26 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=29.26 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.343 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KP=4.102 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.343 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KP=4.102 LeftWall_32
CHANGE unitàb_2_159_0 U-FRICT=24.79 LeftWall_32
CHANGE unitàb_2_159_0 D-FRICT=24.79 LeftWall_32
```

CHANGE unitab\_2\_159\_0 U-KA=0.409 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=3.185 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.409 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=3.185 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-FRICT=23.04 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-FRICT=23.04 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.437 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=2.9 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.437 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=2.9 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-FRICT=29.26 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-FRICT=29.26 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KA=0.343 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KP=4.102 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KA=0.343 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KP=4.102 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-FRICT=24.79 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-FRICT=24.79 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KA=0.409 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=3.185 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.409 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=3.185 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-FRICT=23.04 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-FRICT=23.04 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.437 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=2.9 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.437 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=2.9 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-COHE=12 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-COHE=12 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-COHE=12 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-COHE=12 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-COHE=24 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-COHE=24 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-COHE=24 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-COHE=24 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage2\_180

CHANGE unitab\_2\_159\_0 U-KA=0.449 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=3.463 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.449 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=3.463 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.466 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.054 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.466 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.028 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.449 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=3.463 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.449 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=3.463 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.466 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.054 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.466 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.028 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage3\_1983

SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0

ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.409 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=3.185 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.409 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=3.185 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.437 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=2.9 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.437 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=2.9 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.409 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=3.185 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.409 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=3.185 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.437 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=2.9 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.437 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=2.9 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.9  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.9  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 54  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 54  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3.9  
ENDSTEP

## 6.5. Design Assumption : NTC2018: SISMICA STR - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: NTC2018: SISMICA STR
* Time:giovedì 22 ottobre 2020 11:09:32
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KP=5.879 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KP=5.879 LeftWall_32
CHANGE unitàb_2_159_0 U-FRICT=30 LeftWall_32
CHANGE unitàb_2_159_0 D-FRICT=30 LeftWall_32
```

CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KP=5.879 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-FRICT=28 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-COHE=30 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-ADHES=0 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage2\_180

CHANGE unitab\_2\_159\_0 U-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.71 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.71 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=4 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.71 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.71 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=4.039 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.382 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=4 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage3\_1983

SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0



ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
CHANGE rilevato\_11963\_11964\_0 U-KAED=0.5107 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KAEW=0.8661 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPED=5.535 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPEW=3.819 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAED=0.4504 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAEW=1.275 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPED=3.677 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAED=0.6085 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAEW=1.055 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPED=3.926 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPEW=2.457 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAED=0.5379 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAEW=1.247 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPED=2.551 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KAED=0.6533 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KAEW=1.15 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KPED=3.444 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KPEW=2.037 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KAED=0.5778 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KAEW=1.224 LeftWall\_32

```

CHANGE unitáFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall LeftWall_32
*   min elevation = 192.2
*   max elevation = 194.1
*   average gamma = 20
*   amax/g = 0.300542004
*   deltaQ = 21.6991326888001
DLOAD step LeftWall_32 192.2 11.42 194.1 11.42
* Include pressure contribution from wall: LeftWall_32
* Include wall contribution
DLOAD step LeftWall_32 192.2 9.015 194.1 9.015
SETWALL Rightwall_1021
GEOM 194.2 192.2
SURCHARGE 0 0 0 0
WATER 189 0 179.8 0 0
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPED=5.535 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPED=3.677 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitáb_2_159_0 U-KAED=0.6085 LeftWall_32
CHANGE unitáb_2_159_0 U-KAEW=1.055 LeftWall_32
CHANGE unitáb_2_159_0 U-KPED=3.926 LeftWall_32
CHANGE unitáb_2_159_0 U-KPEW=2.457 LeftWall_32
CHANGE unitáb_2_159_0 D-KAED=0.5379 LeftWall_32
CHANGE unitáb_2_159_0 D-KAEW=1.247 LeftWall_32
CHANGE unitáb_2_159_0 D-KPED=2.551 LeftWall_32
CHANGE unitáb_2_159_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KPED=3.444 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall Rightwall_1021
*   min elevation = 192.2

```

```
*      max elevation = 194.1
*      average gamma = 20
*      amax/g = 0.300542004
*      deltaQ = 21.6991326888001
DLOAD step Rightwall_1021 192.2 -11.42 194.1 -11.42
* Include pressure contribution from wall: Rightwall_1021
* Include wall contribution
DLOAD step Rightwall_1021 192.2 -9.015 194.1 -9.015
VARIABLE soletta_3680 3
ENDSTEP
```

## 6.6. Design Assumption : NTC2018: SISMICA GEO - File di Paratie - File di input (.d)

```
* PARATIE ANALYSIS FOR DESIGN SECTION:Base Design Section USING ASSUMPTION: NTC2018: SISMICA GEO
* Time:giovedì 22 ottobre 2020 11:09:32
* 1: Defining general settings
UNIT m kN
TITLE New Project
DELTA 0.2
option param itemax 40
option control hinges 0 0.0001 0.001

* 2: Defining wall(s)
WALL LeftWall_32 -9.1 179.8 194.1 1
WALL Rightwall_1021 9.1 179.8 194.1 -1

* 3: Defining surfaces for wall(s)
SOIL 0_L LeftWall_32 179.8 194.1 1 0
SOIL 0_R LeftWall_32 179.8 194.1 2 180
SOIL 1_L Rightwall_1021 179.8 194.1 2 0
SOIL 1_R Rightwall_1021 179.8 194.1 1 180

* 4: Defining soil layers
*
* Soil Profile (rilevato_11963_11964_0)
*
LDATA rilevato_11963_11964_0 200
ATREST 0.5 0.5 1
WEIGHT 20 10 10
PERMEABILITY 0.0001
RESISTANCE 0 35 0 0 0
YOUNG 3E+04 9E+04
ENDL
*
* Soil Profile (unitàb_2_159_0)
*
LDATA unitàb_2_159_0 192.2
ATREST 0.5 0.5 1
WEIGHT 19.5 10.5 10
PERMEABILITY 0.0001
RESISTANCE 15 30 0 0 0
YOUNG 1E+04 3E+04
ENDL
*
* Soil Profile (unitàFAA_158_8_0)
*
LDATA unitàFAA_158_8_0 185.1
ATREST 0.5 0.5 1
WEIGHT 20 11 10
PERMEABILITY 0.0001
RESISTANCE 30 28 0 0 0
YOUNG 2E+04 6E+04
ENDL

* 5: Defining structural materials
* Steel material: 108 Name=Fe360 E=206000200 kPa
MATERIAL Fe360_108 2.06E+08
* Concrete material: 105 Name=C28/35 E=32308200 kPa
MATERIAL C2835_105 3.231E+07
* Concrete material: 106 Name=C32/40 E=33345800 kPa
MATERIAL C3240_106 3.335E+07

* 6: Defining structural elements
* 6.1: Beams and combined Wall Elements
BEAM pali_sx_33 LeftWall_32 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_sx_550 LeftWall_32 191.8 194.1 C3240_106 1.2 00 00 0
BEAM pali_dx_1286 Rightwall_1021 179.8 191.8 C2835_105 0.7681 00 00 0
BEAM cordolo_dx_2258 Rightwall_1021 191.8 194.1 C3240_106 1.2 00 00 0

* 6.2: Supports
SLAB soletta_3680 193.7 C3240_106 0.9 0.06075 5

* 6.3: Strips

* 7: Defining Steps
STEP Stage1_31
CHANGE rilevato_11963_11964_0 U-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 D-FRICT=35 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KP=5.879 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KA=0.271 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KP=5.879 LeftWall_32
CHANGE unitàb_2_159_0 U-FRICT=30 LeftWall_32
CHANGE unitàb_2_159_0 D-FRICT=30 LeftWall_32
```

CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-FRICT=28 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-FRICT=28 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-FRICT=35 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-KP=5.879 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KA=0.271 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-KP=5.879 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-FRICT=30 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-FRICT=28 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-FRICT=28 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 U-ADHES=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-COHE=0 Rightwall\_1021  
CHANGE rilevato\_11963\_11964\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-COHE=15 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-COHE=15 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-ADHES=0 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-COHE=30 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-ADHES=0 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-COHE=30 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-ADHES=0 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-COHE=30 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-ADHES=0 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-COHE=30 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-ADHES=0 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 192.2 192.2  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage2\_180

CHANGE unitab\_2\_159\_0 U-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.71 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.362 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.71 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.382 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 U-KP=4.039 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.382 LeftWall\_32  
CHANGE unitaFAA\_158\_8\_0 D-KP=4 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.71 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.362 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.71 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KA=0.382 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 U-KP=4.039 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KA=0.382 Rightwall\_1021  
CHANGE unitaFAA\_158\_8\_0 D-KP=4 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
ENDSTEP

STEP Stage3\_1983

SETWALL LeftWall\_32  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 191.8 191.8  
WATER 189 0 179.8 0 0

ADD pali\_sx\_33 cordolo\_sx\_550 soletta\_3680 pali\_dx\_1286 cordolo\_dx\_2258  
ENDSTEP

STEP Stage4\_2433  
CHANGE unitab\_2\_159\_0 U-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KP=4.288 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KA=0.333 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KP=4.288 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 U-KP=4.288 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KA=0.333 Rightwall\_1021  
CHANGE unitab\_2\_159\_0 D-KP=4.288 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 U-KP=3.812 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KA=0.361 Rightwall\_1021  
CHANGE unitafaa\_158\_8\_0 D-KP=3.812 Rightwall\_1021  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage5\_5177  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 3  
ENDSTEP

STEP Stage6\_5454  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage7\_5903  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
SETWALL Rightwall\_1021  
GEOM 194.2 192.2  
SURCHARGE 20 194.2 0 192.2  
WATER 189 0 179.8 0 0  
VARIABLE soletta\_3680 41.54  
ENDSTEP

STEP Stage8\_6006  
SETWALL LeftWall\_32  
GEOM 194.2 192.2  
SURCHARGE 0 0 0 0  
WATER 189 0 179.8 0 0  
CHANGE rilevato\_11963\_11964\_0 U-KAED=0.5107 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KAEW=0.8661 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPED=5.535 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 U-KPEW=3.819 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAED=0.4504 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KAEW=1.275 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPED=3.677 LeftWall\_32  
CHANGE rilevato\_11963\_11964\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAED=0.6085 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KAEW=1.055 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPED=3.926 LeftWall\_32  
CHANGE unitab\_2\_159\_0 U-KPEW=2.457 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAED=0.5379 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KAEW=1.247 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPED=2.551 LeftWall\_32  
CHANGE unitab\_2\_159\_0 D-KPEW=0.8498 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KAED=0.6533 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KAEW=1.15 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KPED=3.444 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 U-KPEW=2.037 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KAED=0.5778 LeftWall\_32  
CHANGE unitafaa\_158\_8\_0 D-KAEW=1.224 LeftWall\_32

```

CHANGE unitáFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall LeftWall_32
*   min elevation = 192.2
*   max elevation = 194.1
*   average gamma = 20
*   amax/g = 0.300542004
*   deltaQ = 21.6991326888001
DLOAD step LeftWall_32 192.2 11.42 194.1 11.42
* Include pressure contribution from wall: LeftWall_32
* Include wall contribution
DLOAD step LeftWall_32 192.2 9.015 194.1 9.015
SETWALL Rightwall_1021
GEOM 194.2 192.2
SURCHARGE 0 0 0 0
WATER 189 0 179.8 0 0
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPED=5.535 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPED=3.677 LeftWall_32
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitáb_2_159_0 U-KAED=0.6085 LeftWall_32
CHANGE unitáb_2_159_0 U-KAEW=1.055 LeftWall_32
CHANGE unitáb_2_159_0 U-KPED=3.926 LeftWall_32
CHANGE unitáb_2_159_0 U-KPEW=2.457 LeftWall_32
CHANGE unitáb_2_159_0 D-KAED=0.5379 LeftWall_32
CHANGE unitáb_2_159_0 D-KAEW=1.247 LeftWall_32
CHANGE unitáb_2_159_0 D-KPED=2.551 LeftWall_32
CHANGE unitáb_2_159_0 D-KPEW=0.8498 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KPED=3.444 LeftWall_32
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPED=2.21 LeftWall_32
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 LeftWall_32
CHANGE rilevato_11963_11964_0 U-KAED=0.5107 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KAEW=0.8661 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPED=5.535 Rightwall_1021
CHANGE rilevato_11963_11964_0 U-KPEW=3.819 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAED=0.4504 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KAEW=1.275 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPED=3.677 Rightwall_1021
CHANGE rilevato_11963_11964_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAED=0.6085 Rightwall_1021
CHANGE unitáb_2_159_0 U-KAEW=1.055 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPED=3.926 Rightwall_1021
CHANGE unitáb_2_159_0 U-KPEW=2.457 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAED=0.5379 Rightwall_1021
CHANGE unitáb_2_159_0 D-KAEW=1.247 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPED=2.551 Rightwall_1021
CHANGE unitáb_2_159_0 D-KPEW=0.8498 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAED=0.6533 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KAEW=1.15 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPED=3.444 Rightwall_1021
CHANGE unitáFAA_158_8_0 U-KPEW=2.037 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAED=0.5778 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KAEW=1.224 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPED=2.21 Rightwall_1021
CHANGE unitáFAA_158_8_0 D-KPEW=0.8498 Rightwall_1021
EQK USER 0.3005 0.1503 -0.1503 0 0.5 0 0.5 0 0
* Defining seismic surcharge pressures on wall Rightwall_1021
*   min elevation = 192.2

```

```
*      max elevation = 194.1
*      average gamma = 20
*      amax/g = 0.300542004
*      deltaQ = 21.6991326888001
DLOAD step Rightwall_1021 192.2 -11.42 194.1 -11.42
* Include pressure contribution from wall: Rightwall_1021
* Include wall contribution
DLOAD step Rightwall_1021 192.2 -9.015 194.1 -9.015
VARIABLE soletta_3680 3
ENDSTEP
```