

COMMITTENTE:



PROGETTAZIONE:



CUP J81H02000000001

## S.O. PROGETTAZIONE INTEGRATA NORD

### PROGETTO DEFINITIVO

## COMPLETAMENTO RADDOPPIO LINEA PARMA - LA SPEZIA (PONTREMOLESE)

### TRATTA PARMA - VICOFERTILE

OPERE CIVILI DI LINEA

GA07 - GA DB SEZIONE ALLARGATA (pk.3+145,00+3+490,00)

RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO

SCALA:

-

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

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Rev.	Descrizione	Redatto	Data	Verificato	Data	Approvato	Data	Autorizzato Data
A	EMISSIONE ESECUTIVA	P.Cucino	Feb-22	M.Salleolini	Feb-22	G.Fadda	Feb-22	A.Perego Ott-22
B	AGGIORNAMENTO POST VERIFICA RFI	P.Cucino	Ott-22	M.Salleolini	Ott-22	G.Fadda	Ott-22	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

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## 1 PREMESSA

Con “Pontremolese” viene comunemente intesa la linea ferroviaria Parma – La Spezia, linea che congiunge come trasversale la linea Tirrenica con la dorsale Roma-Firenze-Bologna-Milano.

Nel 1976 entra a far parte del Corridoio Plurimodale Tirreno-Brennero (Ti-Bre) e fra gli anni '80 e '90 vengono realizzati il raddoppio delle tratte Vezzano Ligure-S.Stefano di Magra, e Ghiare di Berceto-Solignano e successivamente viene realizzato il prolungamento del raddoppio Solignano-Fornovo. A seguito dell’emanazione della Legge n. 443 del 21 dicembre 2001 (Legge Obiettivo), la restante parte da raddoppiare della linea (Parma-Osteriazza e Berceto-Chiesaccia) è stata inserita fra le opere strategiche.

Con Delibera n.19 del 8 maggio 2009, pubblicata sulla G.U.R.I. n. 301 del 29 dicembre 2009, il CIPE approva il Progetto Preliminare del Completamento del 2003. Delle tratte comprese tra Parma e Osteriazza e tra Berceto e Chiesaccia, vengono individuati tre lotti funzionali:

- Parma-Osteriazza
- Berceto-Pontremoli
- Pontremoli-Chiesaccia.

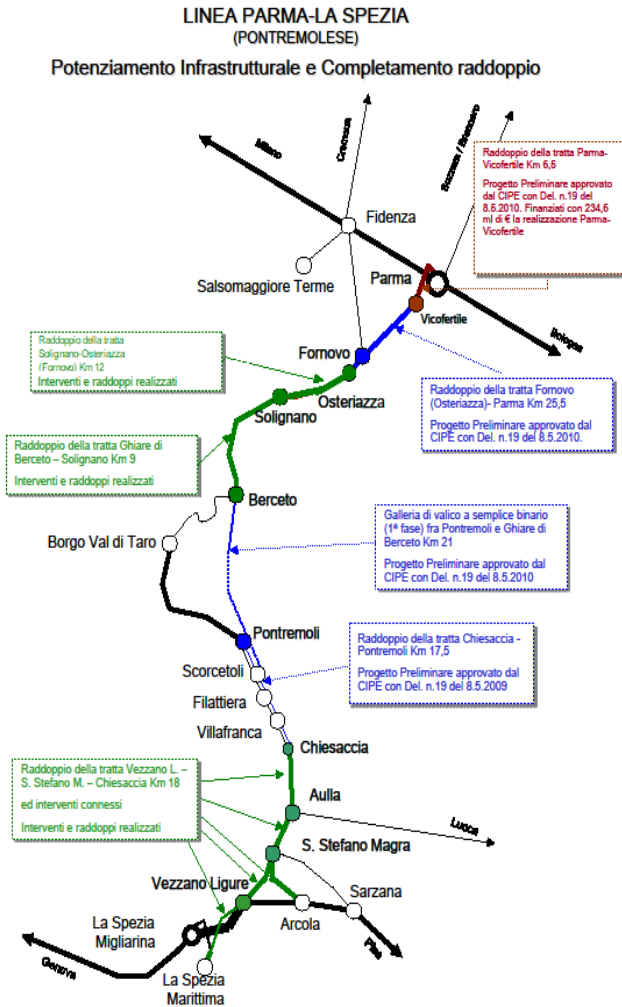
Di questi tre lotti funzionali, nella stessa Delibera, è stato individuato il primo, quello Parma-Osteriazza, come lotto prioritario, a sua volta suddiviso nei tre sub lotti Parma-Vicofertile, Vicofertile-Collecchio e Collecchio-Osteriazza.

Il progetto in oggetto è relativo al progetto definitivo del raddoppio della tratta Parma- Vicofertile

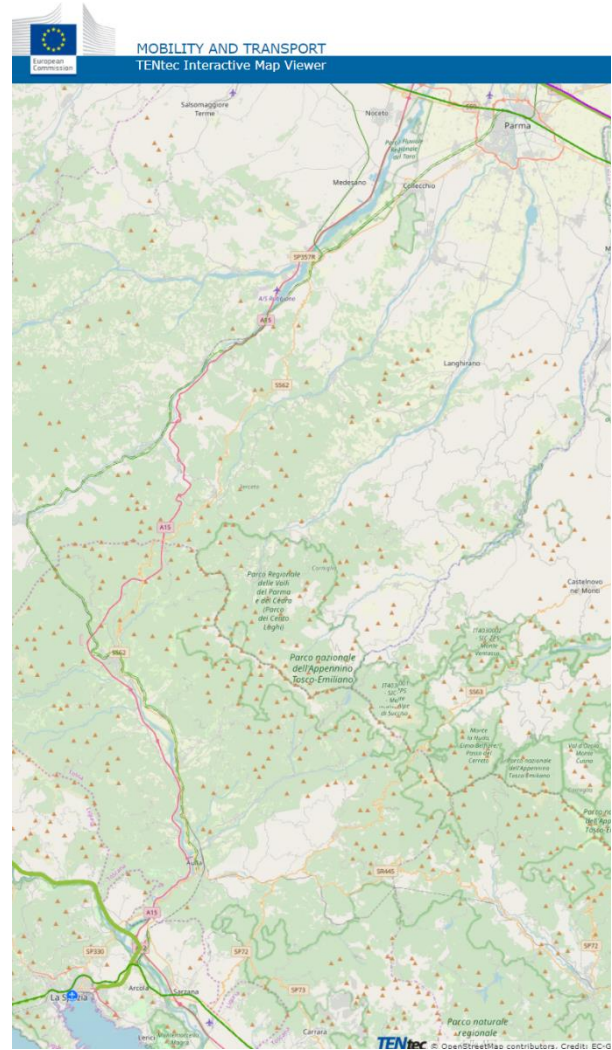
Rispetto al tracciato sviluppato nel Progetto Preliminare del 2004, il Progetto Definitivo vede una variante di tracciato per la parte d’innesto del raddoppio nei binari della stazione di Parma: la coppia di binari garantisce le relazioni merci Fornovo Bologna (direzioni P/D) e il solo binario dispari garantisce le relazioni viaggiatori con La Spezia attestate a Parma (evitando di fuori uscire dal corridoio urbanistico).

Tale variante, oltre a portare notevoli benefici ferroviari nella Stazione di Parma, permetterà di risolvere all’interno dell’abitato di Parma le interferenze della linea Pontremolese con la viabilità ordinaria e di rendere disponibile alla città un tratto di circa 3,5 km (il vecchio binario di tracciato).

Nel seguente schema si riporta lo stato attuale della linea con evidenziati i tratti già raddoppiati, quelli in corso di realizzazione e di progettazione.



**Figura 1**



**Figura 2**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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## 2 DOCUMENTI DI RIFERIMENTO E SOFTWARE UTILIZZATI

### 2.1 Normative di riferimento


Le analisi strutturali e le verifiche di sicurezza sono state effettuate in accordo con le prescrizioni contenute nelle seguenti normative.

- Norme Tecniche per le Costruzioni del 17/01/2018 “Norme tecniche per le costruzioni” pubblicato sulla Gazzetta Ufficiale n. 42 del 20 febbraio 2018;
- Circolare n. 7 del 21/01/2019 “Istruzioni per l’applicazione delle «Nuove norme tecniche per le costruzioni» di cui al DM 17/01/2018 pubblicata sulla GU n. 35 del 11/02/2019;
- RFI DTC SI PS MA IFS 001 E - Manuale di Progettazione delle Opere Civili;
- RFI DTC SI PS SP IFS 001 E – Capitolato generale tecnico di Appalto delle opere civili.
- Norma Europea UNI ENV 1990 – Eurocodice 0 - Basi di calcolo;
- Norma Europea UNI ENV 1991 – Eurocodice 1 - Azioni sulle strutture;
- Norma Europea UNI ENV 1992 – Eurocodice 2 – Progettazione delle strutture in calcestruzzo;
- Norma Europea UNI EN 1998 – Eurocodice 8 – Indicazioni progettuali per la resistenza sismica delle strutture.
- UNI EN 11104– “Calcestruzzo: specificazione. prestazione. produzione e conformità”. Istruzioni complementari per l’applicazione delle EN 206-1;
- UNI EN 206-1:2016 – “Calcestruzzo: specificazione. prestazione. produzione e conformità”;
- Legge 5 novembre 1971 n. 1086 - Norme per la disciplina delle opere in conglomerato cementizio armato, normale e precompresso ed a struttura metallica;

### 2.2 Documenti di riferimento

Sono stati utilizzati come input per il presente documento i seguenti elaborati:


Descrizione Elaborato	Codifica Elaborato
<b>GA07 - GALLERIA ARTIFICIALE DB (pk.3+490,00-3+705,00)</b> CARPENTERIA - TAV. 1/2	IP0000D26PZGA0700001A
<b>GA07 - GALLERIA ARTIFICIALE DB (pk.3+700,00-3+752,00)</b> CARPENTERIA - TAV. 2/2	IP0000D26PZGA0700002A
RELAZIONE GEOTECNICA	IP0000D26RGGE0000001A

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>11 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	11 di 325
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### 2.3 Software Impiegati

I software utilizzati per la progettazione sono:

- “PARATIE PLUS” Versione 21.0 della HarpaCeas S.r.l. di Milano

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>12 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	12 di 325
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### 3 CARATTERISTICHE DEI MATERIALI

Si riportano di seguito le principali caratteristiche dei diversi materiali impiegati nelle opere in progetto.

- **MAGRONE**

**CONGLOMERATO CEMENTIZIO C12/15**

- CLASSE DI RESISTENZA Rck min :  $\geq 15$  MPa
- CLASSE DI ESPOSIZIONE AMBIENTALE : X0

- **SOLETTA SUPERIORE**

**CONGLOMERATO CEMENTIZIO C28/35**

- CLASSE DI RESISTENZA Rck min :  $\geq 35$  Mpa
- RESISTENZA A COMPRESSIONE DI PROGETTO :  $f_{cd} = 0.85 f_{ck} / 1.5 = 15.86$  Mpa
- MODULO ELASTICO :  $E_{cm} = 32$  GPa
- CLASSE DI ESPOSIZIONE AMBIENTALE : XC2
- CLASSE DI LAVORABILITA minima : S4
- RAPPORTO ACQUA/CEMENTO :  $< 0.5$
- DIMENSIONE AGGREGATO massima : 25mm
- COPRIFERRO : C = 40mm ( $\pm 0.5$ )

- **SOLETTA INFERIORE (FONDAZIONE)**

**CONGLOMERATO CEMENTIZIO C28/35**


- CLASSE DI RESISTENZA Rck min :  $\geq 35$  Mpa
- RESISTENZA A COMPRESSIONE DI PROGETTO :  $f_{cd} = 0.85 f_{ck} / 1.5 = 15.86$  Mpa
- MODULO ELASTICO :  $E_{cm} = 32$  GPa
- CLASSE DI ESPOSIZIONE AMBIENTALE : XC2
- CLASSE DI LAVORABILITA minima : S3
- RAPPORTO ACQUA/CEMENTO :  $< 0.5$
- DIMENSIONE AGGREGATO massima : 32mm
- COPRIFERRO : C = 40mm ( $\pm 0.5$ )

- **RIFODERE ED ELEVAZIONI**

**CONGLOMERATO CEMENTIZIO C28/35**

- CLASSE DI RESISTENZA Rck min :  $\geq 35$  Mpa
- RESISTENZA A COMPRESSIONE DI PROGETTO :  $f_{cd} = 0.85 f_{ck} / 1.5 = 15.86$  Mpa
- MODULO ELASTICO :  $E_{cm} = 32$  GPa
- CLASSE DI ESPOSIZIONE AMBIENTALE : XC2



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>13 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	13 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	13 di 325								

- CLASSE DI LAVORABILITA minima : S3
- RAPPORTO ACQUA/CEMENTO : < 0.5
- DIMENSIONE AGGREGATO massima : 32mm
- COPRIFERRO : C = 40mm (± 0.5)

- **DIAFRAMMI**

**CONGLOMERATO CEMENTIZIO C28/35**


- CLASSE DI RESISTENZA Rck min :  $\geq 35\text{Mpa}$
- RESISTENZA A COMPRESSIONE DI PROGETTO :  $f_{cd} = 0.85 f_{ck} / 1.5 = 15.86\text{ Mpa}$
- MODULO ELASTICO :  $E_{cm} = 32\text{ GPa}$
- CLASSE DI ESPOSIZIONE AMBIENTALE : XC2
- CLASSE DI LAVORABILITA minima : S4
- RAPPORTO ACQUA/CEMENTO : < 0.5
- DIMENSIONE AGGREGATO massima : 32mm
- COPRIFERRO : C = 60mm (± 0.5)

Pannelli in c.a. scavati con benna mordente, perforazione sostenuta con fanghi bentonitici.

- **ACCIAIO IN BARRE PER C.A.**

- B450C Saldabile Controllato In Stabilimento
- Resistenza di calcolo :  $f_{yd} = f_{yk} / 1.15 = 391\text{ Mpa}$
- Modulo Elastico :  $E_s = 210\text{ Gpa}$

- **JET GROUTING:** Colonne di diametro minimo  $\Phi 1000\text{mm}$  realizzate mediante iniezione ad alta pressione (50Mpa) di miscele cementizie, in quantità predeterminata, con cemento tipo 425, rapporto A/C miscela 0.8 – 1.2, per garantire una resistenza media a compressione >4 Mpa.

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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IP00	00	D26CL	GA0700001	B	14 di 325								

## 4 DESCRIZIONE DELLE OPERE

I dati principali dell'intervento possono essere riassunti nei seguenti punti:

**Peculiarità dell'opera:** La lunghezza totale del tracciato della GA07, dalla fine della GA07 (pk 3+145,00 binario pari) all'inizio della GA07 (pk 3+490,00 binario pari), è di circa 345.00 m. La GA07 è una galleria artificiale tra diaframmi attraverso la quale transita la linea a doppio binario.

**Descrizione della struttura:** La struttura è costituita da un portale, le cui pareti verticali sono costituite da diaframmi di spessore 1.00m e da una rifodera interna di spessore 0.60m, collegate in testa da un solettone di spessore 1.20m, comprensivo di una predalla di altezza pari a 6cm utilizzata a protezione del getto del solettone superiore controterra. La lunghezza dei diaframmi è pari a 19.00m a partire dall'intradosso del solettone superiore. L'opera è completata dal solettone di fondo con spessore pari a 1.30m. All'estradosso del solettone di copertura è previsto un rinterro il cui spessore massimo è pari a circa 1.50m. Il franco tra piano ferro e intradosso solettone è di tipo ribassato e pari a 5.90m.

Lo studio della galleria risulta condizionato dalla problematica della scavo in presenza di falda tra la pk 3+145,00 e la pk 3+490,00: infatti a -2.8m dal piano ferro poggia su uno strato costituito da ghiaie e pertanto permeabile e si è resa quindi necessaria la realizzazione di un tappo di fondo (jet grouting) costituito da colonne Ø1000/800mm di lunghezza pari a 3.0m, realizzate da piano campagna dopo l'esecuzione dei diaframmi.

La procedura di realizzazione viene schematicamente descritta di seguito:

Fase 0: preparazione del piano campagna e realizzazione dei cordoli guida e realizzazione dei diaframmi;

Fase 1: realizzazione jet grout;

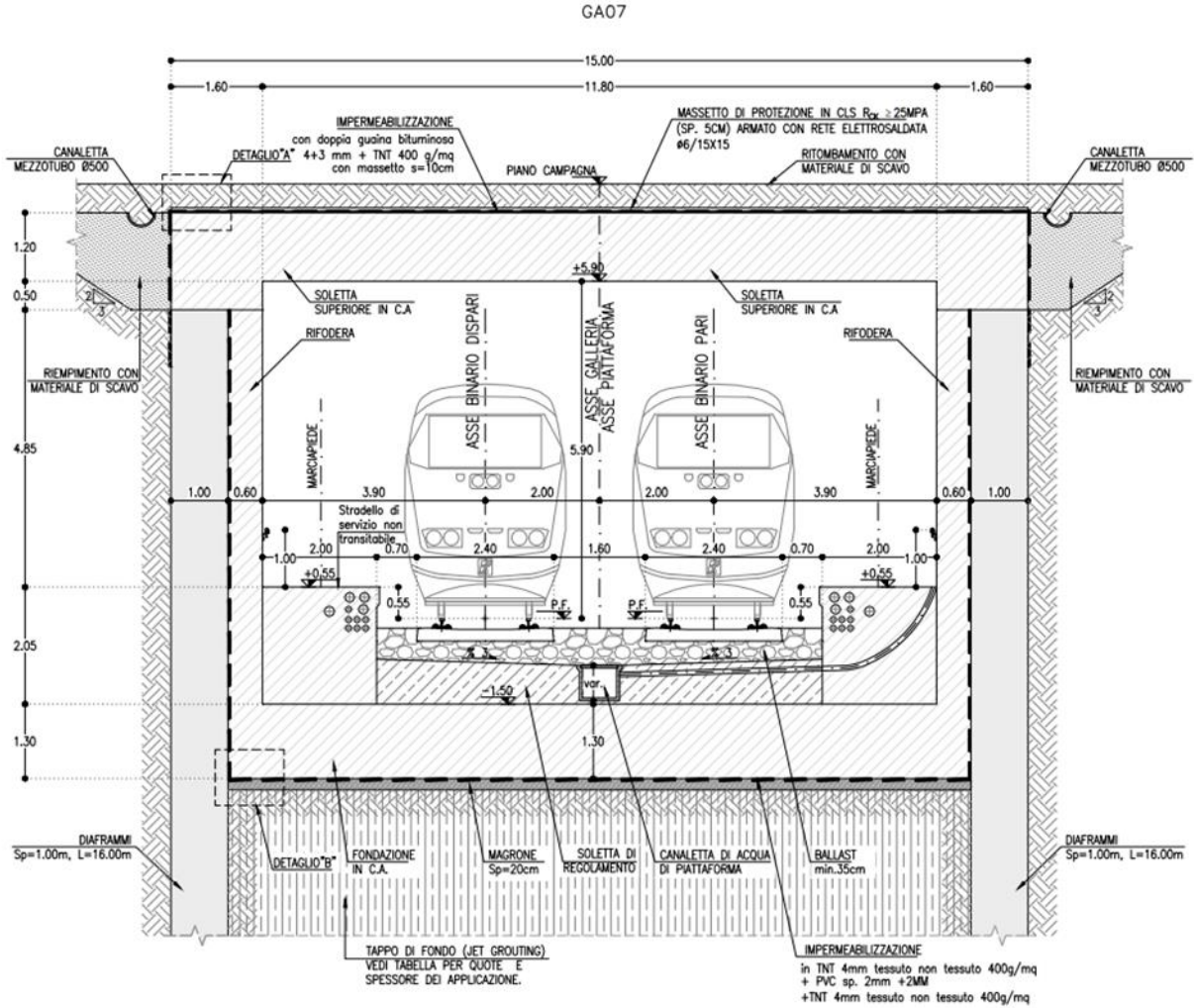
Fase 2: realizzazione del solettone di testa;

Fase 3: ripristino del terreno in superficie;

Fase 4: scavo del terreno interno fino a quota intradosso solettone di fondo;

Fase 5: realizzazione solettone di fondo;

Fase 6: realizzazione rifodere e finiture.



**Figura 3** Sezione Galleria GA07A

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

## 5 CARATTERIZZAZIONE GEOLOGICA – GEOTECNICA

Nel seguito si riporta un breve inquadramento geologico e la sintesi della caratterizzazione e modellazione geotecnica.

### 5.1 Inquadramento geologico

Da un punto di vista geologico, la galleria artificiale GA07 comprende le seguenti formazioni:

#### Ghiaia (G o A1):

Argille limose e limi argillosi di colore marrone chiaro, nocciola, avana e grigio, generalmente consistenti con frustoli carboniosi e livelli decimetrici a forte componente organica. Sono presenti locali intercalazioni limoso sabbiose e sabbiose, localmente ghiaiose. Si rinvencono concrezioni carbonatiche da millimetriche a centimetriche (calcinelli)

#### Limo Argilloso (L o A2):

Ghiaia, ghiaia sabbiosa e con sabbia, localmente limosa e/o argillosa di colore marrone chiaro e avana da media a grossolana, eterometrica, morfologicamente mediamente evoluta ed evoluta, poligenica, generalmente di natura calcarea, marnosa ed arenacea, di dimensioni da subcentimetriche a pluricentimetriche, presenti ciottoli sparsi subarrotondati (diametro anche maggiore di 10 cm)

### 5.2 Caratterizzazione e Modellazione Geotecnica


Tutte le gallerie artificiali sono caratterizzate dalla presenza delle stesse unità geotecniche in uguale successione. Infatti, in tutte le aree si registra la presenza di limo argilloso appoggiato alla ghiaia. Per i dettagli della caratterizzazione geotecnica si rimanda alla "Relazione Geotecnica (IP0000D26RGGE0000001A)".

I parametri geotecnici caratteristici utilizzati nelle analisi di simulazione e verifiche, in riferimento alla stratigrafia assunta, sono riportati nella tabella seguente:

**Tabella 1** Valori caratteristici dei parametri geotecnici utilizzati nelle analisi

TRATTA 5 – DAL KM 3+250 AL KM 3+900 - PCL053B03, PCL053B04, MASW04 e HVSR04																
UNITA'	DA	A	Nspt	$\theta_n$	$\varphi'$	$c'$	$C_u$	$G_0$	$E_0$	$E_{op2}$	$E_{op1}$	OCR	CR	RR	kh	H falda da p.c.
(-)	(m pc)	(m pc)	(colpi/30cm)	(°)	(kPa)	(kPa)	(MPa)	(MPa)	(MPa)	(MPa)	(MPa)	(-)	(-)	(-)	(m/s)	(***)
L	0.00	4.00-8.00	6-15	19	27	12	60	30-45	70-100	14-20	7-10	3.50-6.80	0.024	0.021	9.62E-07	6,0-9,0
G	4.00-8.00	14	47-100	19	37	0	-	90-130	200-300	40-60	20-30				2.03E-04	
L	14	19.00	17	19	27	8	100	60-70	140-160	28-32	14-16	3.50-6.80	0.024	0.021	9.62E-07	
G	19.00	25	17-100	19	37	0	-	140-160	320-370	65-75	32-37					
L	25	27	-	19	27	8	120	85	195	39	19	3.50-6.80	0.024	0.021	9.62E-07	
G	27	33	77-100	19	37	0	-	180	400	80	40					
L	>33		-	19	27	8	160	90	200	40	20	3.50-6.80	0.024	0.021	9.62E-07	

È segnalata la presenza di falda alla quota di circa 51 m slm per il GA07.

 GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b>  <b>TRATTA PARMA - VICOFERTILE</b>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	17 di 325								

## 6 DEFINIZIONE DELL’AZIONE SISMICA

L’azione sismica è valutata con riferimento alle indicazioni del Decreto Ministeriale del 17.01.2018 “Aggiornamento delle nuove norme tecniche per le costruzioni”, nel seguito brevemente NTC2018.

La vita nominale di un’opera strutturale è intesa come il numero di anni nei quali la struttura, purché soggetta alla manutenzione ordinaria, deve poter essere usata per lo scopo al quale è destinata. Si assume  $V_N=75$  anni in accordo al §2.5.1.1.1 del MdP Sezione II (“*Altre opere nuove a velocità  $v<250$  Km/h*”).

In presenza di azioni sismiche, con riferimento alle conseguenze di una interruzione di operatività o di un eventuale collasso, le costruzioni sono suddivise in classi d’uso. In accordo al §2.5.1.1.1 del MdP Sezione II si considera una Classe *III* e pertanto un coefficiente d’uso  $C_u=1.5$  (“*Opere d’arte deli sistema di grande viabilità ferroviaria*”).

Le azioni sismiche su ciascuna costruzione vengono valutate in relazione ad un periodo di riferimento  $V_R$  che si ricava, per ciascun tipo di costruzione, moltiplicandone la vita nominale  $V_N$  per il coefficiente d’uso  $C_u$  (§2.4.3 delle NTC2018):

$$V_R = V_N \times C_u = 75 \text{ anni} \times 1.5 = 112.5 \text{ anni}$$

In accordo alla relazione geologica di riferimento, il sottosuolo rientra nella categoria di suolo di fondazione di tipo “C” ovvero “*Depositi di terreni a grana grossa molto addensati o terreni a grana fina molto consistenti con profondità del substrato superiori a 30m, 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*”.

Relativamente alle condizioni topografiche, per il caso in esame si ritiene di poter adottare la classificazione semplificata proposta in Normatia e assimilare l’area di progetto alla categoria topografica T1, caratterizzata da un coefficiente di amplificazione topografica  $S_T$  pari ad 1.0.

Con riferimento allo stato limite SLV (10% della probabilità di superamento nel periodo di riferimento  $V_R$ ), per l’area di progetto (Latitudine = 44.804511°, Longitudine = 10.297797°) il valore massimo della accelerazione su suolo rigido pianeggiante è

$$a_g=0.1868g.$$

Considerando il coefficiente di amplificazione stratigrafica


$$S_S = 1.4233$$

e topografica

$$S_T = 1$$

si ottiene la accelerazione massima in sito:

$$a_{max} = S_S \cdot S_T \cdot a_g = 0.2659g$$

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>18 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	18 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	18 di 325								

## 7 MODELLO DI CALCOLO

### 7.1 Modellazione Strutturale

Al fine di rappresentare il comportamento dei diaframmi e della soletta superiore durante le varie fasi di lavoro (scavi e/o inserimento degli elementi di contrasto) è opportuno l'impiego di un metodo di calcolo iterativo atto a simulare l'interazione in fase elasto-plastica terreno-paratia.

Allo scopo si impiega il programma di calcolo “PARATIE PLUS” Versione 21.0 della HarpaCeas S.r.l. di Milano.

La fondazione della galleria artificiale sarà realizzata con rifodera e sarà vincolata al giunto diaframma e soletta superiore. Per questo motivo la fondazione e la rifodera sono state modellate come una struttura diversa e risolte nel software strutturale SAP2000. La fondazione viene modellata anche durante il calcolo del sistema diaframma - soletta superiore, al fine di simulare meglio la struttura.

I diaframmi, la soletta superiore e la fondazione sono discretizzata con elementi finiti monodimensionali a due gradi di libertà per nodo (spostamento orizzontale e rotazione).

Il terreno viene schematizzato con delle molle secondo un modello elasto-plastico. Esso reagisce elasticamente sino a valori limite dello spostamento, raggiunti i quali la reazione corrisponde, a seconda del segno dello stesso spostamento, ai valori limite della pressione attiva o passiva.

Con tale metodo, si può quindi seguire analiticamente la successione delle fasi di costruzione, di carico e di contrasto, consentendo di fornire informazioni attendibili sull'entità delle deformazioni e sugli effetti che esse inducono sul diagramma delle pressioni esercitate dal terreno sulla galleria artificiale.

I parametri che caratterizzano il modello dunque possono essere distinti in due classi: parametri di spinta e parametri di deformabilità del terreno che compaiono nella definizione della rigidezza delle molle.

Le figure che seguono mostrano l'input delle strutture inserite nel programma di calcolo.

PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	19 di 325

Nome

Inerzia Equivalente  m<sup>4</sup>/m

Area Equivalente  m

Mat. omogeneizzazione

Da utilizzare per

Muri

Solette (specificare il Dead Load  kN/m)

Puntelli

Puntoni

Anteprima

Geometria e materiali

Custom

Materiale  Inerzia  m<sup>4</sup>/m Area  m<sup>2</sup>/m

Diaframma o Pali

Calcestruzzo

Materiale

Spessore Ct  m

Diametro Cd  m

Passo Cs  m

Efficacia del calcestruzzo per il calcolo della rigidezza [0-1] ac

Acciaio

Materiale

Profilo

Passo Ss

Palancole

Profilo

Materiale

Tipo  βs

Peso per superficie unitaria di parete  kN/m<sup>2</sup> βD

B  lx

H  We

Pannelli

Con Pannelli

Materiale (Calcestruzzo)

Materiale (Legno)

Spessore Lt  m

Posizione

Figura 4 Caratteristiche dei diaframmi inserite in Paratie Plus.

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	20 di 325

Nome: Soletta Inferiore

Inerzia Equivalente: 0.1831 m<sup>4</sup>/m

Area Equivalente: 1.3 m

Mat. omogeneizzazione: C28/35

Da utilizzare per

Muri

Solette (specificare il Dead Load: 25 kN/m)

Puntelli

Puntoni

**Geometria e materiali**

Custom

Materiale: [ ] Inerzia: [ ] m<sup>4</sup>/m Area: [ ] m<sup>2</sup>/m

**Diaframma o Pali**

**Calcestruzzo**

Materiale: C28/35

Spessore: Ct 1.3 m

Diametro: Cd 0.6 m

Passo: Cs 0.6 m

Efficacia del calcestruzzo per il calcolo della rigidezza [0-1]: ac 1

**Acciaio**

Materiale: Fe360

Profilo: [ ]

Passo: Ss [ ] m

**Palancole**

Profilo: [ ] Catalogo Palancole

Materiale: Fe360

Tipo: [ ] βs 1

Peso per superficie unitaria di parete: [ ] kN/m<sup>2</sup> βD 1

B: [ ] lx [ ]

H: [ ] We [ ]

**Pannelli**

Con Pannelli:

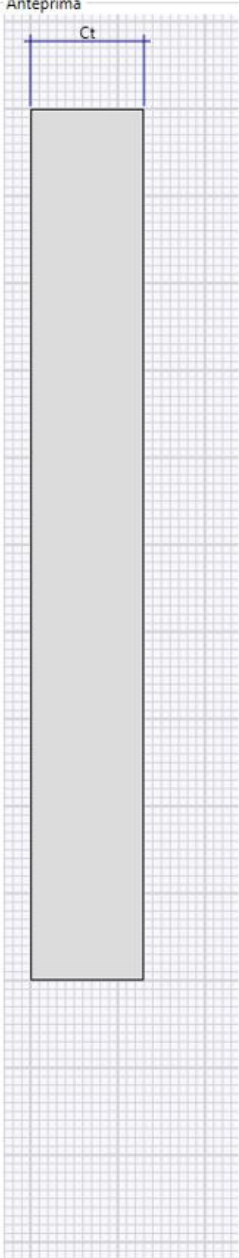
Materiale (Calcestruzzo): [ ]

Materiale (Legno): [ ]

Spessore Lt: [ ] m


Posizione: Sinistra-Esterno

Anteprima



**Figura 5** Caratteristiche delle soletta inferiore inserite in Paratie Plus



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>21 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	21 di 325
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Nome:

Inerzia Equivalente:  m<sup>4</sup>/m

Area Equivalente:  m

Mat. omogeneizzazione:

Da utilizzare per:

Muri

Solette (specificare il Dead Load  kN/m)

Puntelli

Puntoni

**Geometria e materiali**

Custom

Materiale:  Inerzia:  m<sup>4</sup>/m Area:  m<sup>2</sup>/m

**Diaframma o Pali**

**Calcestruzzo**

Materiale:

Spessore: Ct  m

Diametro: Cd  m

Passo: Cs  m

Efficacia del calcestruzzo per il calcolo della rigidità [0-1]: ac

**Acciaio**

Materiale:

Profilo:

Passo: Ss  m

**Palancole**

Profilo:

Materiale:

Tipo:  βs

Peso per superficie unitaria di parete:  kN/m<sup>2</sup> βo

B:  lx

H:  We

**Pannelli**

Con Pannelli:

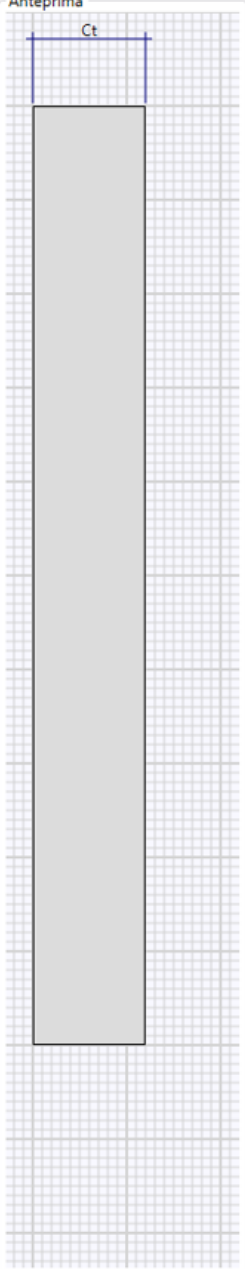
Materiale (Calcestruzzo):

Materiale (Legno):

Spessore: Lt  m

Posizione:

Anteprima




**Figura 6** Caratteristiche della soletta superiore inserite in Paratie Plus

## 7.2 Modellazione Geotecnica

I parametri geotecnici utilizzati nell'analisi sono presi dalla Tabella 1. I parametri del suolo drenato sono usati e  $E_{op}/5$  considerato per il modulo elastico.

La falda si presenta a 4.9 m sotto la superficie del suolo.

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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### 7.2.1 Parametri di spinta del terreno

Il programma impiegato richiede, ovviamente, la definizione di parametri geotecnici degli strati in cui è stato suddiviso il terreno al contorno dell'opera e che è stata già riportata nei paragrafi precedenti.

Il problema dell'interazione suolo-struttura consiste nel valutare il raggiungimento dello stato di equilibrio del terreno al variare delle deformazioni della struttura in quanto la tensione orizzontale  $\sigma'_h$  che lo scheletro solido del terreno esercita sulla parete verticale della struttura è funzione dello spostamento che essa subisce.

L'analisi di interazione ha inizio dallo stato indisturbato del terreno che è in equilibrio in condizioni litostatiche:

$$\sigma'_h = K_0 \cdot \sigma'_v \quad \text{pressione a riposo}$$

Secondo la relazione di Kulhawy [1989], il coefficiente di spinta a riposo dipende dalla resistenza del terreno e dal rapporto di sovraconsolidazione del terreno OCR secondo la seguente relazione:

$$K_0 = K_0^{nc} * OCR^m$$

dove:

- $K_0^{nc}$  è il coefficiente di spinta a riposo per terreni normal-consolidati che secondo Jaky [1936] può essere posto pari a  $K_0 = (1 - \text{sen } \varphi')$ ;
- $m$  è un parametro empirico, di solito compreso tra 0,40 e 0,70.

Con lo scavo, lo stato di equilibrio litostatico viene perturbato e le spinte variano in funzione dello spostamento:

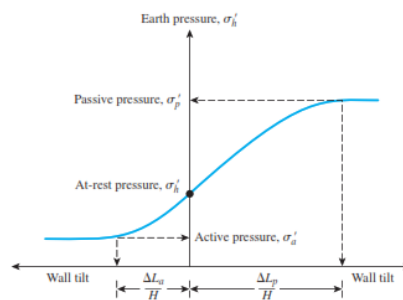



Figure 13.2 Variation of the magnitude of lateral earth pressure with wall tilt

Table 13.1 Typical Values of  $\Delta L_a/H$  and  $\Delta L_p/H$

Soil type	$\Delta L_a/H$	$\Delta L_p/H$
Loose sand	0.001–0.002	0.01
Dense sand	0.0005–0.001	0.005
Soft clay	0.02	0.04
Stiff clay	0.01	0.02

La tensione  $\sigma'_a$  “attiva” sul paramento viene calcolata come:

$$\sigma'_a = K_a \cdot \sigma'_v - 2 \cdot c' \cdot (K_a)^{0,50} \quad \text{pressione attiva}$$

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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dove:

- $K_a$  = coefficiente di spinta attiva;
- $\sigma'_v$  = tensione verticale efficace alla generica profondità;
- $c'$  = coesione efficace.

In condizioni statiche,  $K_a$  è funzione dell'angolo di attrito efficace dello scheletro solido  $\varphi'$ , dell'angolo di attrito fra struttura e terreno  $\delta$  dell'inclinazione  $\beta$  del paramento di monte della struttura di sostegno e dell'inclinazione del terrapieno a tergo dell'opera.

La tensione  $\sigma'_p$  "passiva" sul paramento viene, parimenti, calcolata come:

$$\sigma'_p = K_p \cdot \sigma'_v + 2 \cdot c' \cdot (K_p)^{0,50} \quad \text{pressione passiva}$$

dove:

- $K_p$  = coefficiente di spinta passiva.

Il software utilizzato è in grado, dunque, in funzione del campo di spostamento risultante nei vari step di analisi, di risalire all'entità della spinta in ogni fase a partire dal valore iniziale di spinta a riposo.

Le rigidzze delle molle schematizzanti i vari strati di terreno sono proporzionali ai loro moduli elastici.

Per strutture di sostegno alla pressione esercitata dallo scheletro solido deve essere sommata la pressione esercitata dall'acqua assumendo schemi di filtrazione idonei in funzione delle condizioni stratigrafiche ed al contorno. In presenza di falda, va ovviamente aggiunta la pressione idrostatica che alla generica profondità, può essere valutata come di seguito:

$$u = \gamma_w \cdot z$$

In definitiva, l'espressione generale per il calcolo della pressione verticale efficace alla generica profondità  $z$ , in caso di eventuale presenza di sovraccarichi sul piano limite e falda è la seguente:

$$\sigma'_v = \gamma \cdot (z - h_w) + \gamma' \cdot h_w + q$$


Essendo:

- $\gamma$ : peso di volume naturale del terreno;
- $\gamma'$ : peso di volume del terreno immerso;
- $h_w$ : altezza di falda rispetto al piano orizzontale posto a quota  $z$ ;
- $q$ : intensità del sovraccarico presente su piano limite.

### 7.2.2 Parametri di deformabilità del terreno

Per la definizione del modulo di Young si utilizza il modello elasto-plastico inserendo il valore di  $E$  manualmente. Il programma provvede automaticamente a calcolare le costanti di sottofondo per ogni fase di scavo come:

$$K_{monte} = \frac{E_m \cdot \Delta}{B_m} \quad e \quad K_{valle} = \frac{E_v \cdot \Delta}{B_v}$$

 GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b>  <b>TRATTA PARMA - VICOFERTILE</b>												
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Nelle relazioni presentate,  $\Delta$  è il valore fornito dalla schematizzazione agli elementi finiti e  $B_m$  e  $B_v$  sono rispettivamente le estensioni laterali del cuneo di spinta attiva e passiva del terreno alla quota del baricentro del cuneo stesso, per ogni fase di scavo:

$$B_m = \frac{2}{3} \cdot \lambda_A \cdot \tan\left(45^\circ - \frac{\varphi}{2}\right)$$

$$B_v = \frac{2}{3} \cdot \lambda_p \cdot \tan\left(45^\circ + \frac{\varphi}{2}\right)$$

$$\lambda_A = \min(H_{paratia}; 2H_{scavo})$$

$$\lambda_p = \min(H_{paratia} - H_{scavo}; H_{scavo})$$

Si assume in ogni caso un valore di altezza dello scavo  $H_{scavo}$  non minore di 1/10 dell'altezza totale della paratia  $H_{paratia}$ .

Per simulare il comportamento reale dei terreni, caratterizzato da una marcata non linearità ed in particolare da una differente risposta nella condizione di primo carico o carico vergine rispetto alla condizione di scarico e ricarico, si definiscono valori diversi delle costanti elastiche delle molle; in pratica si adottano due valori dei moduli di elasticità longitudinale, per distinguere la risposta in fase di primo carico (ECV) da quella in fase di scarico (EUR). Il modulo elastico in fase incrudente si assume pari a 1.60 volte il modulo elastico di primo carico  $E_{vc}$  (ha un valore assunto pari al modulo elastico del terreno):

$$E_{ur} = 1.60 \cdot E_{vc}$$

### 7.3 Modellazione Sismica


La modellazione dell'azione sismica è fatta attraverso la Teoria Wood. Si è adottato il metodo pseudostatico, calcolando il coefficiente sismico orizzontale e verticale secondo le prescrizioni della normativa (NTC 2018):

$$k_h = \beta_m \cdot \left(\frac{a_{max}}{g}\right)$$

$$k_v = \pm 0.5 k_h$$

dove:

- $a_{max}$  è l'accelerazione orizzontale massima attesa al sito;
- $\beta_m$  coefficiente di riduzione dell'accelerazione massima attesa al sito, a favore di sicurezza e in ipotesi di strutture rigide ed impedito di subire spostamenti relativi rispetto al terreno si assume  $\beta_m = 1$ .

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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L'effetto del sisma è ottenuto applicando il valori dei  $k_h$  e  $k_v$  all'intero modello del suolo nel software PLAXIS 2D. I valori di  $k_h$  e  $k_v$  sono calcolati come segue:

L'effetto del sisma è ottenuto applicando un incremento di spinta del terreno valutato secondo la teoria di Wood (1973), agente direttamente sulla porzione di paratia compresa tra gli estradossi della soletta superiore ed inferiore secondo una distribuzione uniforme.

$$\Delta S_E = k_h \cdot \gamma \cdot H_{scavo}$$

dove:

- $\gamma$  rappresenta il peso dell'unità di volume della formazione con la quale l'opera interagisce;
- $H$  rappresenta l'altezza della paratia compresa tra gli estradossi delle solette superiore e inferiore;
- $K_h$  rappresenta il coefficiente di spinta in condizioni sismiche.

Per la simulazione degli effetti dell'azione sismica sulle masse inerziali si fa riferimento al metodo pseudostatico secondo quanto previsto dalla normativa vigente, applicando cioè alle masse ed ai carichi fissi e variabili eventualmente presenti, due azioni statiche equivalenti proporzionali al peso, ovvero all'intensità del carico secondo quanto di seguito indicato:

$$F_h = k_h \cdot W \quad \text{azione sismica orizzontale}$$

$$F_v = k_v \cdot W \quad \text{azione sismica verticale}$$

con:

W: Peso della massa coinvolta / intensità del carico permanente;

$K_h$ : coefficiente sismico orizzontale;

$K_v$ : coefficiente sismico verticale.

### 7.3.1 Effetti idrodinamici

Gli effetti idrodinamici sono valutati con il metodo di Westergaard (Westergaard, 1931) e sono applicate come pressioni esterne con la relazione:


$$p_w = \frac{7}{8} a_x \gamma_w \sqrt{z_w H}$$

Dove:

- $H$  è l'altezza del livello di falda rispetto al fondo scavo;
- $Z_w$  è la profondità del punto considerato dalla superficie libera della falda.


Quando l'acqua si trova al di sopra della superficie del terreno, le pressioni esterne idrodinamiche sono contenute all'interno dell'equazione sopra riportata. Nel caso si abbia una quota di falda al di sopra della quota di scavo le pressioni idrodinamiche sono incluse nel lato scavo, nella direzione dell'accelerazione orizzontale.

Dipendendo dalla permeabilità del terreno, l'acqua contenuta nel terreno stesso può muoversi indipendentemente o insieme allo scheletro solido.

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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Poiché il valore soglia convenzionale tra terreno pervio e terreno impervio è:  $k = 5 \cdot 10^{-4}$  m/s e tutti i litotipi/terreni coinvolti hanno una permeabilità minore, non si ritiene opportuno prendere in conto la scomposizione della spinta del terreno e dell'acqua in condizioni sismiche.

Si fa dunque l'ipotesi di terreno impervio, condizione che corrisponde alla impossibilità dell'acqua di muoversi in maniera indipendente, per cui gli effetti idrodinamici sono trascurabili ed il cuneo di spinta viene valutato con un peso dato dal  $\gamma_{\text{saturo}}$ .

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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## 8 APPROCCI PROGETTUALI

Le azioni considerate per la verifica delle gallerie artificiali sono le seguenti:

- **Azioni permanenti strutturali ( $G_1$ ):** peso proprio degli elementi strutturali;
- **Azioni permanenti non strutturali ( $G_2$ ):** spinta del terreno a monte e a valle dell'opera.
- **Azioni variabili ( $Q_k$ ):** carico variabile sul piano campagna atto a simulare la presenza di sovraccarichi variabili in fase costruttiva legato alle varie fasi realizzative;
- **Azione sismica ( $E$ ):** Accelerazione orizzontale e verticale come definita al C.7.3.

### 8.1 Combinazioni di carico

Le combinazioni di carico prese in considerazione nelle verifiche sono state definite in base a quanto prescritto dalle NTC2018 al par.2.5.3.

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

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

Combinazione caratteristica rara, impiegata per gli stati limite di esercizio (SLE) irreversibili, da utilizzarsi nelle verifiche delle tensioni d'esercizio:

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


Combinazione caratteristica frequente, impiegata per gli stati limite di esercizio (SLE) reversibili, da utilizzarsi nelle verifiche a fessurazione:

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

Combinazione quasi permanente, generalmente impiegata per gli effetti a lungo termine:

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

I valori dei coefficienti parziali di sicurezza  $\gamma_F$ ,  $\gamma_M$  e  $\gamma_R$  (relativi alle resistenze dei pali soggetti a carichi assiali), nonché i coefficienti di combinazione  $\psi$  delle azioni sono dati dalle tabelle NTC2018 5.2.V, 5.2.VI, 6.2.II e 6.4.II che vengono riportate nel seguito.

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA          (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO          METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

## 8.2 Metodo agli Stati Limite ed Approcci di Progetto

Come prescritto nella normativa vigente, per le paratie si devono considerare almeno i seguenti stati limite ultimi:

### SLU di tipo geotecnico (GEO) e di tipo idraulico (UPL e HYD)

- collasso per rotazione intorno a un punto dell'opera (atto di moto rigido);
- collasso per carico limite verticale;
- instabilità del fondo scavo in terreni a grana fine in condizioni non drenate;
- instabilità del fondo scavo per sollevamento;
- sifonamento del fondo scavo;
- instabilità globale dell'insieme terreno-opera.

### SLU di tipo strutturale (STR)

- raggiungimento della resistenza in uno o più ancoraggi;
- raggiungimento della resistenza in uno o più puntoni o di sistemi di contrasto;
- raggiungimento della resistenza strutturale della paratia

accertando che la condizione (6.2.1) sia soddisfatta per ogni stato limite considerato.

La verifica di stabilità globale dell'insieme terreno-opera deve essere effettuata secondo l'Approccio 1:

- Combinazione 2: (A2+M2+R2)

tenendo conto dei coefficienti parziali riportati nelle Tabelle 6.2.I e 6.2.II e 6.8.I.

Le rimanenti verifiche devono essere effettuate considerando le seguenti combinazioni di coefficienti:

- Combinazione 1: (A1+M1+R1)
- Combinazione 2: (A2+M2+R1)


tenendo conto dei valori dei coefficienti parziali riportati nelle Tabelle 6.2.I, 6.2.II e 6.5.I, con i coefficienti  $\gamma_R$  del gruppo R1 pari all'unità.

**Tabella 2** Coefficienti parziali per le azioni o per l'effetto delle azioni (Tab. 6.2.I N.T.C. 2018)

	Effetto	Coefficiente Parziale $\gamma_F$ (o $\gamma_E$ )	EQU	(A1)	(A2)
Carichi permanenti $G_1$	Favorevole	$\gamma_{G1}$	0,9	1,0	1,0
	Sfavorevole		1,1	1,3	1,0
Carichi permanenti $G_2^{(1)}$	Favorevole	$\gamma_{G2}$	0,8	0,8	0,8
	Sfavorevole		1,5	1,5	1,3
Azioni variabili Q	Favorevole	$\gamma_Q$	0,0	0,0	0,0
	Sfavorevole		1,5	1,5	1,3

<sup>(1)</sup> Per i carichi permanenti  $G_2$  si applica quanto indicato alla Tabella 2.6.I. Per la spinta delle terre si fa riferimento ai coefficienti  $\gamma_{G1}$



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>29 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	29 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	29 di 325								

**Tabella 3** Coefficienti parziali per i parametri geotecnici del terreno (Tab.6.2.II NTC2018)

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

**Tabella 4** Coefficienti parziali per le verifiche di sicurezza di opere di materiali sciolti e di fronti di scavo (Tabella 6.8.I – N.T.C. 2018).

COEFFICIENTE	R2
$\gamma_R$	1,1

## 9 MODELLO DI CALCOLO E VERIFICHE LE GALLERIE ARTIFICIALI

Sono state verificate le seguenti sezioni:

- Sez. 1: Galleria Artificiale Tra Diaframmi : sezione alla PK. 3+145,00;

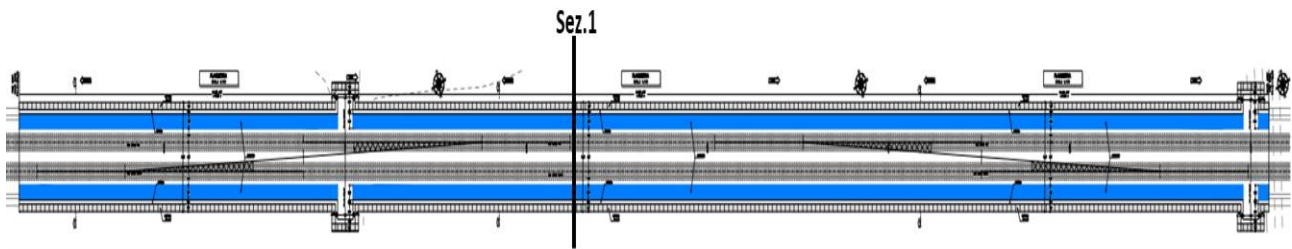
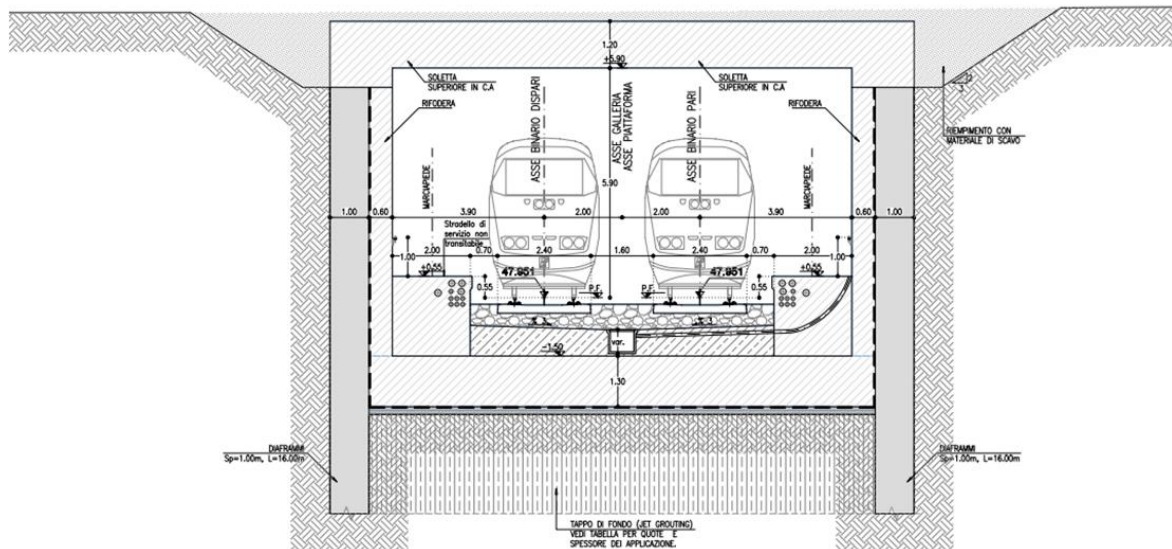



Figura 7: Sezioni di calcolo



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>31 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	31 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	31 di 325								


## 9.1 Sezione 1 – PK. 3+145,00 – 3+490,00

### 9.1.1 Fasi di calcolo

L'analisi di interazione tra il terreno e l'opera di sostegno è eseguita mediante il codice di calcolo ParatiePlus, con riferimento ad uno schema piano e nell'ipotesi di sottosuolo assimilato ad una successione di strati orizzontali. L'analisi si articola secondo una sequenza di fasi, diverse in funzione del tipo di problema, allo scopo di simulare sia le reali fasi costruttive che la variazione dello stato di sforzo sino al completamento della costruzione

Per la geometria del problema in esame, l'analisi è articolata nella seguente successione di fasi:

1. Scavo fino a quota -1.0m;
2. Realizzazione del tappo di fondo (jet grouting \*), del diaframma e della soletta superiore;
3. Scavo fino alla quota della soletta inferiore a quota -9.50m;
4. Realizzazione della fondazione e riempimento (\*\*); Applicazione del carico aerodinamico(\*\*\*)
5. Attivazione azione sismica.

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>32 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	32 di 325
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**(\*) Tappo di fondo: Parametri di Jet Grouting**

Al tappo di fondo in jet grouting si possono assumere i seguenti valori di resistenza a rottura e moduloelastico:

$$\sigma_c = 2500 \text{ kPa}$$

$$E = 2500 \text{ Mpa}$$

Il valore di coesione è determinato dalla seguente espressione:

$$c = 0.5 \times \sigma_c \times (1 - \sin \phi) / \cos \phi$$

con  $\phi$  pari all'angolo di attrito della ghiaia,  $37^\circ$

Si ottiene un valore di coesione pari a 623 kPa.

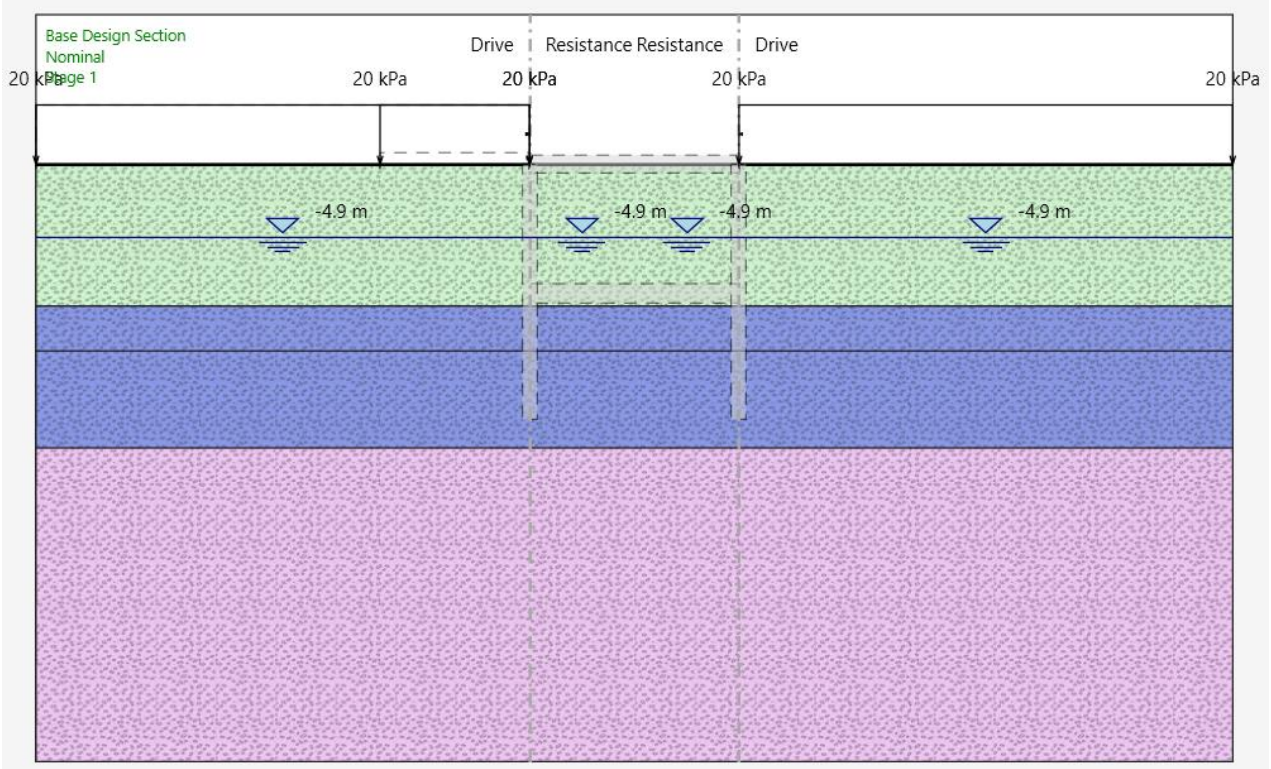
Nelle successive verifiche alla struttura si assumono i seguenti parametri geotecnici, a favore di sicurezza ridotti rispetto a quelli sopra stimati:

Peso specifico	19.0 kN/m <sup>3</sup> ;
Angolo di attrito	37°
Coesione	300 kPa
Modulo Elastico	800 MPa

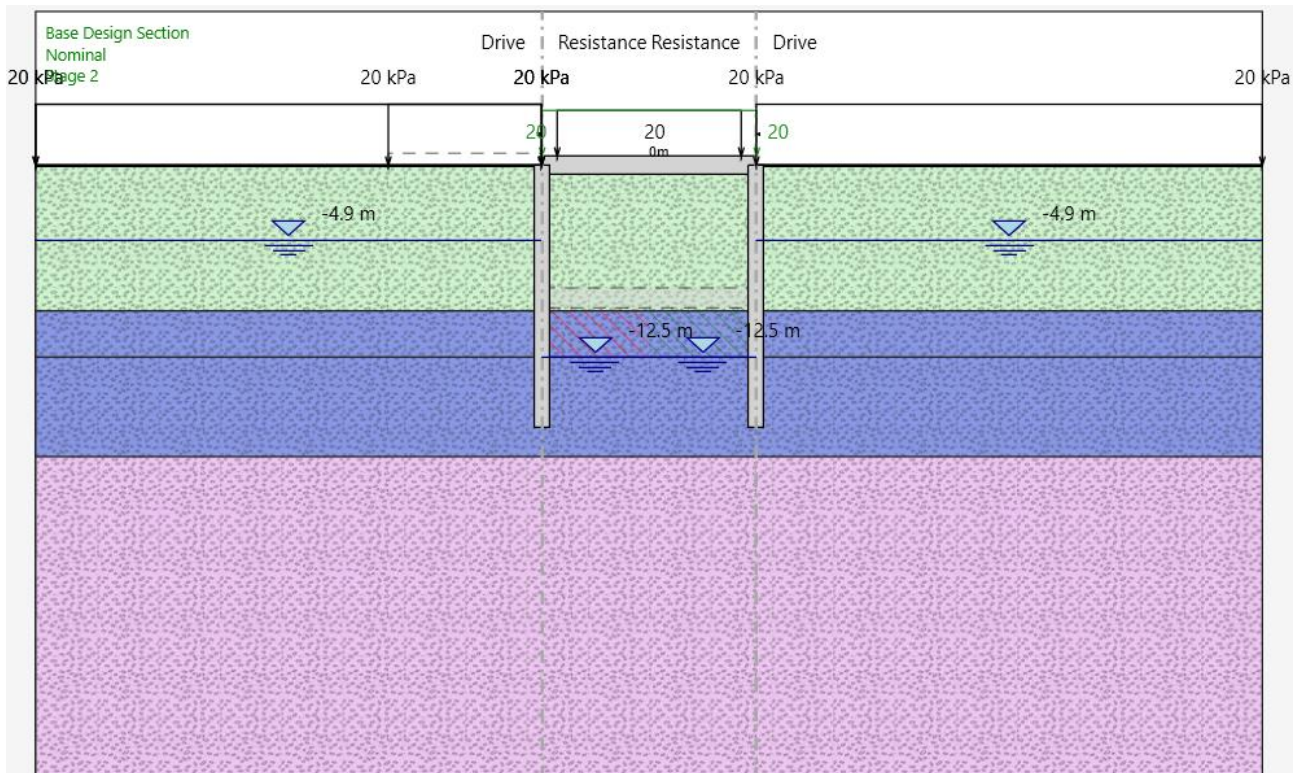
**(\*\*) Carico di riempimento**

Il terreno a monte dei pali viene modellato come carico permanente

$$(\gamma_{\text{terreno}} \times H_{\text{terreno}} = 20 \times 1.0 = 20 \text{ kN/m}^2);$$

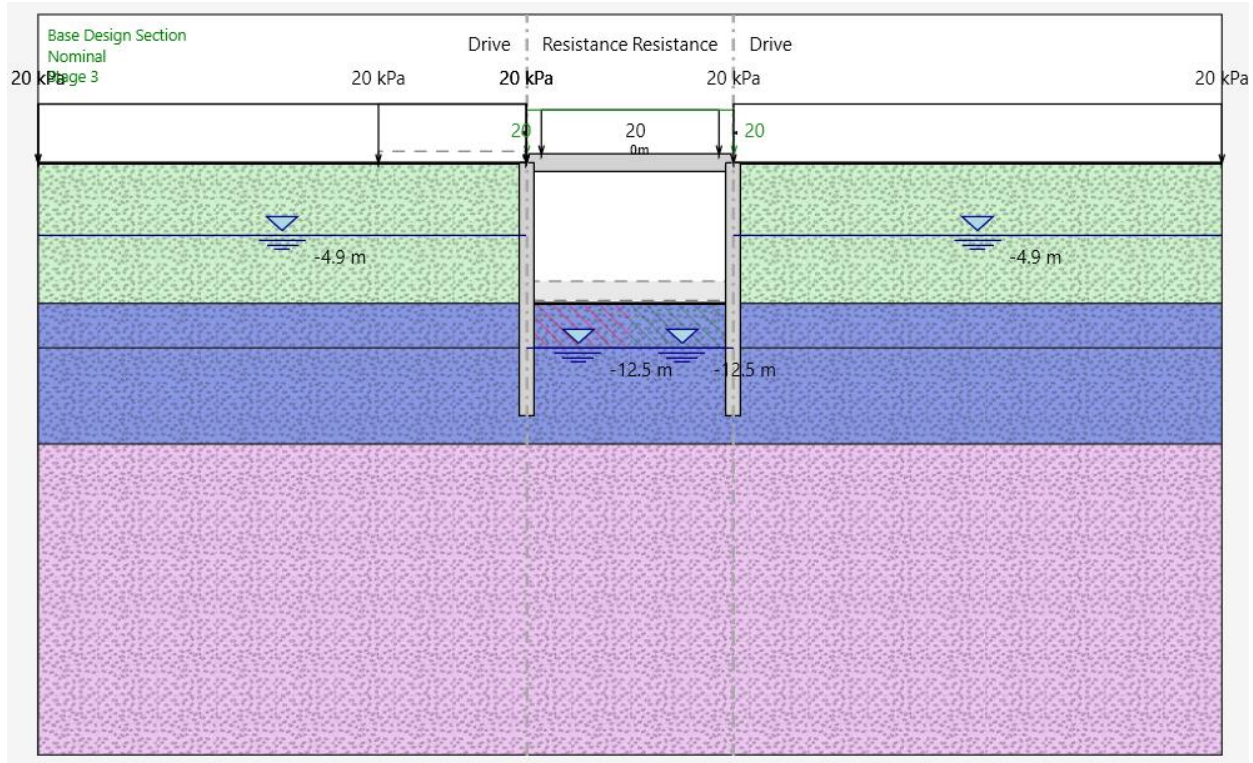


**Figura 8 Fase 1 –Scavo fino a quota -1.0m;**

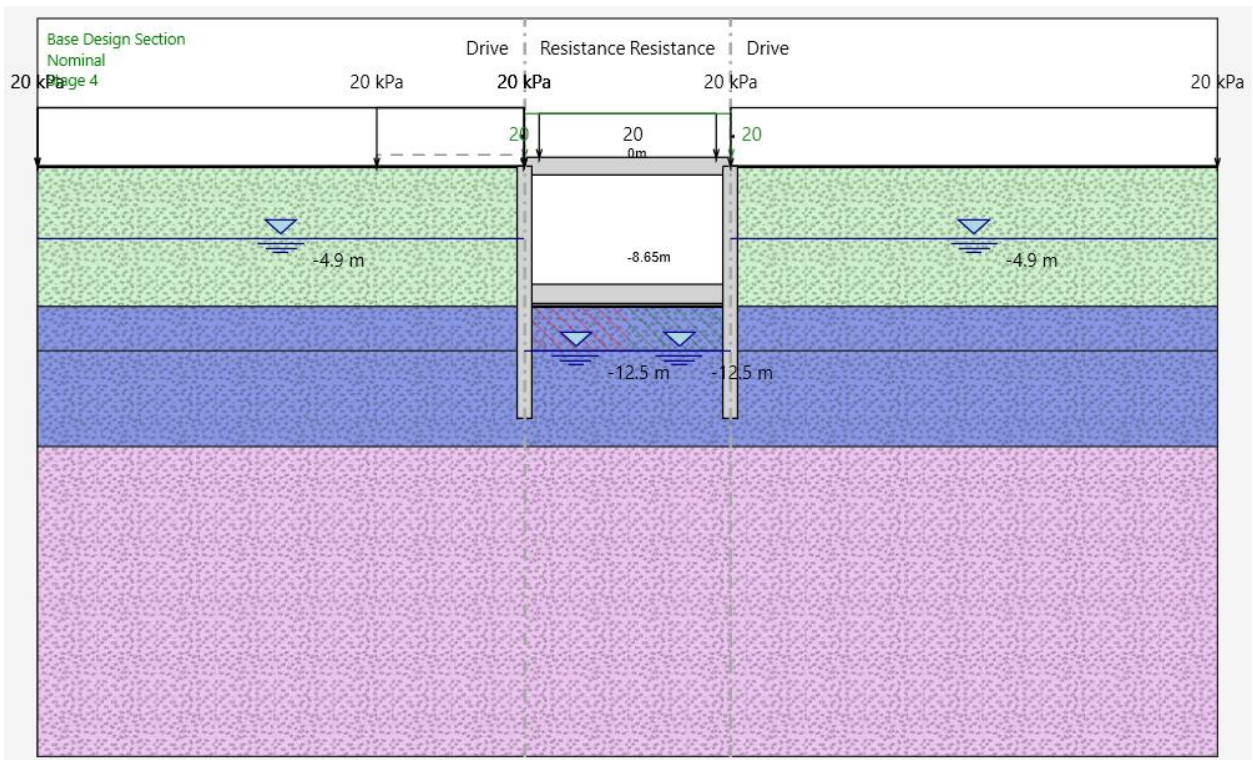


**Figura 9 Fase 2 Realizzazione del tappo di fondo (jet grouting), del diaframma e della soletta superiore**





**Figura 10 Fase 3 – Scavo fino alla quota della soletta inferiore a quota -9.50m**



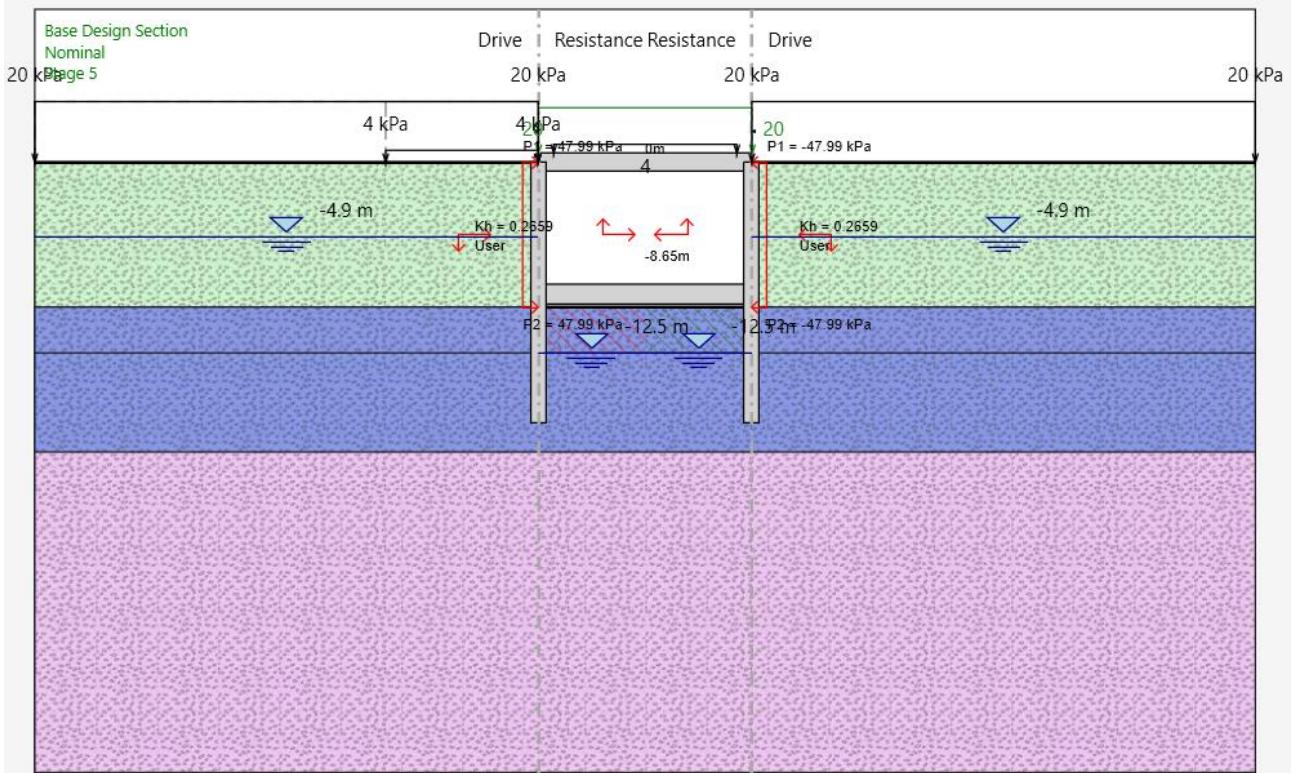
**Figura 11 Fase 4 - Realizzazione della fondazione e riempimento**

**PROGETTO DEFINITIVO**


**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

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**Figura 12 Fase 5 - Attivazione azione sismica**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>36 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	36 di 325
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### 9.1.2 Parametri Geotecnici

I parametri geotecnici adottati nelle analisi come riportato nel prospetto che segue:

PARAMETRI GEOTECNICI PER GA07							
UNITA'	DA	A	$\gamma_n$	$\phi'$	$c'$	$E_{op2}$	H falda da p.c.
(-)	(m pc)	(m pc)	(°)	(kPa)	(kPa)	(MPa)	[m]
A1-1	0,0	10,5	19,0	27,0	12,0	14,0	5,9
A2-1	10,5	20,0	19,0	37,0	0,0	60,0	
A2-2	>20		19,0	37,0	0,0	70,0	

$\gamma_n$  : Peso dell'unità di volume.  
 $\phi'$  : Angolo d'attrito.  
 $c'$  : Coesione efficace.  
 $E_{op2}$  : Modulo di Young per opere d'arte.



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>37 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	37 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	37 di 325								

### 9.1.3 Risultati delle analisi

#### 9.1.3.1 Analisi delle sollecitazioni

Di seguito si sintetizzano i risultati dei calcoli relativi alle diverse combinazioni di carico. In particolare, per si riportano i valori massimi delle sollecitazioni sulla paratia e gli andamenti delle sollecitazioni durante tutte le fasi di calcolo.

**Tabella 5** Sollecitazioni massime per metro lineare agenti sulla soletta superiore

CALCOLO	SLU		SLV		SLE	
	Mmax	Vmax	Mmax	Vmax	Mmax	Vmax
<b>Con Incastro</b>	1440,1	450,65	986,62	510,34	1033,3	332,27
<b>Senza Incastro</b>	773,23	439,98	882,39	490,09	585,05	332,96
<b>Con Incastro: Il calcolo con il grado di incastro agli estremi di soletta superiore sono %100</b>						
<b>Senza Incastro: Il calcolo con il grado di incastro agli estremi di soletta superiore sono %0</b>						

**Tabella 6-** Sollecitazioni massime per metro lineare agenti sui diaframmi

CALCOLO	SLU		SLV		SLE	
	Mmax	Vmax	Mmax	Vmax	Mmax	Vmax
<b>Con Incastro</b>	1440,1	661,26	986,62	347,26	1033,3	464,08
<b>Senza Incastro</b>	2264,1	647,58	1198,1	343,01	1590,9	455,02
<b>Con Incastro: Il calcolo con il grado di incastro agli estremi di soletta superiore sono %100</b>						
<b>Senza Incastro: Il calcolo con il grado di incastro agli estremi di soletta superiore sono %0</b>						

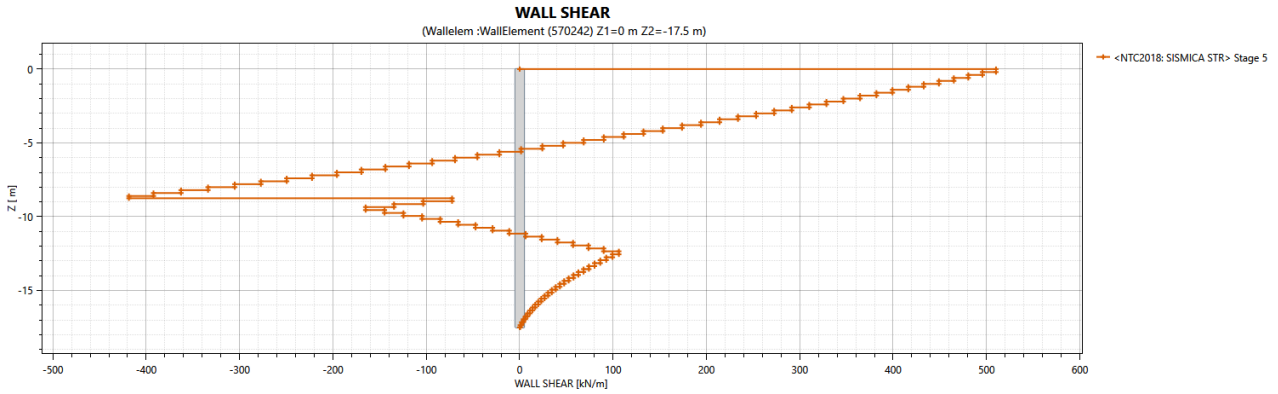


PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO

COMMESSA LOTTO CODIFICA DOCUMENTO REV FOGLIO

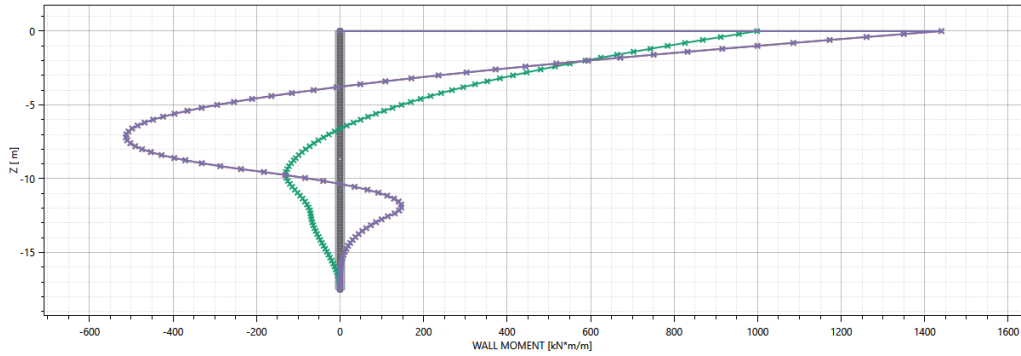
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**Figura 13** Andamento del momento flettente e taglio della diaframma sx in condizioni SLU e SLV per i vari fasi di calcolo (sulla condizione con incastro soletta superiore, %100)

**WALL MOMENT**

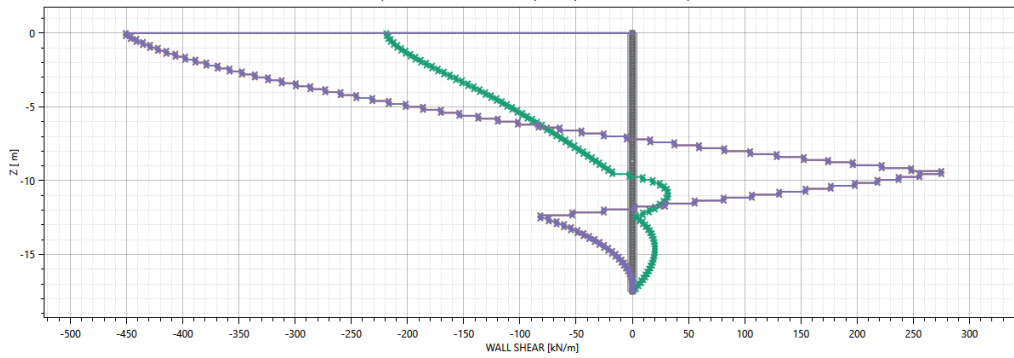
(Wallelem :WallElement New (570243) Z1=0 m Z2=-17.5 m)



◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 1  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 2  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 3  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 4

**WALL SHEAR**

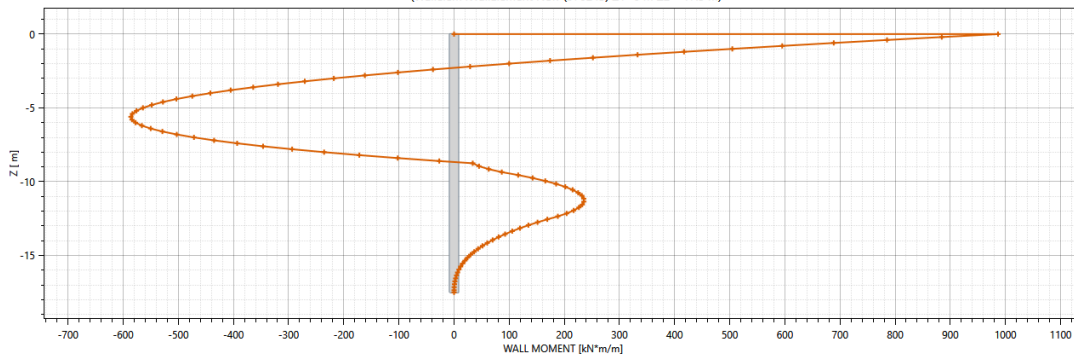
(Wallelem :WallElement New (570243) Z1=0 m Z2=-17.5 m)



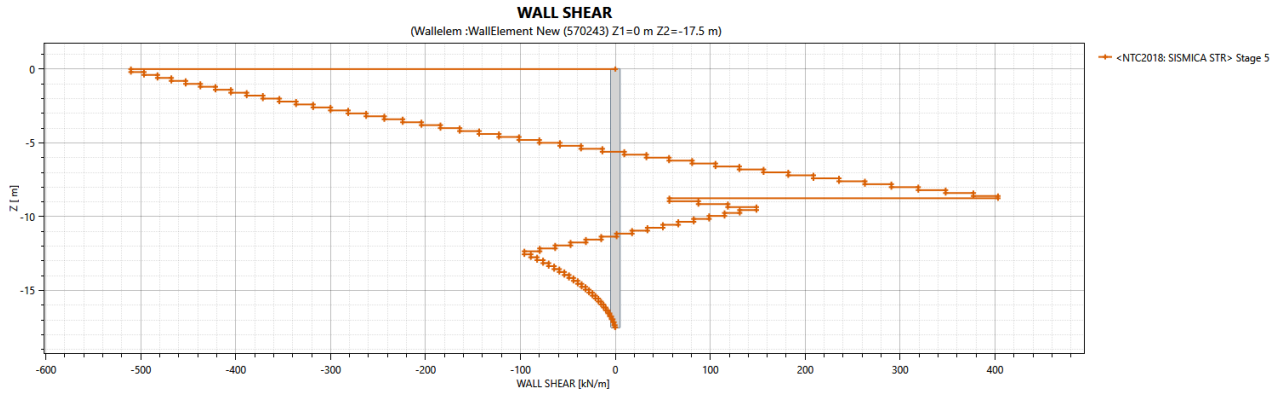
◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 1  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 2  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 3  
 ◊ <NTC2018: A1+M1+R1 (R3 per tiranti)> Stage 4

**WALL MOMENT**

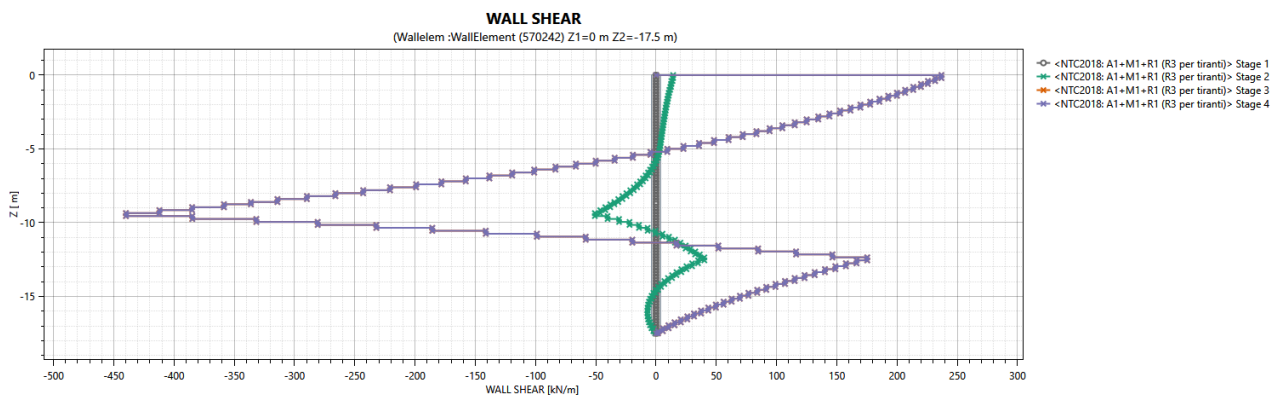
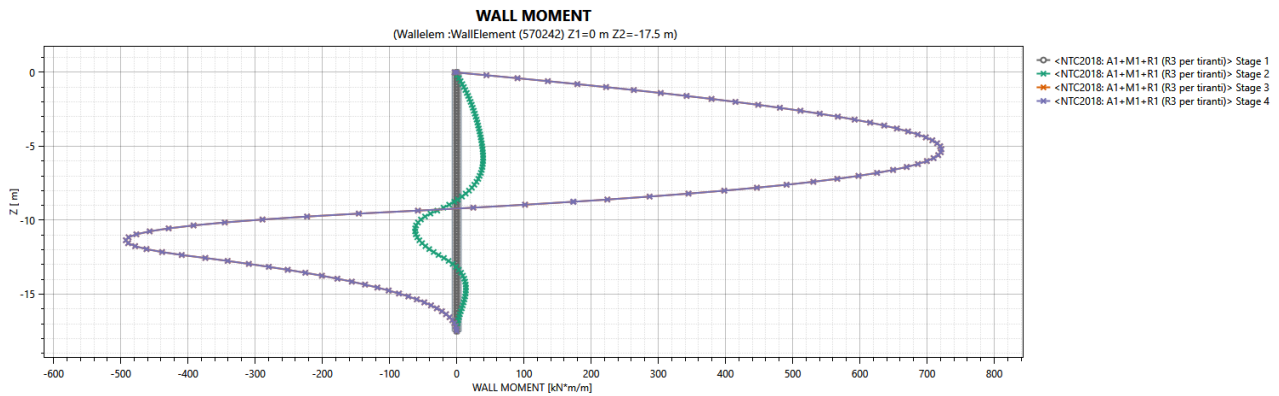
(Wallelem :WallElement New (570243) Z1=0 m Z2=-17.5 m)

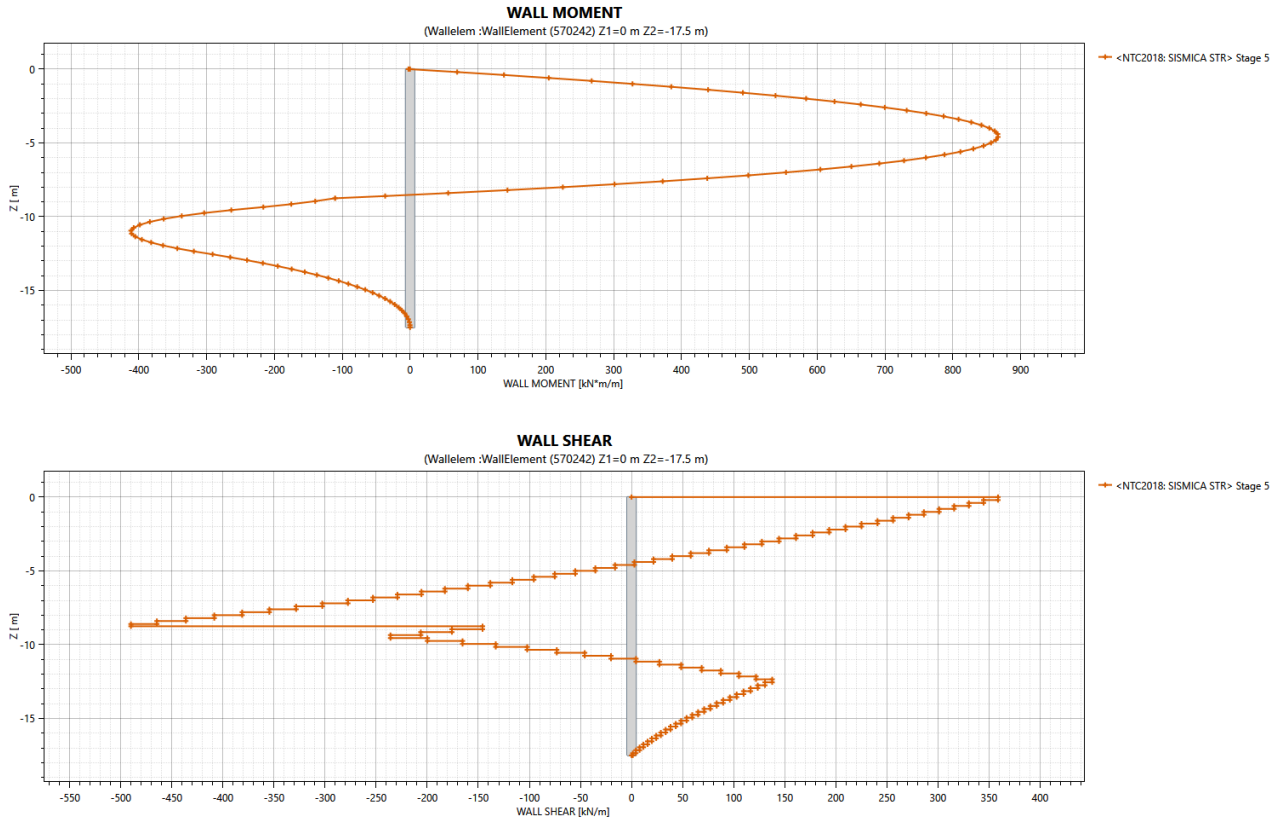


◊ <NTC2018: SISMICA STR> Stage 5

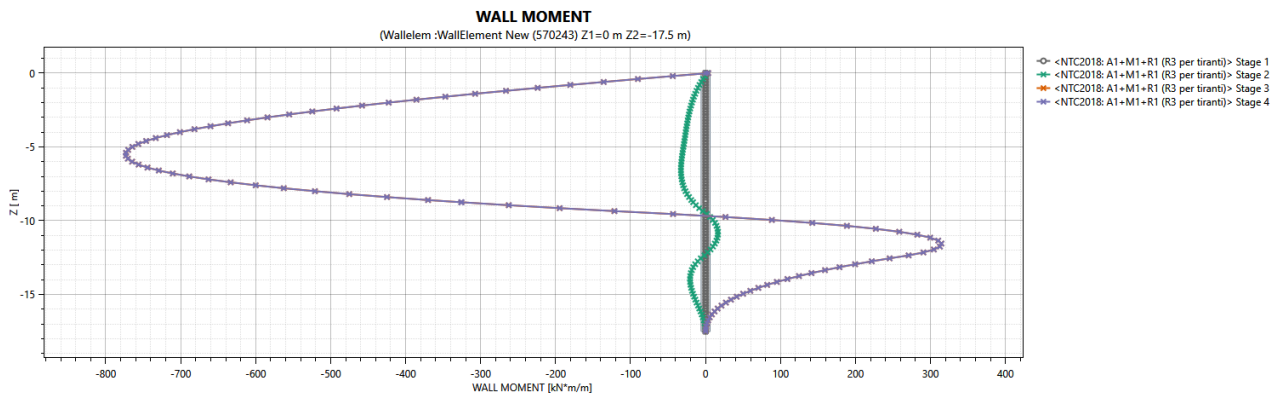


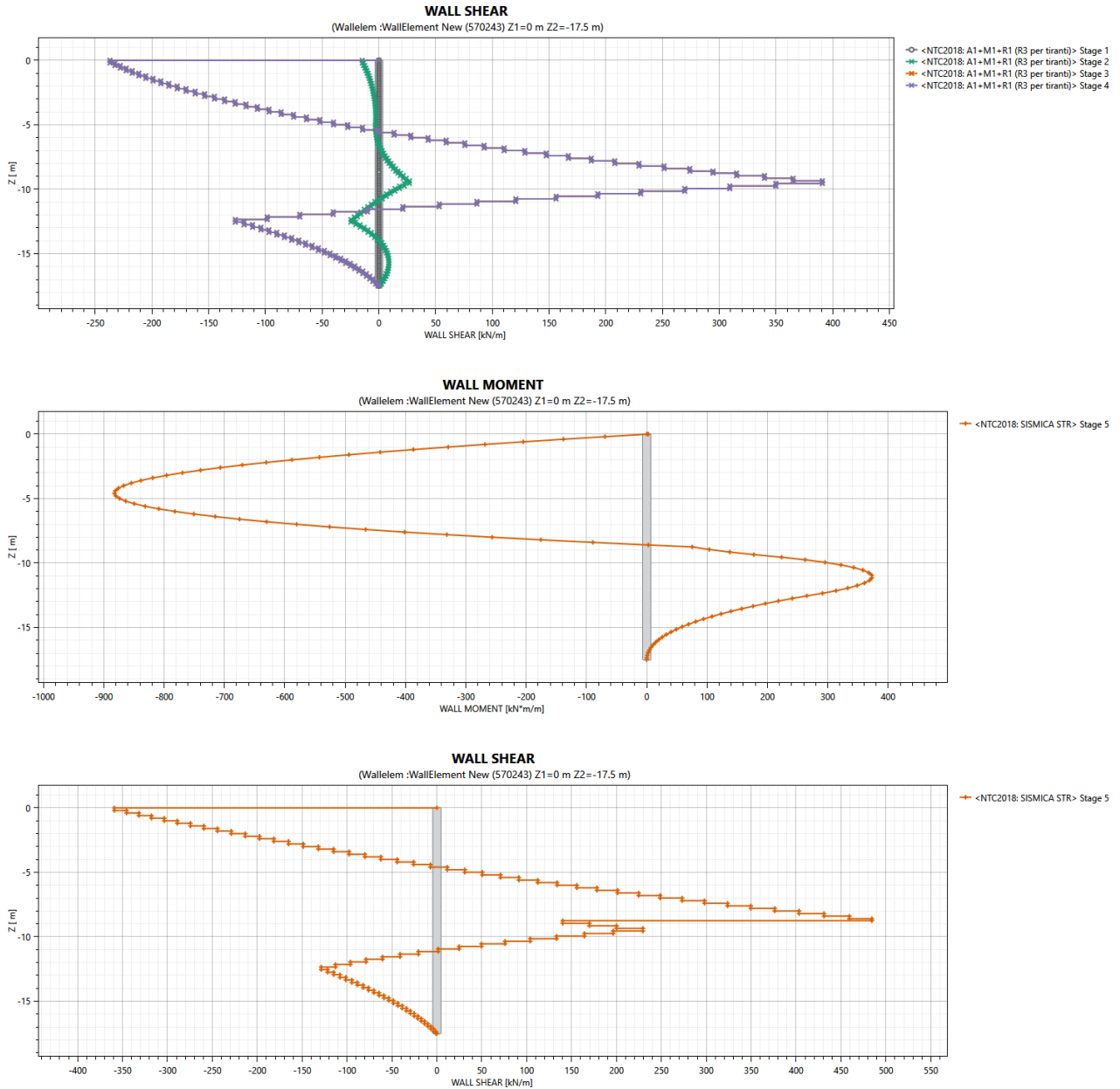
**Figura 14** Andamento del momento flettente e taglio della diaframma dx in condizioni SLU e SLV per i vari fasi di calcolo (sulla condizione con incastro soletta superiore, %100)





**Figura 15** Andamento del momento flettente e taglio della diaframma sx in condizioni SLU e SLV per i vari fasi di calcolo (sulla condizione senza incastro soletta superiore, %0)





**Figura 16** Andamento del momento flettente e taglio della diaframma dx in condizioni SLU e SLV per i vari fasi di calcolo (sulla condizione senza incastro soletta superiore, %0)

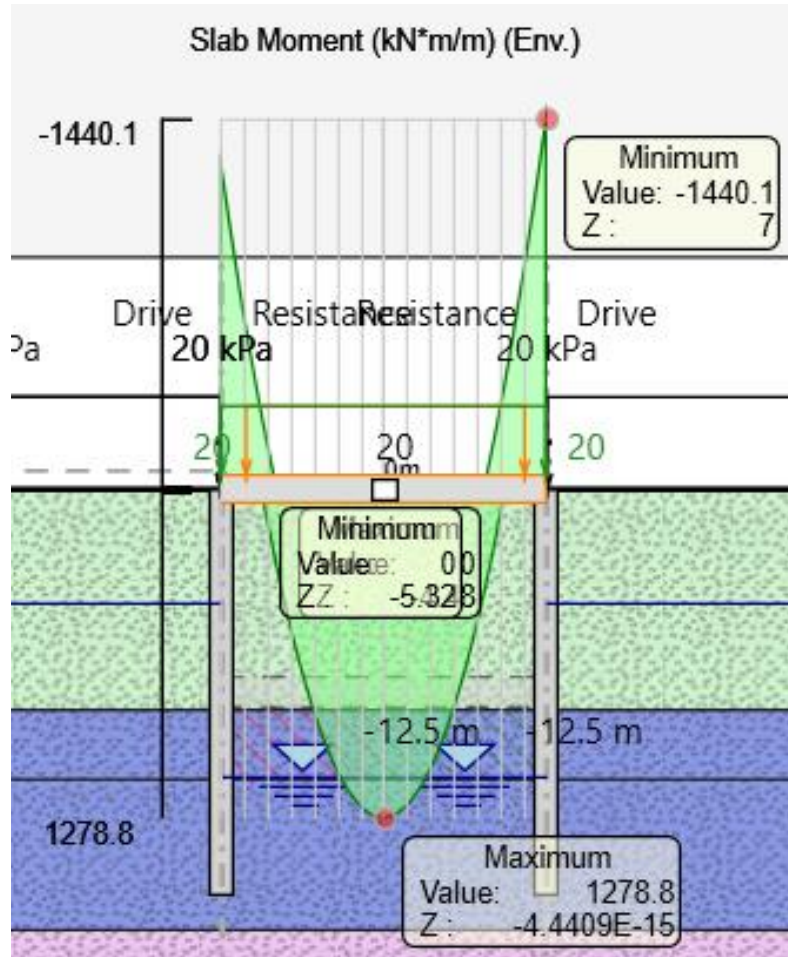


Figura 17 Andamento del momento flettente della soletta superiore in condizione SLU (sulla condizione con incastro soletta superiore).



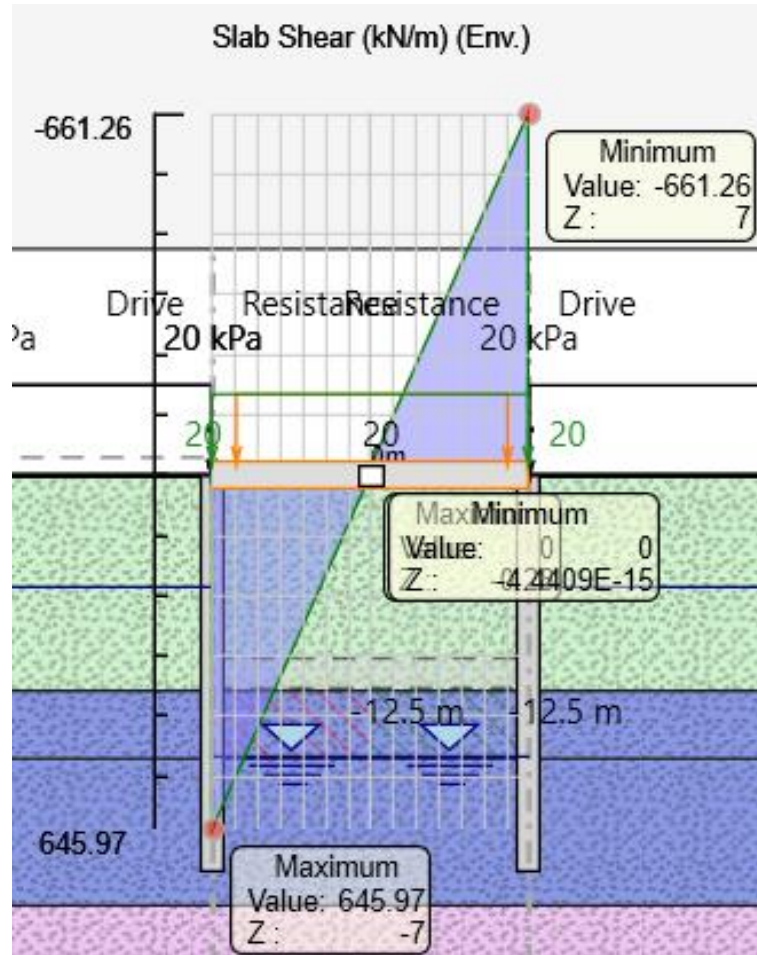
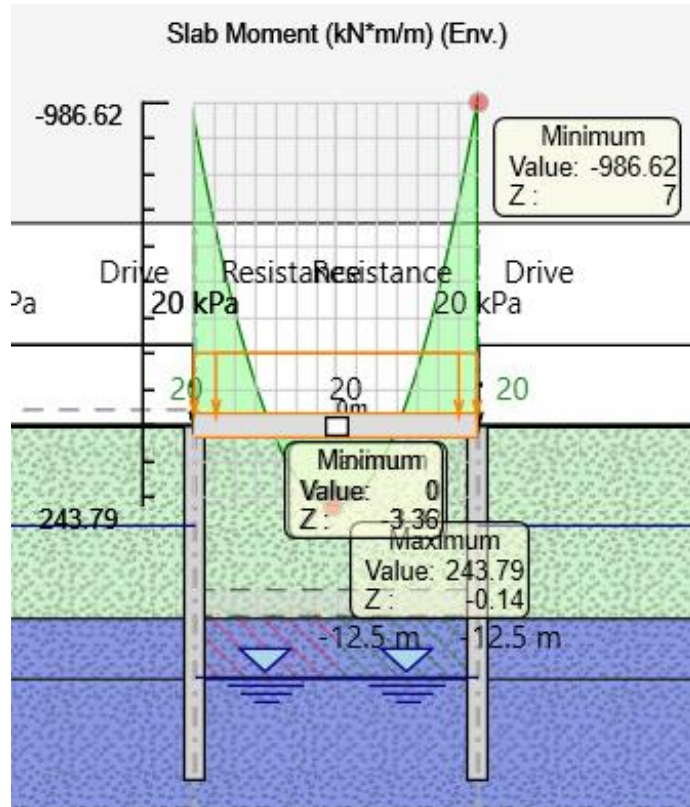
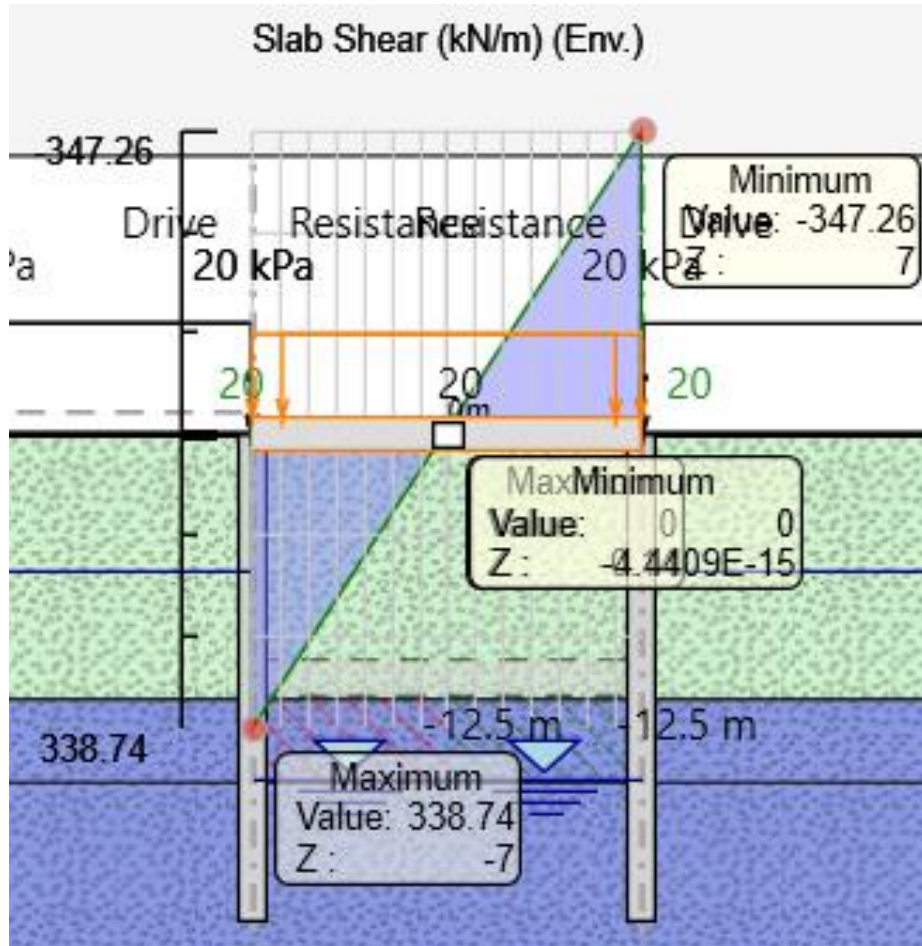


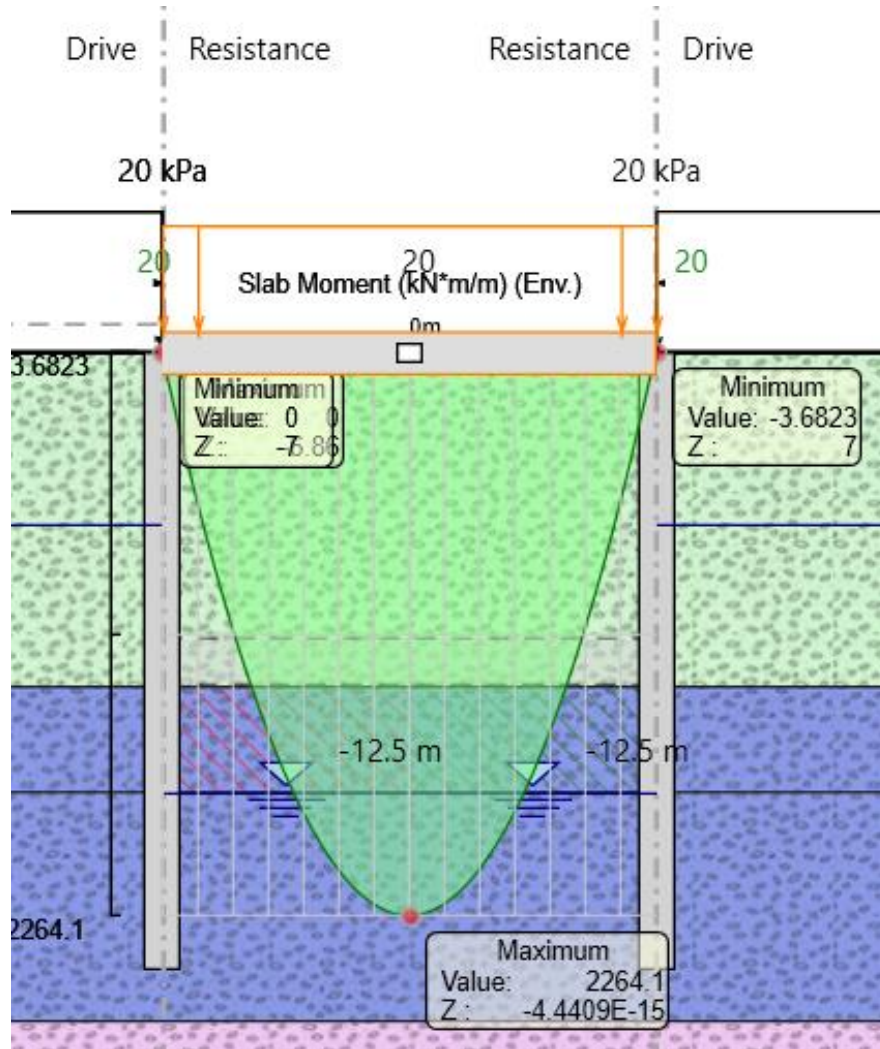
Figura 18 Andamento taglio della soletta superiore in condizione SLU (sulla condizione con incastro soletta superiore).



**Figura 19** Andamento del momento flettente della soletta superiore in condizione SLV (sulla condizione con incastro soletta superiore).

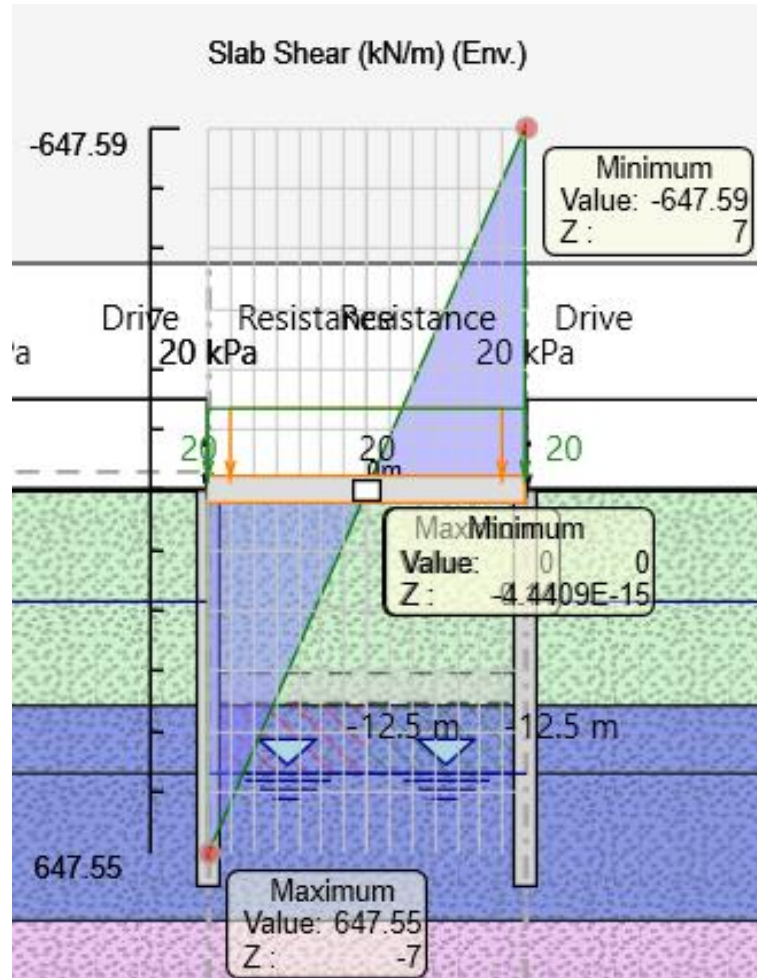


**Figura 20** Andamento taglio della soletta superiore in condizione SLV (sulla condizione con incastro soletta superiore).

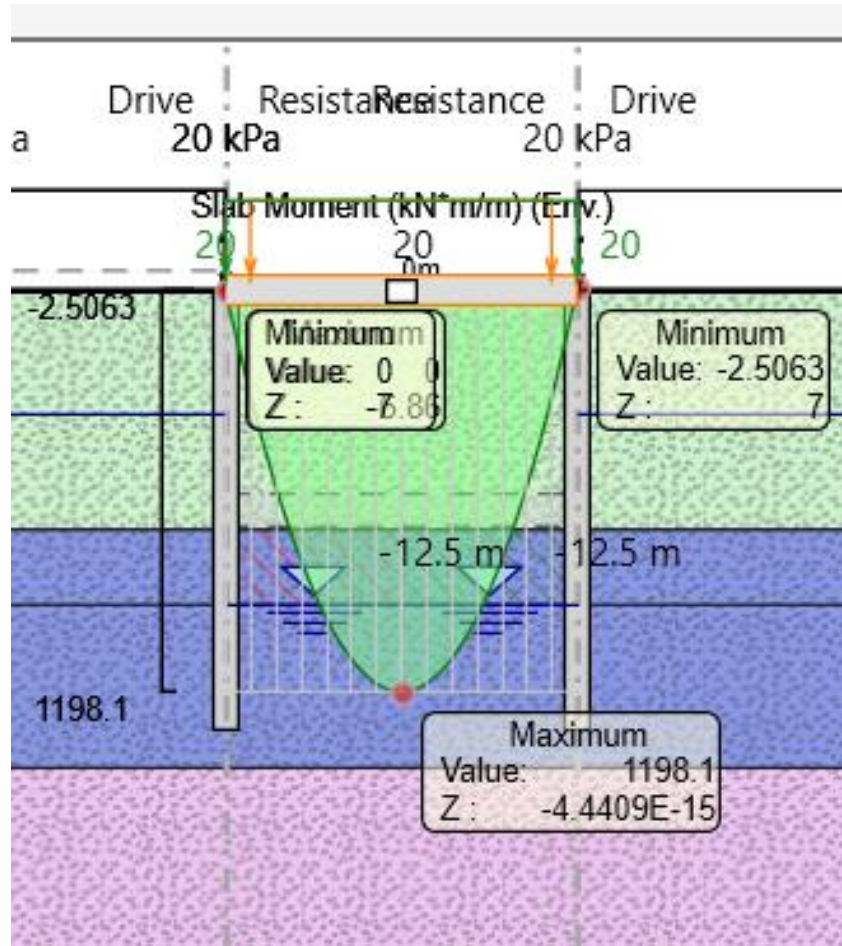


**Figura 21** Andamento del momento flettente della soletta superiore in condizione SLU (sulla condizione senza incastro soletta superiore).

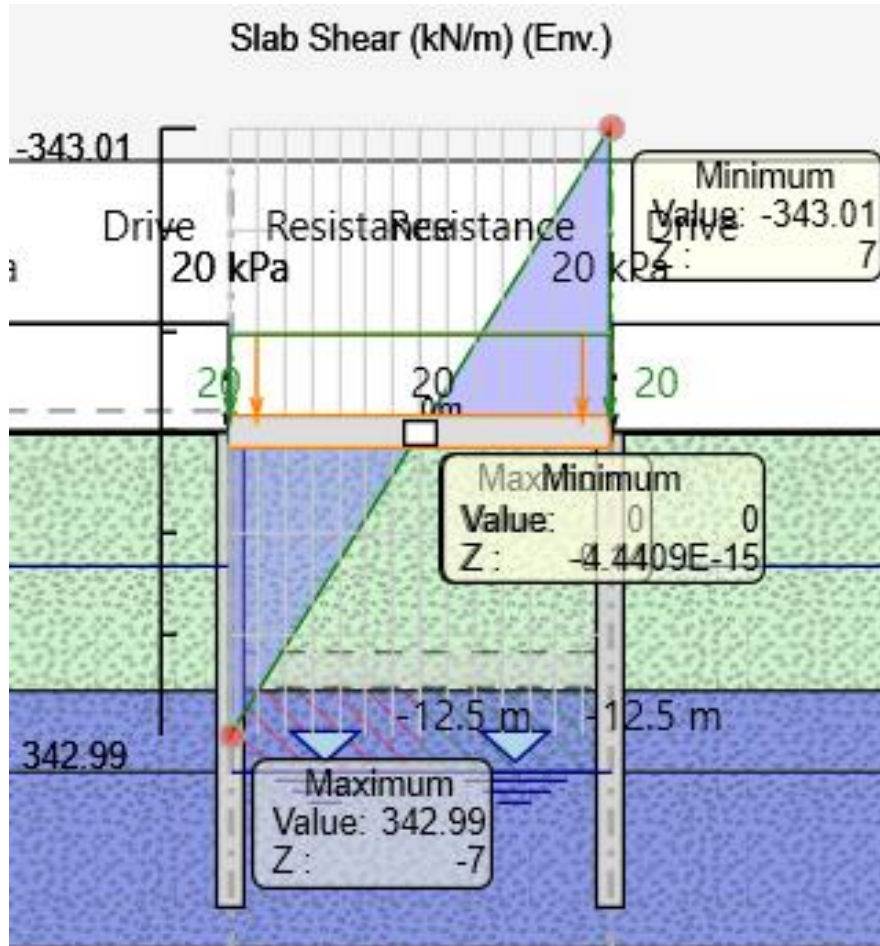





**Figura 22** Andamento taglio della soletta superiore in condizione SLU (sulla condizione senza incastro soletta superiore).



**Figura 23** Andamento del momento flettente della soletta superiore in condizione SLV (sulla condizione senza incastro soletta superiore).



**Figura 24** Andamento taglio della soletta superiore in condizione SLV (sulla condizione senza incastro soletta superiore).

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>52 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	52 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	52 di 325								

#### 9.1.4 Verifiche strutturali

##### 9.1.4.1 Diaframmi

Le figure seguenti mostrano rispettivamente il momento, la forza di taglio e la forza assiale estratti dalla fase di calcolo più critica per le condizioni sia con che senza soletta incastrata e diaframma.

Elemento	SLU			SLV			SLE		
	Nmax	Mmax	Vmax	Nmax	Mmax	Vmax	Nmax	Mmax	Vmax
<b>Diaframmi</b>	661,26	1440,10	450,65	347,26	986,62	510,34	464,08	1033,30	332,27

Per i solettoni sono state adottate delle armature con due fila 10Ø24 (B450C), cautelativamente sia in zona tesa che compressa. Con i valori di sezione e armatura proposti, la struttura risulta verificata agli SLU sismici, SLU statici, fessurazione.



**DIAFRAMMI**

**INPUT**

**SOLLECITAZIONI DI VERIFICA**

Combinazione	N <sub>sd</sub> [kN]	M <sub>sd</sub> [kNm]	V <sub>sd</sub> [kN]
SLE Quasi Permanente	-461,0	1255,0	386,38
SLE Frequente	-461,0	1255,0	386,38
SLE Rara	-461,0	1255,0	386,38
SLU	-657,7	1724,2	521
SLV	-345,7	1213,5	564

**CARATTERISTICHE GEOMETRICHE DELLA SEZIONE IN C.A.**

Geometria della sezione			
Base (ortogonale al Taglio)	B [cm]	100	
Altezza (parallela al Taglio)	H [cm]	100	
Altezza utile della sezione	d [cm]	92	
Area di calcestruzzo	A <sub>c</sub> [cm <sup>2</sup> ]	10000	

Armatura longitudinale tesa				
		1° STRATO	2° STRATO	3° STRATO
Numero Barre	n	10,00	10,00	0
Diametro	φ [mm]	24	24	0
Posizione dal lembo esterno	c [cm]	8,4	8,4	0,0
Area strato	A <sub>s</sub> [cm <sup>2</sup> ]	45,24	45,24	0,00
Rapporto di armatura	ρ [%]	0,988%		

Armatura longitudinale compressa				
		1° STRATO	2° STRATO	3° STRATO
Numero Barre	n	10,0	10	0
Diametro	φ [mm]	24	24	0
Posizione dal lembo esterno	c' [cm]	8,4	8,4	0,0
Area strato	A <sub>s</sub> ' [cm <sup>2</sup> ]	45,24	45,24	0,00
Rapporto di armatura	ρ' [%]	0,988%		

Armatura trasversale				
		1° TIPO	2° TIPO	3° TIPO
Diametro	φ [mm]	12	0	0
Numero bracci	n <sub>bi</sub>	5	5	0
Passo	s <sub>w</sub> [cm]	50	0	0
Inclinazione	α [deg]	90	90	90
Area armatura a metro	A <sub>sw</sub> /s <sub>w</sub> [cm <sup>2</sup> /m]	11,31	0,00	0,00

**CARATTERISTICHE REOLOGICHE DEI MATERIALI**

Concrete		
Resistenza cubica a compressione	RCK	35
Resistenza cilindrica caratteristica a compressione	f <sub>ck</sub> [Mpa]	28,00
Resistenza cilindrica media a compressione	f <sub>cm</sub> [Mpa]	36,00
Resistenza media a trazione per flessione	f <sub>ctm</sub> [Mpa]	2,77
Resistenza caratteristica a trazione per flessione	f <sub>ctk</sub> [Mpa]	1,94
Resistenza di progetto a compressione	f <sub>cd</sub> [Mpa]	15,87
Resistenza di progetto delle bielle compresse	f <sub>cd</sub> ' [Mpa]	8,45

Acciaio		
Resistenza di progetto a snervamento	f <sub>yd</sub> [Mpa]	391,30

**OUTPUT**

**VERIFICHE IN ESERCIZIO**

Verifica Tensionale				σ limit
Calcestruzzo SLE Quasi Permanente				
	σ <sub>c</sub> [Mpa] =	6,30	12,600	
Calcestruzzo SLE Rara				
	σ <sub>c</sub> [Mpa] =	6,30	15,400	
Acciaio SLE Rara				
	σ <sub>s</sub> [Mpa] =	146,61	337,500	
Verifica di fessurazione				w limit
Combinazione SLE Quasi permanente				
	w <sub>d</sub> [mm] =	0,177	0,300	
Combinazione SLE Frequente				
	w <sub>d</sub> [mm] =	0,159	0,300	

**VERIFICA DI RESISTENZA A TAGLIO**

Sollecitazioni di progetto			
Taglio sollecitante = max Taglio(SLU,SLV)			
	V <sub>sd</sub> [kN]	564,0	
Sforzo Normale concomitante al massimo taglio			
	N <sub>sd</sub> [kN]	-345,7	

Verifica di resistenza in assenza di armatura specifica			
Resistenza di progetto senza armatura specifica			
	V <sub>Rd1</sub> [kN]	1146,16	
Coefficiente di sicurezza			
	V <sub>Rd1</sub> /V <sub>sd</sub>	2,03	

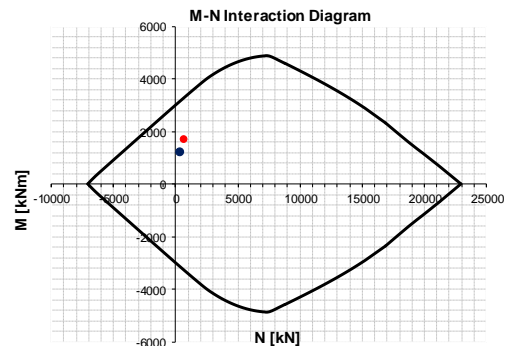
Verifica di resistenza dell'armatura specifica			
CoTan(θ) di progetto			
	cotan(θ)	2,5	
Resistenza a taglio delle bielle compresse in cls			
	V <sub>Rd2</sub> (θ) [kN]	2456	
Resistenza a taglio dell'armatura			
	V <sub>Rd1</sub> (θ) [kN]	912	
Resistenza a taglio di progetto			
	V <sub>Rd</sub> [kN]	912	
Coefficiente di sicurezza			
	V <sub>Rd</sub> /V <sub>sd</sub>	1,62	

**VERIFICA DI RESISTENZA A PRESSO-FLESSIONE**


Sollecitazioni di progetto				SLU	SLV	
Momento sollecitante				M <sub>sd</sub> [kNm]	1724,2	1213,5
Sforzo Normale concomitante				N <sub>sd</sub> [kN]	-657,7	-345,7

Verifica di resistenza in termini di momento				SLU	SLV	
Momento resistente				M <sub>Rd</sub> [kNm]	3266,3	3139,4
Coefficiente di sicurezza				M <sub>Rd</sub> /M <sub>sd</sub>	1,89	2,59

Verifica di resistenza in termini di sforzo normale				SLU	SLV	
Sforzo normale resistente				N <sub>Rd</sub> [kN]	-	-
Coefficiente di sicurezza				N <sub>Rd</sub> /N <sub>sd</sub>	-	-



Tutte le verifiche risultano soddisfatte. In conclusione, sulla base dei risultati delle verifiche strutturali condotte nei confronti degli SLU/SLV, può essere definita un'incidenza di armatura di **180 kg/m<sup>3</sup>**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>54 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	54 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	54 di 325								

#### 9.1.4.2 Soletta Superiore

I valori massimi delle sollecitazioni la soletta superiore, sono:

Elemento	SLU			SLV			SLE		
	Nmax	Mmax	Vmax	Nmax	Mmax	Vmax	Nmax	Mmax	Vmax
<b>Soletta Superiore</b>	439,98	2264,10	647,58	490,09	1198,10	343,01	332,96	1590,90	455,02

Per i solettoni sono state adottate delle armature con due fila 10Ø26 (B450C), cautelativamente sia in zona tesa che compressa. Con i valori di sezione e armatura proposti, la struttura risulta verificata agli SLU sismici, SLU statici, fessurazione.

**SOLETTA SUPERIORE**

**INPUT**

**SOLLECITAZIONI DI VERIFICA**

Combinazione	N <sub>sd</sub> [kN]	M <sub>sd</sub> [kNm]	V <sub>sd</sub> [kN]
SLE Quasi Permanente	-209,0	1590,9	455,02
SLE Frequente	-209,0	1590,9	455,02
SLE Rara	-209,0	1590,9	455,02
SLU	-276,7	2264,1	648
SLV	-564,2	1213,5	346

**CARATTERISTICHE GEOMETRICHE DELLA SEZIONE IN C.A.**

Geometria della sezione			
Base (ortogonale al Taglio)	B [cm]	100	
Altezza (parallela al Taglio)	H [cm]	120	
Altezza utile della sezione	d [cm]	112	
Area di calcestruzzo	A <sub>c</sub> [cm <sup>2</sup> ]	12000	

Armatura longitudinale tesa		1° STRATO	2° STRATO	3° STRATO
Numero Barre	n	10,00	10,00	0
Diametro	φ [mm]	26	26	0
Posizione dal lembo esterno	c [cm]	8,5	8,5	0,0
Area strato	A <sub>s</sub> [cm <sup>2</sup> ]	53,09	53,09	0,00
Rapporto di armatura	ρ [%]	0,952%		

Armatura longitudinale compressa		1° STRATO	2° STRATO	3° STRATO
Numero Barre	n	10,0	10	0
Diametro	φ [mm]	26	26	0
Posizione dal lembo esterno	c' [cm]	8,5	8,5	0,0
Area strato	A <sub>s</sub> ' [cm <sup>2</sup> ]	53,09	53,09	0,00
Rapporto di armatura	ρ' [%]	0,952%		

Armatura trasversale		1° TIPO	2° TIPO	3° TIPO
Diametro	φ [mm]	12	0	0
Numero bracci	n <sub>bi</sub>	5	5	0
Passo	s <sub>w</sub> [cm]	40	0	0
Inclinazione	α [deg]	90	90	90
Area armatura a metro	A <sub>sw</sub> /s <sub>w</sub> [cm <sup>2</sup> /m]	14,14	0,00	0,00

**CARATTERISTICHE REOLOGICHE DEI MATERIALI**

Concrete		
Resistenza cubica a compressione	RCK	35
Resistenza cilindrica caratteristica a compressione	f <sub>ck</sub> [Mpa]	28,00
Resistenza cilindrica media a compressione	f <sub>cm</sub> [Mpa]	36,00
Resistenza media a trazione per flessione	f <sub>ctm</sub> [Mpa]	2,77
Resistenza caratteristica a trazione per flessione	f <sub>ctk</sub> [Mpa]	1,94
Resistenza di progetto a compressione	f <sub>cd</sub> [Mpa]	15,87
Resistenza di progetto delle bielle compresse	f <sub>cd'</sub> [Mpa]	8,45

Acciaio		
Resistenza di progetto a snervamento	f <sub>yd</sub> [Mpa]	391,30

**OUTPUT**

**VERIFICHE IN ESERCIZIO**

Verifica Tensionale			σ limit
Calcestruzzo SLE Quasi Permanente	σ <sub>c</sub> [Mpa] =	5,22	12,600
Calcestruzzo SLE Rara	σ <sub>c</sub> [Mpa] =	5,22	15,400
Acciaio SLE Rara	σ <sub>s</sub> [Mpa] =	140,21	337,500

Verifica di fessurazione			w limit
Combinazione SLE Quasi permanente	w <sub>d</sub> [mm] =	0,169	0,300
Combinazione SLE Frequente	w <sub>d</sub> [mm] =	0,157	0,300

**VERIFICA DI RESISTENZA A TAGLIO**

Sollecitazioni di progetto			
Taglio sollecitante = max Taglio(SLU,SLV)	V <sub>sd</sub> [kN]	648,0	
Sforzo Normale concomitante al massimo taglio	N <sub>sd</sub> [kN]	-276,7	

Verifica di resistenza in assenza di armatura specifica			
Resistenza di progetto senza armatura specifica	V <sub>Rd1</sub> [kN]	1375,90	
Coefficiente di sicurezza	V <sub>Rd1</sub> /V <sub>sd</sub>	2,12	

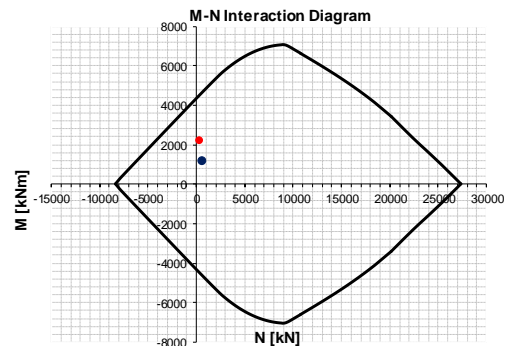
Verifica di resistenza dell'armatura specifica			
CoTan(θ) di progetto	cotan(θ)	2,5	
Resistenza a taglio delle bielle compresse in cls	V <sub>Rd2</sub> (θ) [kN]	2968	
Resistenza a taglio dell'armatura	V <sub>Rd1</sub> (θ) [kN]	1388	
Resistenza a taglio di progetto	V <sub>Rd</sub> [kN]	1388	
Coefficiente di sicurezza	V <sub>Rd</sub> /V <sub>sd</sub>	2,14	

**VERIFICA DI RESISTENZA A PRESSO-FLESSIONE**


Sollecitazioni di progetto		SLU	SLV
Momento sollecitante	M <sub>sd</sub> [kNm]	2264,1	1213,5
Sforzo Normale concomitante	N <sub>sd</sub> [kN]	-276,7	-564,2

Verifica di resistenza in termini di momento		SLU	SLV
Momento resistente	M <sub>Rd</sub> [kNm]	4472,7	4617,7
Coefficiente di sicurezza	M <sub>Rd</sub> /M <sub>sd</sub>	1,98	3,81

Verifica di resistenza in termini di sforzo normale		SLU	SLV
Sforzo normale resistente	N <sub>Rd</sub> [kN]	-	-
Coefficiente di sicurezza	N <sub>Rd</sub> /N <sub>sd</sub>	-	-



In conclusione, sulla base dei risultati delle verifiche strutturali condotte nei confronti degli SLU/SLV, può essere definita un'incidenza di armatura di **170 kg/m<sup>3</sup>**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>56 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	56 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	56 di 325								

### 9.1.5 Verifiche geotecniche

#### SLU-GEO

Per quanto riguarda le verifiche geotecniche SLU (Combinazione A2+M2+R1), la percentuale di spinta passiva mobilitata, pari al 17%, è tale da garantire la stabilità dell'opera alla rototraslazione.

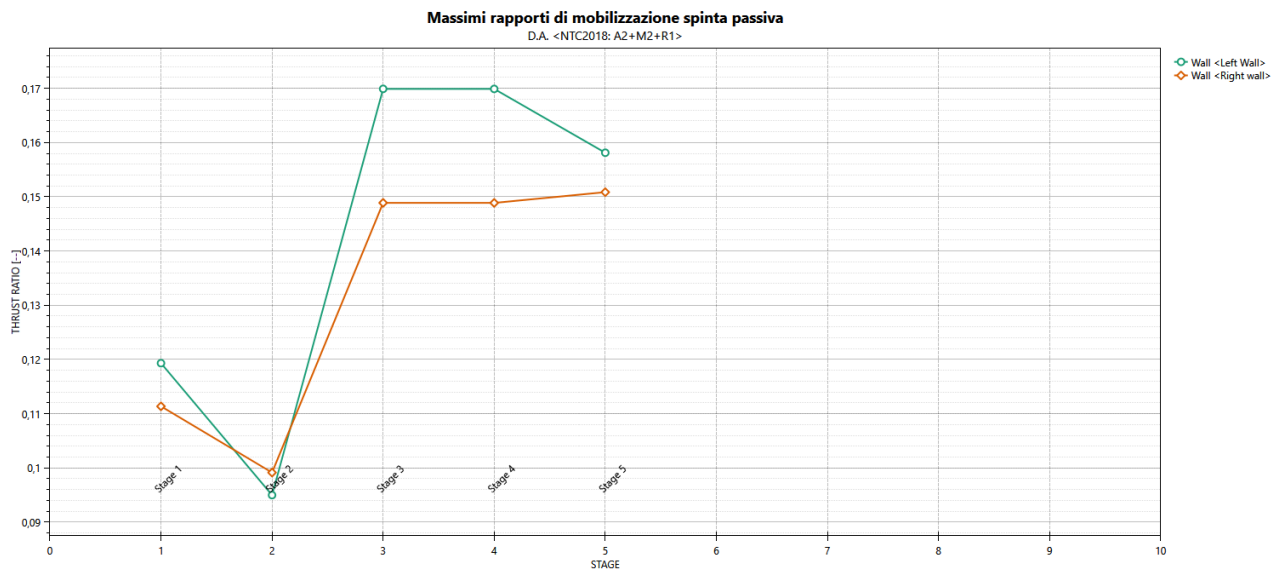


Figura 25 Rapporto di mobilitazione della spinta passiva.

### 9.1.6 Carichi aerodinamici(\*\*\*)

Per quanto riguarda le azioni aerodinamiche è opportuno fare un approfondimento. Nel caso in esame, infatti, la velocità di progetto è pari a 30 km/h; tuttavia per l'utilizzo degli abachi da normativa ai fini della definizione dei carichi aerodinamici è necessario considerare il valore disponibile più vicino ovvero una velocità 120 km/h.

Con tali ipotesi si ottengono i seguenti valori largamente cautelativi rispettivamente le pressioni/depressioni sulle superfici laterali e soprastanti della galleria (si ricorda che sono azioni di carattere istantaneo).

$$Q_{\text{pareti,k}} = \pm 0.18 \text{ kPa} \quad (\text{assumendo la distanza } a_g \text{ pari a 6 metri})$$

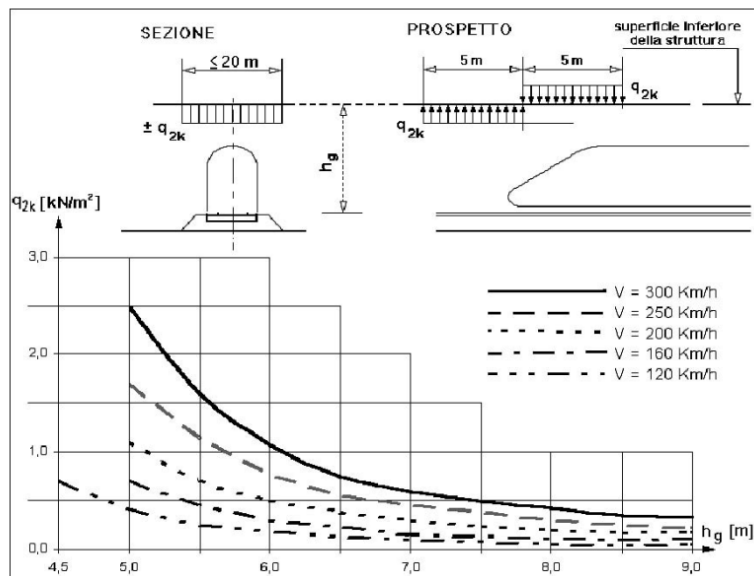
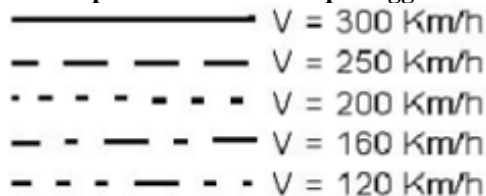


Fig. 5.2.9 - Valori caratteristici delle azioni  $q_{2k}$  per superfici orizzontali al di sopra del binario

### Figura - 1 Pressione/depressione laterale al passaggio dei convogli ferroviari

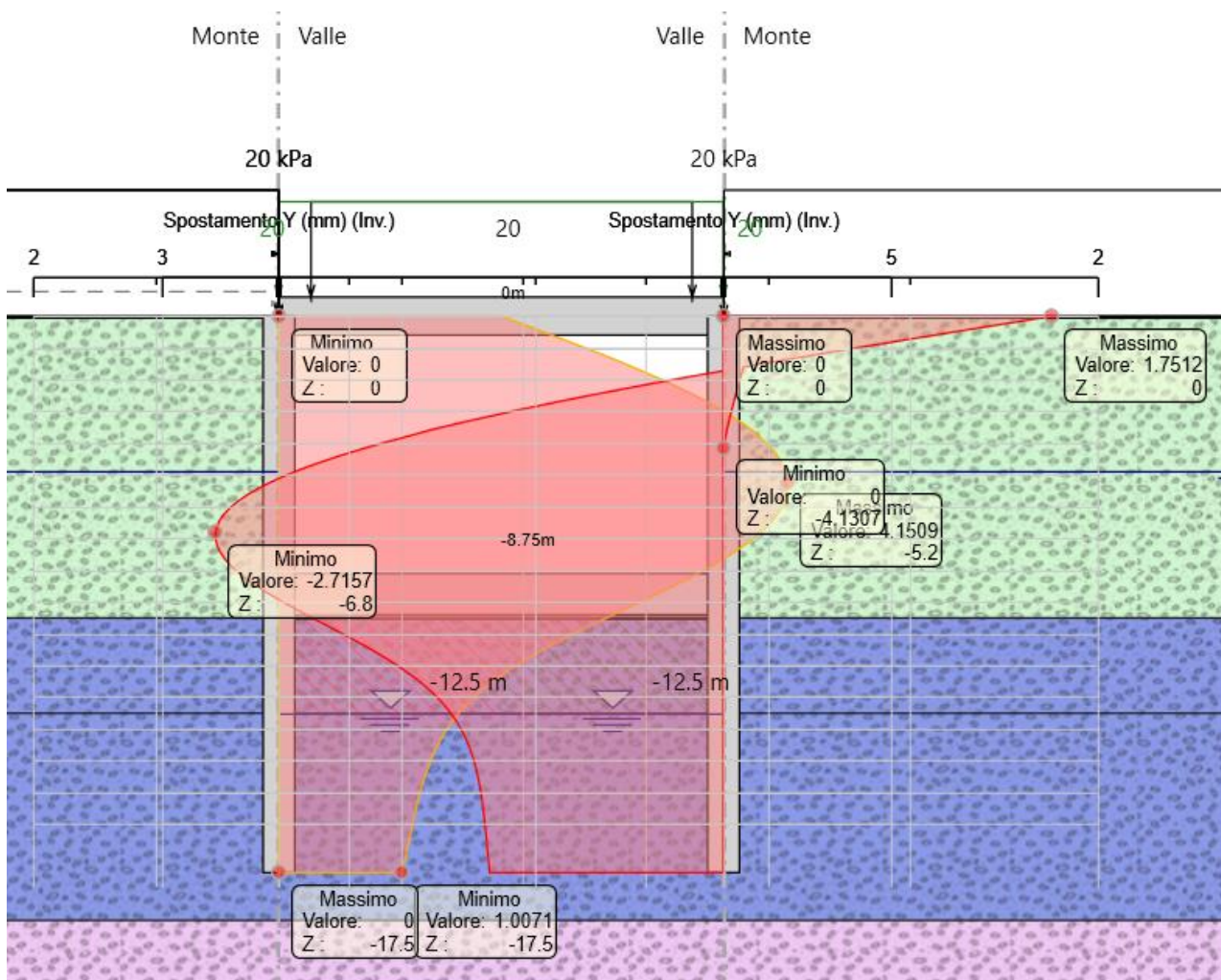


Nel caso specifico, l'azione di pressione e depressione aerodinamica può essere trascurata per i piedritti in quanto di entità irrilevante rispetto alle spinte laterali del terreno.


## SLE

Nel rispetto dei principi di funzionalità dell'opera, è necessario eseguire anche la verifica nei confronti degli Stati Limite di Esercizio (SLE). A tal fine si controlla che gli spostamenti subiti dalla paratia siano tollerabili e compatibili con le prestazioni attese nelle condizioni di regolare esercizio.

Come evidenziato in Figura sotto, gli spostamenti laterali sono di entità tale (valore massimo pari a c.a. 4.1509mm) da non indurre problematiche di funzionalità della struttura stessa e delle costruzioni adiacenti nei confronti degli SLE.



**Figura 26** Involuppo spostamenti SLE.

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	59 di 325								

### 9.1.7 *Rivestimento interno galleria scatolare metodo milano*

#### 9.1.7.1 MODELLO DI CALCOLO


La struttura viene schematizzata con un modello di calcolo a telaio chiuso su un letto di molle alla Winkler mediante un'analisi elastico-lineare svolta con il programma di calcolo agli elementi finiti SAP2000 v.20.1 (Computers and Structures®). Gli elementi frame che schematizzano il telaio piano hanno una sezione rettangolare di larghezza 1.0m ed altezza pari a:

- piedritti destra / sinistra / media  $h = 0.60 \text{ m}$
- fondazione  $h = 1.30 \text{ m}$

Il modulo elastico del materiale assegnato agli elementi asta è assunto:

- Struttura in elevazione  $E = 33346 \text{ N/mm}^2$  :  $\text{cls Rck} = 37\text{N/mm}^2$

Nelle successive figure si riporta lo schema di calcolo adottato con la numerazione dei nodi (Figura 6) .

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>60 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	60 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	60 di 325								

## 10 VITA NOMINALE E CLASSI D'USO

### 10.1 Vita Nominale

La vita nominale di progetto di una costruzione, così come definita al punto 2.4.1 del DM 17.01.2018, è intesa come il numero di anni nel quale è previsto che l'opera, purché soggetta alla necessaria manutenzione, mantenga specifici livelli prestazionali. Con riferimento alla tabella 2.4.1 del DM 17.01.2018, la vita nominale VN delle infrastrutture ferroviarie può, di norma, assumersi come indicato nella seguente tabella:


TIPO DI COSTRUZIONE <sup>(1)</sup>	Vita Nominale V <sub>N</sub> [Anni] <sup>(1)</sup>
OPERE NUOVE SU INFRASTRUTTURE FERROVIARIE PROGETTATE CON LE NORME VIGENTI PRIMA DEL DM 14.01.2008 A VELOCITÀ CONVENZIONALE (V<250 Km/h)	50
ALTRE OPERE NUOVE A VELOCITÀ V<250 Km/h	75
ALTRE OPERE NUOVE A VELOCITÀ V ≥ 250 km/h	100
OPERE DI GRANDI DIMENSIONI: PONTI E VIADOTTI CON CAMPATE DI LUCE MAGGIORE DI 150 m	≥ 100 <sup>(2)</sup>
<p>(1) – La stessa V<sub>N</sub> si applica anche ad apparecchi di appoggio, coprigiunti e impermeabilizzazione delle stesse opere.</p> <p>(2) - Da definirsi per il singolo progetto a cura di FERROVIE.</p>	

**Fig. 1 – Vita nominale delle infrastrutture ferroviarie**

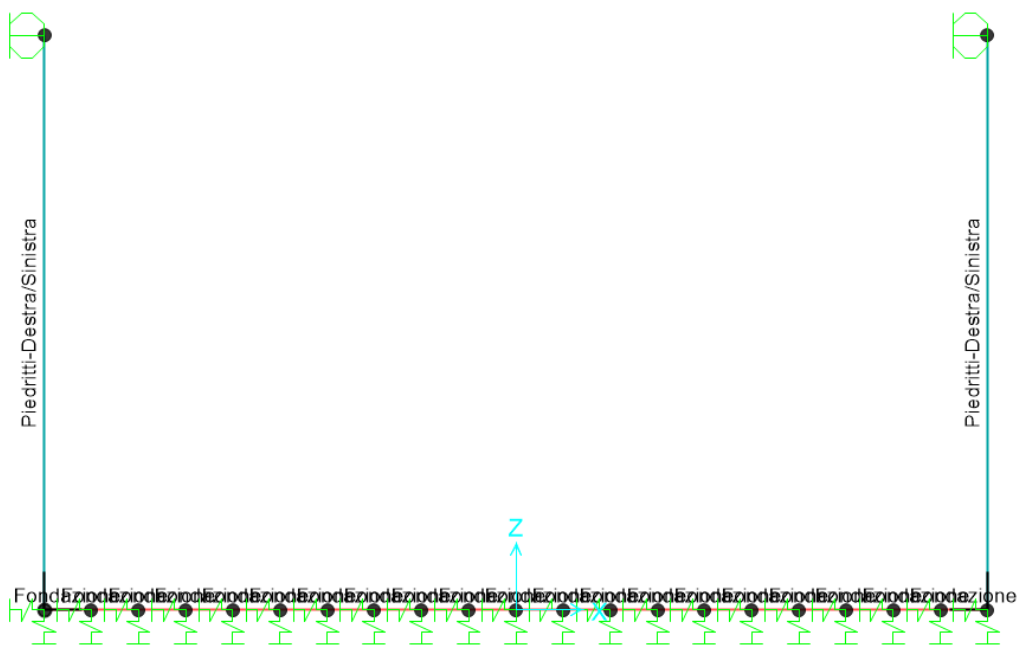
### 10.2 Classi d'uso

Il DM 17.01.2018 attribuisce alle costruzioni, in funzione della loro destinazione d'uso e quindi delle conseguenze di una interruzione di operatività o di un eventuale collasso in conseguenza di un evento sismico, diverse classi d'uso; a ciascuna classe corrisponde un coefficiente d'uso CU. Con riferimento alla classificazione di cui al punto 2.4.2 del DM 17.01.2018, la classe d'uso delle infrastrutture ferroviarie può, di norma, assumersi come indicato nella seguente tabella 2.5.1.1.2-1




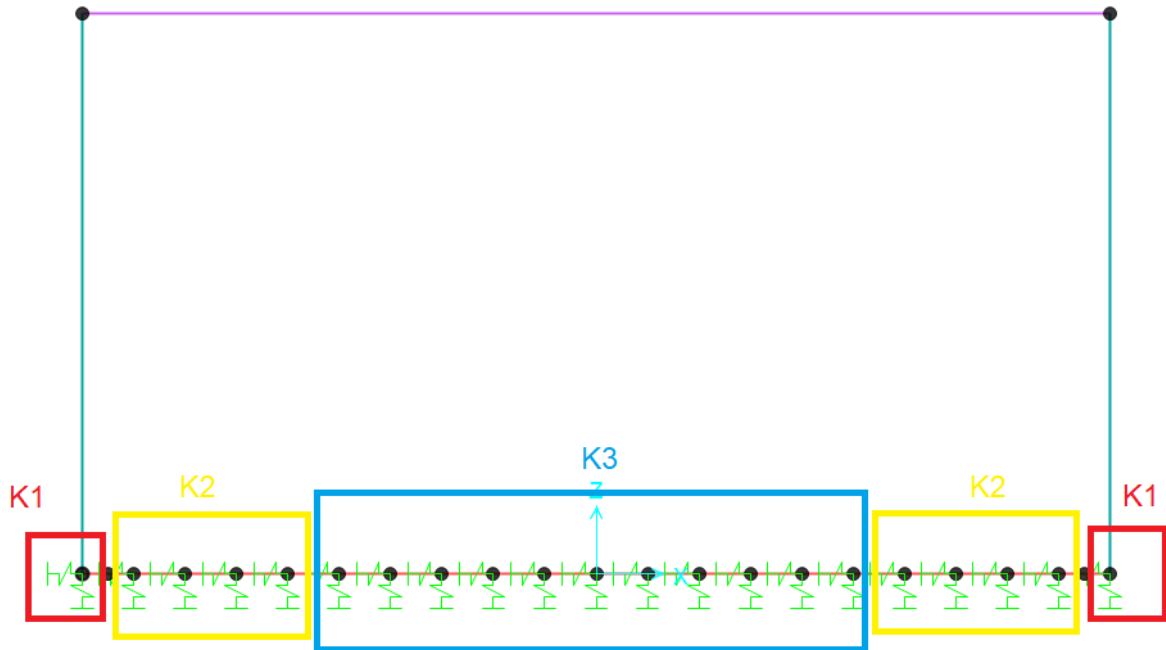
 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>61 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	61 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	61 di 325								

TIPO DI COSTRUZIONE	Classe d'uso <sup>(1)</sup>	Coefficiente d'uso [CU] <sup>(1)</sup>
FABBRICATI APPARTENENTI ALL'ELENCO A AI SENSI DEL DPCM 3685/2003	IV	2
GRANDI STAZIONI	IV	2
FABBRICATI APPARTENENTI ALL'ELENCO B AI SENSI DEL DPCM 3685/2003	III	1.5
OPERE D'ARTE DEL SISTEMA DI GRANDE VIABILITÀ FERROVIARIA <sup>(2)</sup>	III	1.5
ALTRE OPERE D'ARTE, FABBRICATI NON RIENTRANTI NELLE CLASSI D'USO III E IV	II	1
<p><b>(1)</b> Qualora una costruzione sia interferente con un'altra infrastruttura di cui all'elenco A del DPCM 3685 del 2003 o all'elenco B del DPCM 3685 del 2003 dovrà essere presa in conto la più alta tra la classe d'uso assegnata alla costruzione attraverso la presente tabella e quella dell'infrastruttura con cui si realizza l'interferenza.</p> <p><b>(2)</b> Ricadono in classe d'uso IV le opere d'arte nuove ricadenti nelle tratte di nodo di collegamento delle grandi stazioni con il sistema di grande viabilità ferroviaria</p>		



**Figura 27 Modellazione unifilare dello scatolare**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>62 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	62 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	62 di 325								



**Figura 28 Vincoli alla base del modello di calcolo**

La fondazione è appoggiata su un insieme di molle elastiche che simulano la risposta del terreno di fondazione sottostante (molle alla Winkler calibrate sul modello geotecnico del terreno).

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	63 di 325

Per la modellazione del terreno si considera la trave su suolo elastico, modellata con l'utilizzo di molle alla Winkler, aventi la seguente rigidezza (Vesic, 1965):

Per cui risulta:

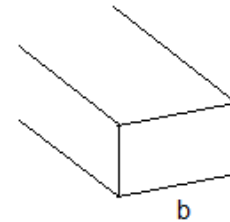
$$K = \frac{0.65E}{1-\nu^2} \sqrt[12]{\frac{Eb^4}{(EJ)_{fond}}}$$

E= 800000 kN/mq      modulo elastico del terreno  
 $\nu$ = 0.3      coeff. di Poisson

**trave di fondazione**


b= 1.00 m      dimensione trasversale trave  
h= 1.30 m      altezza trave  
J= 0.183083 m<sup>4</sup>      inerzia trave  
Rck= 37 Mpa  
Ec= 34671746 kN/mq      modulo di elasticità ds

**K= 480840 kN/mc**      modulo di reazione lineare sulla trave



i =	0.62m			
hpiedritti=	0.60m	Kv	Kh	
K3	480840 x 0.68 =	298121	99374	kN/m
K1-S	2*480840 *(0.62/2 +0.68/2) =	586625	195542	kN/m
K1-D	2*480840 *(0.62/2 +0.68/2) =	586625	195542	kN/m
K2	1.5*K3 =	447181	149060	kN/m

**Tabella 7 – Calcolo della rigidezza di fondazione**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	64 di 325								

### 10.2.1.1 ANALISI DEI CARICHI

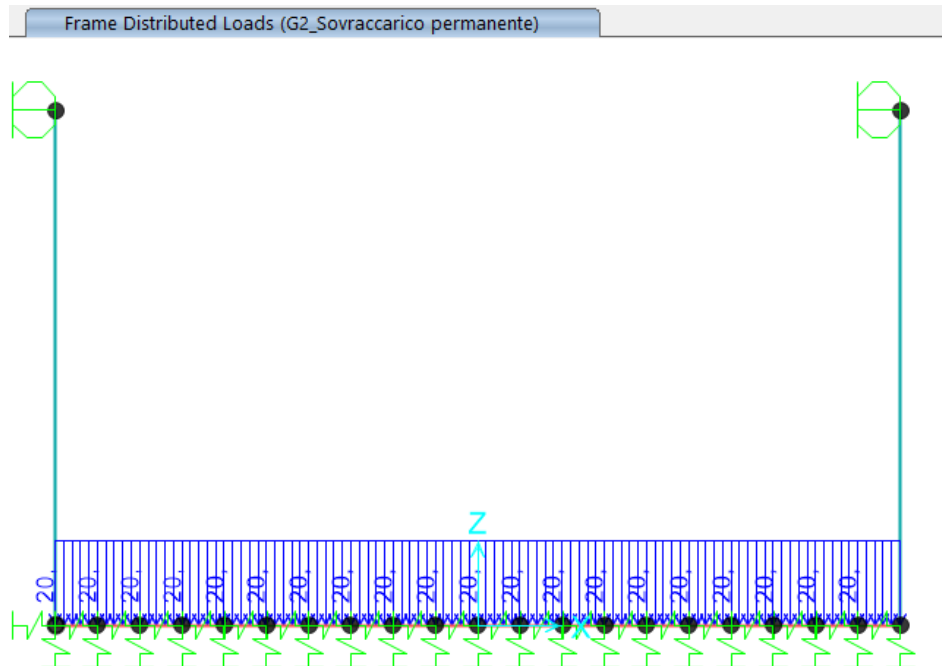
#### 10.2.1.1.1 **Peso proprio (PP)**

Il peso proprio è stato considerato ponendo il peso per unità di volume del calcestruzzo armato pari a  $\gamma = 25.0 \text{ kN/m}^3$ .

#### 10.2.1.1.2 **Sovraccarico permanente (PERM)**


Sul solettone si considera uno spessore medio del massetto delle pendenze  $s_b = 0.80\text{m}$  con peso per unità di volume  $\gamma_b = 20.00\text{kN/m}^3$

$$G2_{\text{sov.perm.}} = 1.0\text{m} \times 20.00\text{kN/m}^3 \times 1.0\text{m} = 20.0 \text{ kN/m}$$



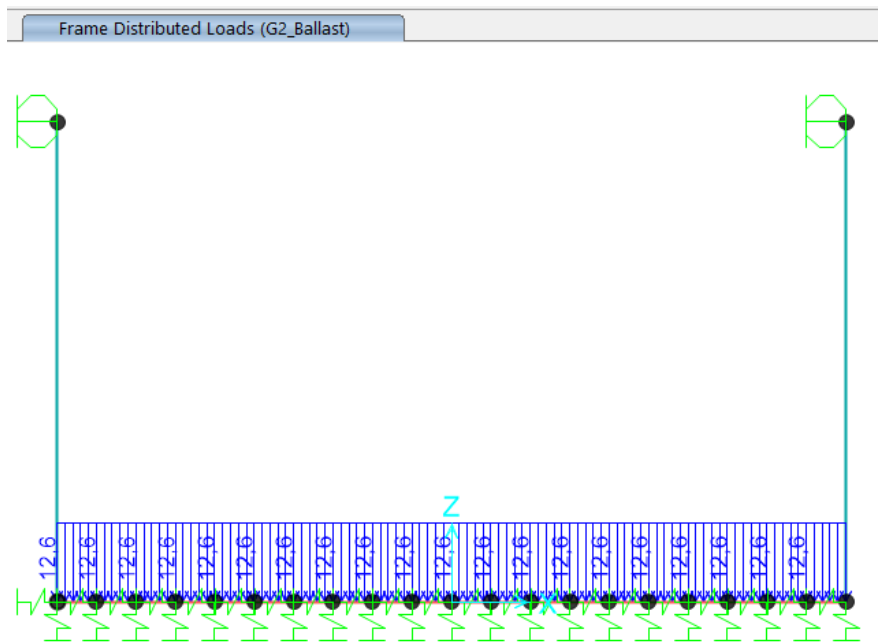
**Figura 29 Sovraccarico permanente**

#### 10.2.1.1.2.1 *Ballast e armamento (G2)*

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	65 di 325								

Sul fondazione si considera uno spessore di ballast e armamento de linea ferroviaria pari a 0.65 m con peso di unità di volume  $\gamma_{pav\_str} = 18.00\text{kN/m}^3$  distribuito su tutta larghezza dela soletta superiore.


$$G2\_balast = 0.70\text{m} \times 1.0\text{m} \times 18.00\text{kN/m}^3 = 12.6 \text{ kN/m}$$



**Figura 30 G2\_Balast armamento**

### 10.2.1.1.3 Azioni sollecitanti esercitate dai carichi ferroviari

Il carico verticale ferroviario è definito per mezzo di diversi modelli di carico: in particolare sono forniti due treni di carico distinti, il primo rappresentativo del traffico normale LM71, il secondo rappresentativo del traffico pesante SW2.

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

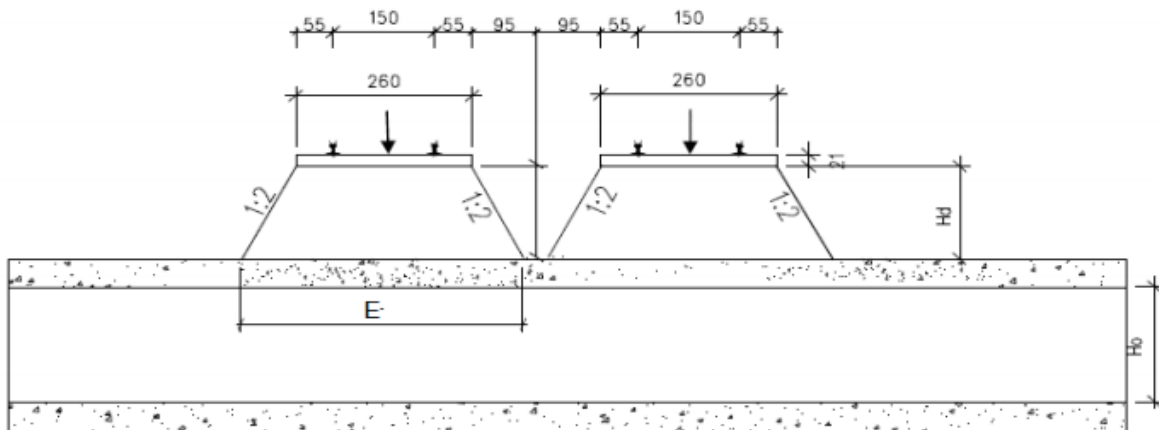
Coefficiente di adattamento  $\alpha$

I valori dei suddetti carichi relativi alla configurazione LM71 e SW2 dovranno essere moltiplicati per un coefficiente di adattamento, variabile in ragione della tipologia dell'Infrastruttura (ferrovia ordinaria, ferrovia leggera metropolitana), viene di seguito riportata la tabella con la variabilità del coefficiente in base al tipo di linea o categoria di linea.

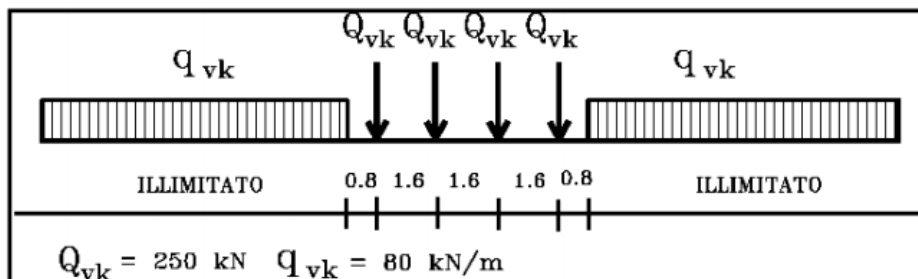
Tipi di linea o categorie di linea STI	Valore minimo del fattore alfa ( $\alpha$ )
IV	1.1
V	1.0
VI	1.1
VII-P	0.83
VII-F, VII-M	0.91

**Tabella 8 – Coefficiente di adattamento**

Per completezza di informazioni viene di seguito riportata la tabella attinente alla categorie di linea STI per il sottosistema Infrastruttura del sistema ferroviario convenzionale:



**Figura 31 Diffusione del carico ferroviario**



**Figura 32 Modello di carico LM71**

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	67 di 325

$H_d \approx 1.75\text{m}$

$L_{net} = 11.80\text{m}$

$\Phi_1 = 1.1$

$\Phi_2 = [2.16 / (L_{clear}^{0.5} - 0.2)] + 0.73 = 1.40$

diffondere il carico del treno =  $80 \times 1.1 \times 1.40 \times 1 = 123 \text{ kN/m}$

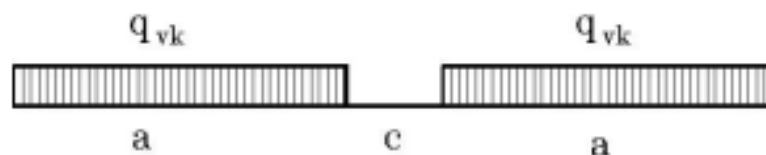
carico del treno singolo =  $250 \times 1.1 \times 1.40 \times 4 \times 1 = 1540 \text{ kN}$


$E_x = 5.90\text{m}$

$E_y = 1.6\text{m} \times 3 + 2 \times 1.75\text{m} = 8.3\text{m}$

$A = 5.90 \times 8.3 = 49.0\text{m}^2$

Carico LM71  $\rightarrow W_{trn}(\text{doppio}) = 2 \times (1540 / 49.0) = 63.00 \text{ kN/m}^2$



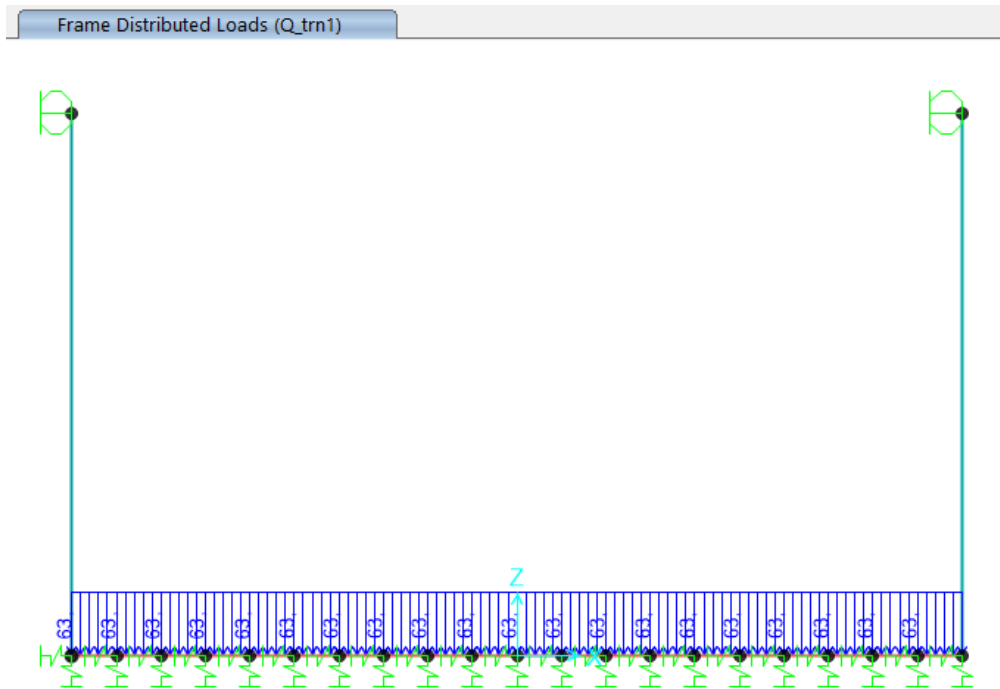
 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

Tipo di Carico	$q_{vk}$ [kN/m]	a [m]	c [m]
SW/0	133	15,0	5,3
SW/2	150	25,0	7,0

**Figura 33** Modello di carico SW

$E = 5.90m$

Carico SW → diffondere il carico del treno =  $2 \times (150 / 5.90) = 50.85 \text{ kN/m}^2$

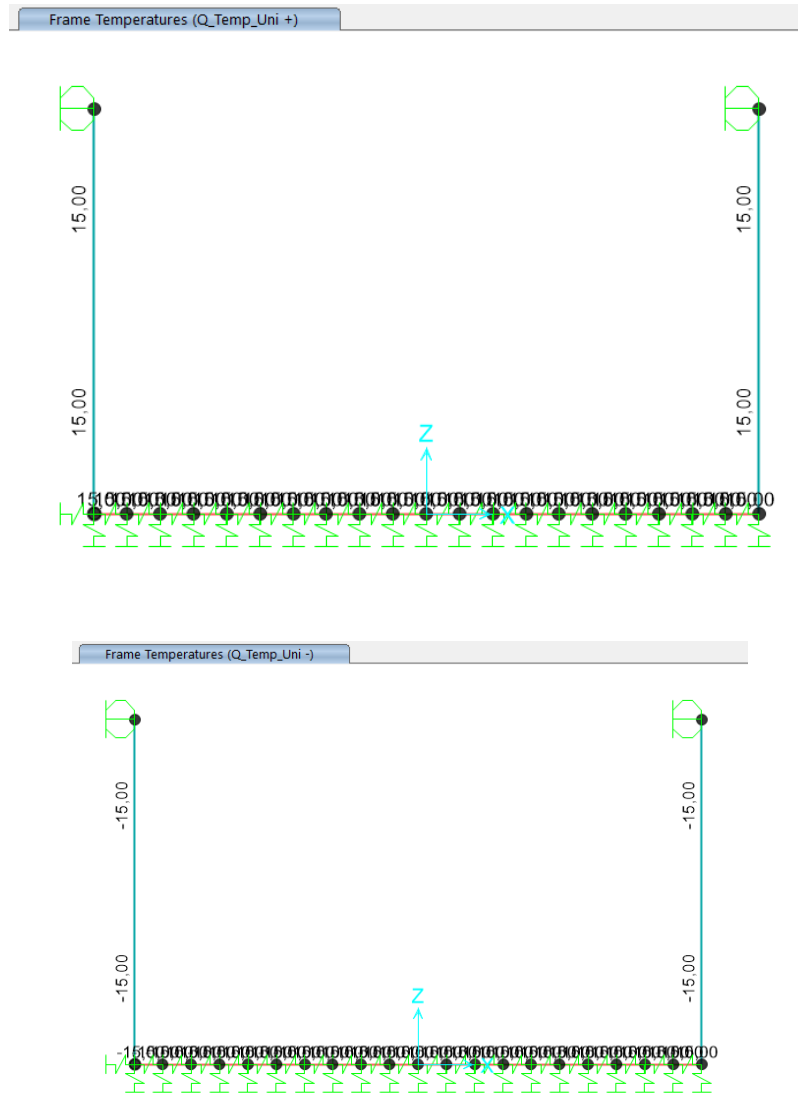


**Figura 34** Qtrn1 – Carico del treno sfalsato

#### 10.2.1.1.3.1 Azioni termiche uniformi (TU)



Si considera una variazione termica uniforme  $\Delta T = 15.0^{\circ}\text{C}$  sugli elementi della struttura in elevazione, adottando per il coefficiente di dilatazione termica un valore  $\alpha = 10 \times 10^{-6}$ .



**Figura 35 Q\_Temp\_Uni +/-: Forza termiche uniformi**

#### 10.2.1.1.3.2 Azioni termiche differenziali (TF)

Si considera una variazione termica differenziale  $\Delta T = 5.0^{\circ}\text{C}$  su tutti gli elementi della struttura in elevazione, adottando per il coefficiente di dilatazione termica un valore  $\alpha = 10 \times 10^{-6}$ .



PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	71 di 325

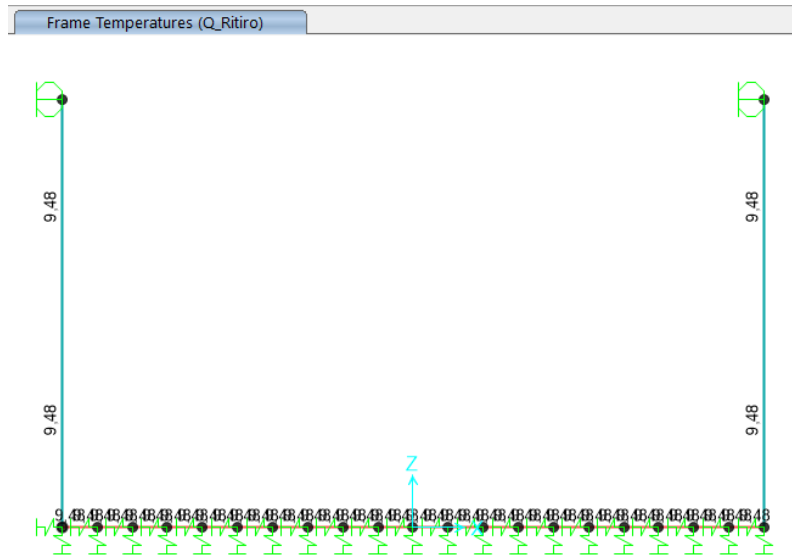
$j_0 = j_{RH} * \beta(f_{cm}) * \beta(t_0) =$		2.7236	nominal creep coefficient	
$j_{RH}$	1.2314		per $f_{cm} > 35$ Mpa	
$j_{RH}$			per $f_{cm} \leq 35$ Mpa	
RH	75	[%]		
$\beta(f_{cm})$	2.7619			
$\beta(t_0)$	0.8008			
h0	943.9461883	[mm]		
Ac	10000	[cm <sup>2</sup> ]		
u	400	[cm]		
$\beta_c(t, t_0)$	0.9835			
t	25550	[days]		
t <sub>0</sub>	2	[days]		
t-t <sub>0</sub>	25548	[days]		
$\beta_H$	1871.59		per $f_{cm} > 35$ Mpa	
$\beta_H$			per $f_{cm} \leq 35$ Mpa	
a <sub>1</sub>	0.9618			
a <sub>2</sub>	0.9889			
a <sub>3</sub>	0.9726			
f <sub>cm</sub>	37.00	[MPa]		
f <sub>ck</sub>	30.00	[MPa]		
<b>DEFORMAZIONE TOTALE DA RITIRO</b>				
$e_{cs} = e_{cd} + e_{ca} =$	0.000348751		deformazione totale da ritiro	
$e_{cd} =$	0.000298751		deformazione da ritiro per essiccamento	
$e_{ca} =$	5E-05		deformazione da ritiro autogeno	
<b>DEFORMAZIONE DA RITIRO PER ESSICCAMENTO</b>				
$e_{cd0} = k_h * e_{cd0}$	0.000312317			
$e_{cd0} =$	0.000446167		appendix B for $e_{cd0}$	
a <sub>ds1</sub>	6		CLS class R	
a <sub>ds2</sub>	0.11		CLS class R	
b <sub>RH</sub>	0.8961			
RH <sub>0</sub>	100	[%]		

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	72 di 325

$f_{cm0} =$	10	[MPa]		
$b_{ds}(t,ts) =$	0.956565134			
t	25550			
ts	2			
<b>DEFORMAZIONE DA RITIRO AUTOGENO</b>				
$b_{as}(t) =$	1			
t	25550			
$e_{ca}(\infty) =$	0.00005	coefficiente di dilatazione termica		
$\Delta T_{rit} =$	9.48			



**Figura 37 Q\_Ritiro**

#### 10.2.1.1.4 Permanenti portati:

##### 10.2.1.1.4.1 G3: Spinta laterale del acqua

L'impatto laterale dell'acqua ( $\gamma = 10 \text{ kN/m}^3$ ) nella vasca di sedazione. Il carico orizzontale dell'acqua aumenta con la profondità. Le situazioni più sfavorevoli sono considerate come vuoto e pieno d'acqua.

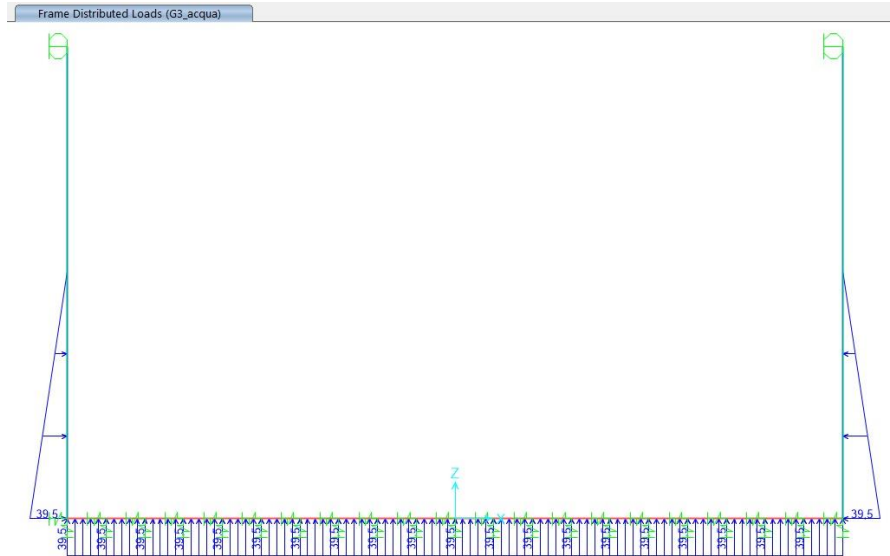
$$H_w \times \gamma_w = 3.95\text{m} \times 10\text{kN/m}^3 = 39.5 \text{ kN/m}^2$$

**PROGETTO DEFINITIVO**


**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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IP00	00	D26CL	GA0700001	B	73 di 325
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**Figura 38 G3 Acqua\_H\_X+ e Sollevamento dell'acqua e forza laterale**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	74 di 325								

### 10.2.1.1.5 Azioni sismiche

In condizioni sismiche, il rispetto degli stati limite si considera conseguito quando:

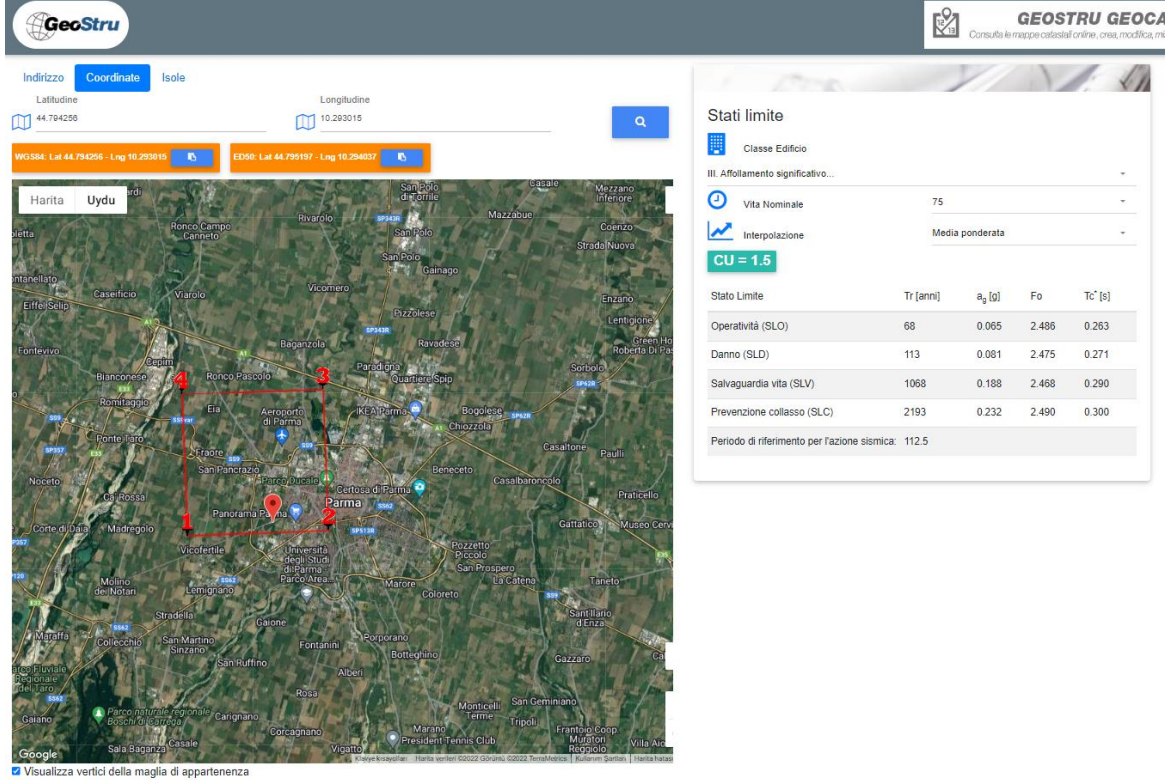
- nei confronti degli stati limite di esercizio siano rispettate le verifiche relative allo Stato Limite di Danno;
- nei confronti degli stati limite ultimi siano rispettate le verifiche relative allo Stato Limite di salvaguardia della Vita.

Gli stati limite, sia di esercizio sia ultimi, sono individuati riferendosi alle prestazioni che l'opera a realizzarsi deve assolvere durante un evento sismico; nel caso di specie per la funzione che l'opera deve espletare nella sua vita utile, è significativo calcolare lo Stato Limite di Danno (SLD) per l'esercizio e lo Stato Limite di Salvaguardia della Vita (SLV) per lo stato limite ultimo.

Per la definizione dell'azione sismica si assumono i seguenti parametri di base:

- Categoria di suolo: C
- Categoria topografica: T1
- Vita nominale: VN = 75 anni;
- Classe d'uso : III;
- Coeff. d'uso:  $c_u = 1.5$
- Periodo di riferimento per l'azione sismica:  $VR = VN \times c_u = 112,5$  anni

I parametri che definiscono l'azione sismica, calcolati mediante il documento excel Spettri-NTC.ver.1.0.3.xls fornito dal Consiglio Superiore dei Lavori Pubblici, vengono di seguito riportati:



**GeoStru**   **GEOSTRU GEOCA**  
Consulta le mappe catastali online, crea, modifica, mis

Indirizzo   Coordinate   Isole

Latitudine   Longitudine

44.794256   10.293015

WGS84: Lat 44.794256 - Long 10.293015   ED50: Lat 44.793197 - Long 10.294837

Harita   Uydu

**Stati limite**

Classe Edificio

III. Affollamento significativo...

Vita Nominale   75

Interpolazione   Media ponderata

**CU = 1.5**

Stato Limite	Tr [anni]	a <sub>g</sub> [g]	F <sub>o</sub>	T <sub>c</sub> [s]
Operatività (SLO)	68	0.065	2.486	0.263
Danno (SLD)	113	0.081	2.475	0.271
Salvaguardia vita (SLV)	1068	0.188	2.468	0.290
Prevenzione collasso (SLC)	2193	0.232	2.490	0.300

Periodo di riferimento per l'azione sismica: 112.5

Visualizza vertici della maglia di appartenenza

**Coefficienti sismici**

Tipo   Muri di sostegno NTC 2018

Muri di sostegno che non sono in grado di subire spostamenti.

H (m)   us (m)

1   0.1

Cat. Sottosuolo   C

Cat. Topografica   T1

	SLO	SLD	SLV	SLC
SS Amplificazione stratigrafica	1,50	1,50	1,42	1,35
CC Coeff. funz categoria	1,63	1,62	1,58	1,56
ST Amplificazione topografica	1,00	1,00	1,00	1,00

Acc.ne massima attesa al sito [m/s<sup>2</sup>]   0.6


Coefficienti	SLO	SLD	SLV	SLC
kh	0.098	0.121	0.267	0.314
kv	0.049	0.061	0.133	0.157
Amax [m/s <sup>2</sup> ]	0.957	1.188	2.615	3.076
Beta	1.000	1.000	1.000	1.000

ESPORTA IN TXT   SALVA SU GEOGRAPHIX

PDF   SPETTRI

Carica file



 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>76 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	76 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	76 di 325								

Per il calcolo in condizioni sismiche si utilizza il metodo dell'analisi pseudostatica in cui l'azione sismica è rappresentata da una forza statica equivalente pari al prodotto delle forze di gravità per un opportuno coefficiente sismico  $k$ . Le forze sismiche sono pertanto:

- Forza sismica orizzontale  $F_h = k_h W$
- Forza sismica verticale  $F_v = k_v W$

I valori dei coefficienti sismici orizzontali  $k_h$  e verticale  $k_v$  sono posti pari all'accelerazione massima degli spettri di progetto relativi allo stato limite considerato (SLV, SLD).

$a_{max} = S \cdot a_g = (S_S \cdot S_T) \cdot a_g$	<p><b>Tab. 7.11.I – Coefficienti di riduzione dell'accelerazione massima attesa al sito</b></p>	$k_h = \beta_s \cdot \frac{a_{max}}{g}$ $k_v = \pm 0,5 \cdot k_h$								
	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Categoria di sottosuolo</th> </tr> <tr> <th>A</th> <th>B, C, D, E</th> </tr> </thead> <tbody> <tr> <td></td> <td><math>\beta_s</math></td> <td><math>\beta_s</math></td> </tr> </tbody> </table>			Categoria di sottosuolo		A	B, C, D, E		$\beta_s$	$\beta_s$
				Categoria di sottosuolo						
			A	B, C, D, E						
	$\beta_s$	$\beta_s$								
<table border="1"> <tr> <td><math>0,2 &lt; a_g (g) \leq 0,4</math></td> <td>0,30</td> <td>0,28</td> </tr> </table>	$0,2 < a_g (g) \leq 0,4$	0,30	0,28							
$0,2 < a_g (g) \leq 0,4$	0,30	0,28								
<table border="1"> <tr> <td><math>0,1 &lt; a_g (g) \leq 0,2</math></td> <td>0,27</td> <td>0,24</td> </tr> </table>	$0,1 < a_g (g) \leq 0,2$	0,27	0,24							
$0,1 < a_g (g) \leq 0,2$	0,27	0,24								
<table border="1"> <tr> <td><math>a_g (g) \leq 0,1</math></td> <td>0,20</td> <td>0,20</td> </tr> </table>	$a_g (g) \leq 0,1$	0,20	0,20							
$a_g (g) \leq 0,1$	0,20	0,20								
<p>Muri di sostegno che non sono in grado di subire spostamenti: <math>\beta_s=1.0</math></p>										


Stato limite	$k_h$	$k_v$
SLD	0.143	0.068
SLV	0.294	0.147
sld / slv	0.500	0.476

**Tabella 9 – Coefficienti sismici**

Gli effetti dell'azione sismica sono valutati tenendo conto delle masse associate ai seguenti carichi gravitazionali:

$$G1 + G2 + \psi_2 Q_k$$

I carichi gravitazionali coinvolti dall'azione sismica sono:

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>77 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	77 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	77 di 325								

10.2.1.1.5.1 Carichi Sismici

Le forze d'inerzia orizzontali relative allo SLV sono applicate come fattore di gravità.

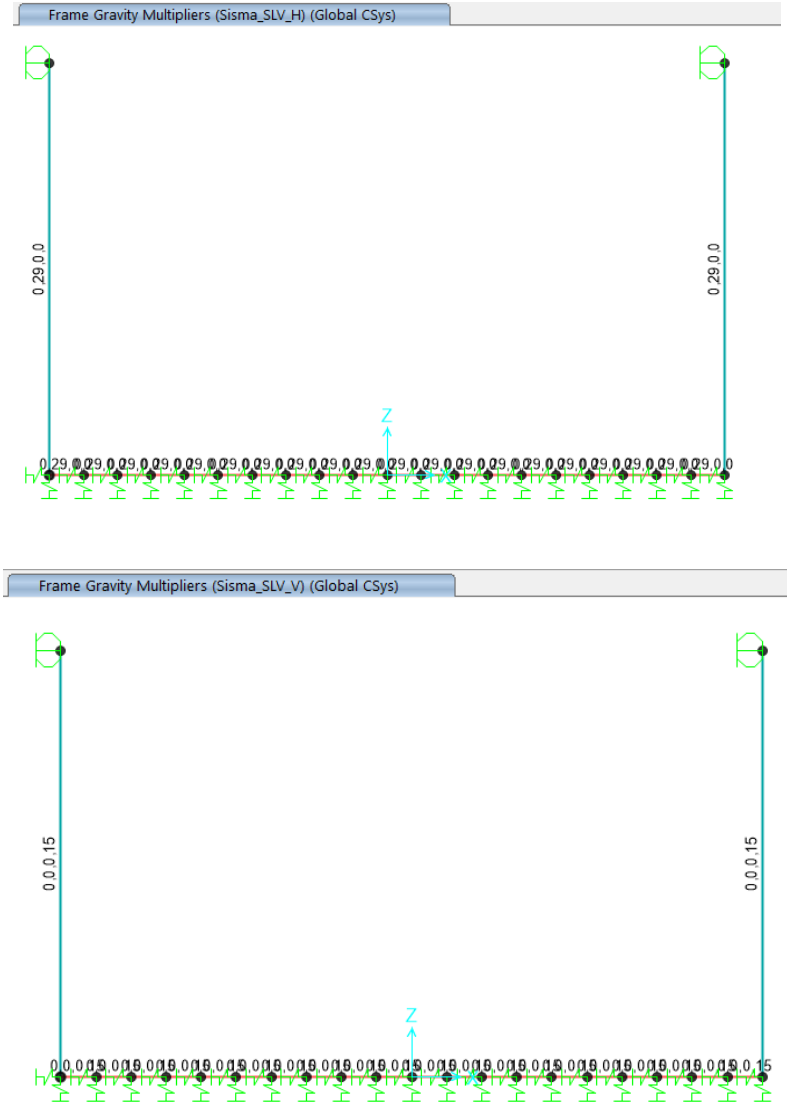



Figura 39 Sisma SLV\_H e Sisma SLV\_V – Forze inerziali orizzontali

 GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b>  <b>TRATTA PARMA - VICOFERTILE</b>												
<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>78 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	78 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	78 di 325								

### 10.2.1.2 Verifica al martellamento

Tutte le strutture che costituiscono la galleria artificiale sono posizionate in continuità tra le parti. Il giunto strutturale presente tra i singoli tratti è un giunto necessario per consentire il ritiro della struttura ma non permette spostamenti relativi tra le due strutture contigue. Di fatto tale giunto garantisce per i due tratti un comportamento indipendente solo trasversalmente. Dal punto di vista longitudinale, infatti, vista l'enorme rigidità strutturale in tale direzione, gli spostamenti relativi possono essere trascurati.

Per tali ragioni le verifiche al martellamento possono ritenersi soddisfatte.

### 10.2.1.3 Verifiche SLD e SLO

Con riferimento alle verifiche allo Stato Limite di Danno ed allo Stato Limite di Operatività (SLD e SLO) si mette in evidenza che sono verifiche di deformabilità relativa (verifiche sugli spostamenti relativi di interpiano). Nel caso in esame, le strutture sono interamente interrato e in caso di sisma subiscono un moto traslazionale di tipo rigido, con spostamenti di interpiano quindi trascurabili. Pertanto, le verifiche SLD e SLO non sono significative e non vengono riportate e si ritengono implicitamente verificate.

### 10.2.1.4 COMBINAZIONI DI CARICO

Le combinazioni di carico, considerate ai fini delle verifiche, sono stabilite in modo da garantire la sicurezza in conformità a quanto prescritto nei capitoli 2 e 5 del DM 17/01/2018.


Gli stati limite ultimi analizzati si riferiscono al raggiungimento della resistenza degli elementi strutturali che compongono l'opera ed allo sviluppo di meccanismi di collasso determinati dalla mobilitazione della resistenza del terreno.

Le verifiche agli stati limite ultimi devono essere eseguiti in riferimento ai seguenti stati limite:

- SLU di tipo geotecnico (GEO)
  - collasso per carico limite dell'insieme fondazione-terreno;
- SLU di tipo strutturale (STR)
  - raggiungimento della resistenza negli elementi strutturali.

Le verifiche della fondazione possono essere condotte secondo l'approccio progettuale "Approccio 1", utilizzando i coefficienti parziali riportati nelle Tabelle 6.2.I e 5.1.V delle NTC per i parametri geotecnici e le azioni.

– combinazione 1 → (A1+M1+R1) → generalmente dimensionante per STR

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

- combinazione 2 → (A2+M2+R2) → generalmente dimensionante per GEO (carico limite)

**Tab. 5.2.V - Coefficienti parziali di sicurezza per le combinazioni di carico agli SLU**

Coefficiente			EQU <sup>(1)</sup>	A1	A2
Azioni permanenti	favorevoli	YG1	0,90	1,00	1,00
	sfavorevoli		1,10	1,35	1,00
Azioni permanenti non strutturali <sup>(2)</sup>	favorevoli	YG2	0,00	0,00	0,00
	sfavorevoli		1,50	1,50	1,30
Ballast <sup>(3)</sup>	favorevoli	YB	0,90	1,00	1,00
	sfavorevoli		1,50	1,50	1,30
Azioni variabili da traffico <sup>(4)</sup>	favorevoli	YQ	0,00	0,00	0,00
	sfavorevoli		1,45	1,45	1,25
Azioni variabili	favorevoli	YQi	0,00	0,00	0,00
	sfavorevoli		1,50	1,50	1,30
Precompressione	favorevole	YP	0,90	1,00	1,00
	sfavorevole		1,00 <sup>(5)</sup>	1,00 <sup>(6)</sup>	1,00
Ritiro, viscosità e cedimenti non imposti appositamente	favorevole	YCe	0,00	0,00	0,00
	sfavorevole	d	1,20	1,20	1,00


<sup>(1)</sup> Equilibrio che non coinvolga i parametri di deformabilità e resistenza del terreno; altrimenti si applicano i valori della colonna A2.

**Tab. 5.2.VI - Coefficienti di combinazione  $\Psi$  delle azioni**

Azioni		$\Psi_0$	$\Psi_1$	$\Psi_2$
Azioni singole	Carico sul rilevato a tergo delle spalle	0,80	0,50	0,0
da traffico	Azioni aerodinamiche generate dal transito dei convogli	0,80	0,50	0,0
	$g^r_1$	0,80 <sup>(2)</sup>	0,80 <sup>(2)</sup>	0,0
Gruppi di	$g^r_2$	0,80 <sup>(2)</sup>	0,80 <sup>(2)</sup>	-
carico	$g^r_3$	0,80 <sup>(2)</sup>	0,80 <sup>(2)</sup>	0,0
	$g^r_4$	1,00	1,00 <sup>(2)</sup>	0,0
Azioni del vento	$F_{Wk}$	0,60	0,50	0,0
Azioni da neve	in fase di esecuzione SLU e SLE	0,80 0,0	0,0 0,0	0,0 0,0
Azioni termiche	$T_k$	0,60	0,60	0,50

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

<sup>(2)</sup> Quando come azione di base venga assunta quella del vento, i coefficienti  $\Psi_0$  relativi ai gruppi di carico delle azioni da traffico vanno assunti pari a 0,0.

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

Tab. 5.2.VII - Ulteriori coefficienti di combinazione  $\psi$  delle azioni

	Azioni	$\psi_0$	$\psi_1$	$\psi_2$
Azioni singole da traffico	Treno di carico LM 71	0,80 <sup>(3)</sup>	<sup>(1)</sup>	0,0
	Treno di carico SW /0	0,80 <sup>(3)</sup>	0,80	0,0
	Treno di carico SW/2	0,00 <sup>(3)</sup>	0,80	0,0
	Treno scarico	1,00 <sup>(3)</sup>	-	-
	Centrifuga	<sup>(2)</sup> <sup>(3)</sup>	<sup>(2)</sup>	<sup>(2)</sup>
	Azione laterale (serpeggio)	1,00 <sup>(3)</sup>	0,80	0,0

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

<sup>(2)</sup> Si usano gli stessi coefficienti  $\psi$  adottati per i carichi che provocano dette azioni.

<sup>(3)</sup> Quando come azione di base venga assunta quella del vento, i coefficienti  $\psi_0$  relativi ai gruppi di carico delle azioni da traffico vanno assunti pari a 0,0.

Tab. 5.2.III - Carichi mobili in funzione del numero di binari presenti sul ponte

Numero di binari	Binari Carichi	Traffico normale		Traffico pesante <sup>(2)</sup>
		caso a <sup>(1)</sup>	caso b <sup>(1)</sup>	
1	Primo	1,0 (LM 71"+SW/0)	-	1,0 SW/2
	Primo	1,0 (LM 71"+SW/0)	-	1,0 SW/2
2	secondo	1,0 (LM 71"+SW/0)	-	1,0 (LM 71"+SW/0)
	Primo	1,0 (LM 71"+SW/0)	0,75 (LM 71"+SW/0)	1,0 SW/2
≥3	secondo	1,0 (LM 71"+SW/0)	0,75 (LM 71"+SW/0)	1,0 (LM 71"+SW/0)
	Altri	-	0,75 (LM 71"+SW/0)	-

<sup>(1)</sup> LM71 "+ SW/0 significa considerare il più sfavorevole fra i treni LM 71, SW/0

<sup>(2)</sup> Salvo i casi in cui sia esplicitamente escluso


Figura 40 Estretto NTC2018\_treni

Ai fini delle verifiche degli stati limite ultimi si definiscono le seguenti combinazioni:

$$\text{STR}) \Rightarrow \gamma_{G1} \cdot G1 + \gamma_{G2} \cdot G2 + \gamma_{Q1} \cdot Q_{k1} + \sum_i \psi_{0i} \cdot Q_{ki} \Rightarrow (\Phi_d = \Phi_k)$$

$$\text{GEO}) \Rightarrow \gamma_{G1} \cdot G1 + \gamma_{G2} \cdot G2 + \gamma_{Q1} \cdot Q_{k1} + \sum_i \psi_{0i} \cdot Q_{ki} \Rightarrow (\text{spinte } \Phi_d = \tan^{-1}(\tan \Phi_k / \gamma_\Phi))$$

Ai fini delle verifiche degli stati limite di esercizio si definiscono le seguenti combinazioni:

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV</td> <td>FOGLIO</td> </tr> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>81 di 325</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	81 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	81 di 325								

Rara)  $\Rightarrow G1+G2 + Q_{k1} + \sum_i \psi_{0i} \cdot Q_{ki}$  controllo tensioni cls / acc

Frequente)  $\Rightarrow G1+G2 + \psi_{11} \cdot Q_{k1} + \sum_i \psi_{2i} \cdot Q_{ki}$  controllo apertura fessure

Quasi permanente)  $\Rightarrow G1+G2 + \psi_{21} \cdot Q_{k1} + \sum_i \psi_{2i} \cdot Q_{ki}$  controllo tensioni cls

Per la condizione sismica, le combinazioni per gli stati limite da prendere in considerazione sono le seguenti:

STR)  $\Rightarrow E+G1+G2+\sum_i \psi_{2i} \cdot Q_{ki} \Rightarrow (\Phi_d = \Phi_k)$

GEO)  $\Rightarrow E+G1+G2+\sum_i \psi_{2i} \cdot Q_{ki} \Rightarrow (\text{spinte } \Phi_d = \tan^{-1}(\tan \Phi_k / \gamma_\Phi))$

Gli effetti dell'azione sismica saranno valutati tenendo conto delle masse associate ai seguenti carichi gravitazionali:

$$G1+G2+\sum_i \psi_{2i} \cdot Q_{ki}$$

I valori del coefficiente  $\psi_{2i}$  sono quelli riportati nella tabella 2.5.I della norma; la stessa propone nel caso di ponti, di assumere per i carichi dovuti al transito dei mezzi  $\psi_{2i} = 0.2$  solo quando rilevanti.

Nel caso in esame si è posto  $\Psi_2 = 0$ .

Le condizioni elementari di carico, riportate nella tabella sottostante, sono state combinate in modo da determinare gli effetti più gravosi per la struttura.

TABLE: Load Pattern Definitions	
LoadPat	DesignType
Text	Text
G1_DEAD	Dead
Q_Temp_Uni +	Temperature
Q_Temp_Uni -	Temperature
Q_Temp_Farfalla +	Temperature
Q_Temp_Farfalla -	Temperature
Q_Ritiro	Temperature
Sisma_SLD_H	Quake
Sisma_SLD_V	Quake
Sisma_SLV_V	Quake
Sisma_SLV_H	Quake
G2_Sovraccarico permanente	Dead
G2_Ballast	Dead
Q_trn1	Live

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	82 di 325

G3_SP.dx_Spinta destra	Super Dead
G3_SP.sx_Spinta sinistra	Super Dead
G3_P.cop_Spinta verticale	Super Dead
G3_acqua	Super Dead
Q_SQ.sx	Live
Q_SQ.dx	Live
Q_lak	Live
Q_lbk	Live
SLVi_H	Quake
SLVc_H	Quake

**Tabella 10 - Condizioni elementari di carico definite nel modello di calcolo**

TABLE: COMBINATIONS					
ComboName	CaseName	ScaleFactor	ComboName	CaseName	ScaleFactor
SLU-STR-01	G1_DEAD	1.35	SLEF-10	G1_DEAD	1
SLU-STR-01	G2_Ballast	1.5	SLEF-10	G2_Ballast	1
SLU-STR-01	G2_Sovraccarico permanente	1.5	SLEF-10	G2_Sovraccarico permanente	1
SLU-STR-01	G3_acqua	1.5	SLEF-10	G3_acqua	1
SLU-STR-01	G3_Pcop_Spinta verticale	1.5	SLEF-10	G3_Pcop_Spinta verticale	1
SLU-STR-01	G3_SP.dx_Spinta destra	1.5	SLEF-10	G3_SP.dx_Spinta destra	1
SLU-STR-01	G3_SP.sx_Spinta sinistra	1.5	SLEF-10	G3_SP.sx_Spinta sinistra	1
SLU-STR-01	Q_lak	1.45	SLEF-10	Q_lak	0
SLU-STR-01	Q_lbk	0	SLEF-10	Q_lbk	0.6
SLU-STR-01	Q_Ritiro	0.72	SLEF-10	Q_Ritiro	0
SLU-STR-01	Q_SQ.dx	1.5	SLEF-10	Q_SQ.dx	0.6
SLU-STR-01	Q_SQ.sx	1.5	SLEF-10	Q_SQ.sx	0.6
SLU-STR-01	Q_Temp_Farfalla -	0	SLEF-10	Q_Temp_Farfalla -	0.6
SLU-STR-01	Q_Temp_Farfalla +	0.72	SLEF-10	Q_Temp_Farfalla +	0
SLU-STR-01	Q_Temp_Uni -	0	SLEF-10	Q_Temp_Uni -	0.6
SLU-STR-01	Q_Temp_Uni +	0.72	SLEF-10	Q_Temp_Uni +	0
SLU-STR-01	Q_trn1	1.45	SLEF-10	Q_trn1	1
SLU-STR-01	Sisma_SLV_H	0	SLEF-10	Sisma_SLV_H	0
SLU-STR-01	Sisma_SLV_V	0	SLEF-10	Sisma_SLV_V	0
SLU-STR-01	SLVc_H	0	SLEF-10	SLVc_H	0
SLU-STR-01	SLVi_H	0	SLEF-10	SLVi_H	0
SLU-STR-02	G1_DEAD	1.35	SLEF-11	G1_DEAD	1
SLU-STR-02	G2_Ballast	1.5	SLEF-11	G2_Ballast	1
SLU-STR-02	G2_Sovraccarico permanente	1.5	SLEF-11	G2_Sovraccarico permanente	1
SLU-STR-02	G3_acqua	1.5	SLEF-11	G3_acqua	0
SLU-STR-02	G3_Pcop_Spinta verticale	1.5	SLEF-11	G3_Pcop_Spinta verticale	1
SLU-STR-02	G3_SP.dx_Spinta destra	1.5	SLEF-11	G3_SP.dx_Spinta destra	1
SLU-STR-02	G3_SP.sx_Spinta sinistra	1.5	SLEF-11	G3_SP.sx_Spinta sinistra	1

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

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SLU-STR-02	Q_lak	0	SLEF-11	Q_lak	0.6
SLU-STR-02	Q_lbk	1.45	SLEF-11	Q_lbk	0
SLU-STR-02	Q_Ritiro	0.72	SLEF-11	Q_Ritiro	0
SLU-STR-02	Q_SQ.dx	1.5	SLEF-11	Q_SQ.dx	0.6
SLU-STR-02	Q_SQ.sx	1.5	SLEF-11	Q_SQ.sx	1
SLU-STR-02	Q_Temp_Farfalla -	0	SLEF-11	Q_Temp_Farfalla -	0.6
SLU-STR-02	Q_Temp_Farfalla +	0.72	SLEF-11	Q_Temp_Farfalla +	0
SLU-STR-02	Q_Temp_Uni -	0	SLEF-11	Q_Temp_Uni -	0.6
SLU-STR-02	Q_Temp_Uni +	0.72	SLEF-11	Q_Temp_Uni +	0
SLU-STR-02	Q_trn1	1.45	SLEF-11	Q_trn1	0.6
SLU-STR-02	Sisma_SLV_H	0	SLEF-11	Sisma_SLV_H	0
SLU-STR-02	Sisma_SLV_V	0	SLEF-11	Sisma_SLV_V	0
SLU-STR-02	SLVc_H	0	SLEF-11	SLVc_H	0
SLU-STR-02	SLVi_H	0	SLEF-11	SLVi_H	0
SLU-STR-03	G1_DEAD	1.35	SLEF-12	G1_DEAD	1
SLU-STR-03	G2_Ballast	1.5	SLEF-12	G2_Ballast	1
SLU-STR-03	G2_Sovraccarico permanente	1.5	SLEF-12	G2_Sovraccarico permanente	1
SLU-STR-03	G3_acqua	0	SLEF-12	G3_acqua	0
SLU-STR-03	G3_Pcop_Spinta verticale	1.5	SLEF-12	G3_Pcop_Spinta verticale	1
SLU-STR-03	G3_SP.dx_Spinta destra	1.5	SLEF-12	G3_SP.dx_Spinta destra	1
SLU-STR-03	G3_SP.sx_Spinta sinistra	1.5	SLEF-12	G3_SP.sx_Spinta sinistra	1
SLU-STR-03	Q_lak	1.45	SLEF-12	Q_lak	0
SLU-STR-03	Q_lbk	0	SLEF-12	Q_lbk	0.6
SLU-STR-03	Q_Ritiro	0.72	SLEF-12	Q_Ritiro	0.6
SLU-STR-03	Q_SQ.dx	1.5	SLEF-12	Q_SQ.dx	0.6
SLU-STR-03	Q_SQ.sx	1.5	SLEF-12	Q_SQ.sx	0.6
SLU-STR-03	Q_Temp_Farfalla -	0	SLEF-12	Q_Temp_Farfalla -	0.6
SLU-STR-03	Q_Temp_Farfalla +	0.72	SLEF-12	Q_Temp_Farfalla +	0
SLU-STR-03	Q_Temp_Uni -	0	SLEF-12	Q_Temp_Uni -	0.6
SLU-STR-03	Q_Temp_Uni +	0.72	SLEF-12	Q_Temp_Uni +	0
SLU-STR-03	Q_trn1	1.45	SLEF-12	Q_trn1	1
SLU-STR-03	Sisma_SLV_H	0	SLEF-12	Sisma_SLV_H	0
SLU-STR-03	Sisma_SLV_V	0	SLEF-12	Sisma_SLV_V	0
SLU-STR-03	SLVc_H	0	SLEF-12	SLVc_H	0
SLU-STR-03	SLVi_H	0	SLEF-12	SLVi_H	0
SLU-STR-04	G1_DEAD	1.35	SLEF-13	G1_DEAD	1
SLU-STR-04	G2_Ballast	1.5	SLEF-13	G2_Ballast	1
SLU-STR-04	G2_Sovraccarico permanente	1.5	SLEF-13	G2_Sovraccarico permanente	1
SLU-STR-04	G3_acqua	0	SLEF-13	G3_acqua	1
SLU-STR-04	G3_Pcop_Spinta verticale	1.5	SLEF-13	G3_Pcop_Spinta verticale	1
SLU-STR-04	G3_SP.dx_Spinta destra	1.5	SLEF-13	G3_SP.dx_Spinta destra	1
SLU-STR-04	G3_SP.sx_Spinta sinistra	1.5	SLEF-13	G3_SP.sx_Spinta sinistra	1
SLU-STR-04	Q_lak	0	SLEF-13	Q_lak	0.6
SLU-STR-04	Q_lbk	1.45	SLEF-13	Q_lbk	0
SLU-STR-04	Q_Ritiro	0.72	SLEF-13	Q_Ritiro	0
SLU-STR-04	Q_SQ.dx	1.5	SLEF-13	Q_SQ.dx	0.6
SLU-STR-04	Q_SQ.sx	1.5	SLEF-13	Q_SQ.sx	0.6
SLU-STR-04	Q_Temp_Farfalla -	0	SLEF-13	Q_Temp_Farfalla -	0.6
SLU-STR-04	Q_Temp_Farfalla +	0.72	SLEF-13	Q_Temp_Farfalla +	0



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SLU-STR-04	Q_Temp_Uni -	0	SLEF-13	Q_Temp_Uni -	0.6
SLU-STR-04	Q_Temp_Uni +	0.72	SLEF-13	Q_Temp_Uni +	0
SLU-STR-04	Q_trn1	1.45	SLEF-13	Q_trn1	0.6
SLU-STR-04	Sisma_SLV_H	0	SLEF-13	Sisma_SLV_H	0
SLU-STR-04	Sisma_SLV_V	0	SLEF-13	Sisma_SLV_V	0
SLU-STR-04	SLVc_H	0	SLEF-13	SLVc_H	0
SLU-STR-04	SLVi_H	0	SLEF-13	SLVi_H	0
SLU-STR-05	G1_DEAD	1.35	SLEF-14	G1_DEAD	1
SLU-STR-05	G2_Ballast	1.5	SLEF-14	G2_Ballast	1
SLU-STR-05	G2_Sovraccarico permanente	1.5	SLEF-14	G2_Sovraccarico permanente	1
SLU-STR-05	G3_acqua	1.5	SLEF-14	G3_acqua	1
SLU-STR-05	G3_Pcop_Spinta verticale	1.5	SLEF-14	G3_Pcop_Spinta verticale	1
SLU-STR-05	G3_SP.dx_Spinta destra	1.5	SLEF-14	G3_SP.dx_Spinta destra	1
SLU-STR-05	G3_SP.sx_Spinta sinistra	1.5	SLEF-14	G3_SP.sx_Spinta sinistra	1
SLU-STR-05	Q_lak	1.16	SLEF-14	Q_lak	0
SLU-STR-05	Q_lbk	0	SLEF-14	Q_lbk	0.6
SLU-STR-05	Q_Ritiro	1.2	SLEF-14	Q_Ritiro	0
SLU-STR-05	Q_SQ.dx	1.16	SLEF-14	Q_SQ.dx	0.6
SLU-STR-05	Q_SQ.sx	1.16	SLEF-14	Q_SQ.sx	0.6
SLU-STR-05	Q_Temp_Farfalla -	0	SLEF-14	Q_Temp_Farfalla -	0.6
SLU-STR-05	Q_Temp_Farfalla +	1.2	SLEF-14	Q_Temp_Farfalla +	0
SLU-STR-05	Q_Temp_Uni -	0	SLEF-14	Q_Temp_Uni -	0.6
SLU-STR-05	Q_Temp_Uni +	1.2	SLEF-14	Q_Temp_Uni +	0
SLU-STR-05	Q_trn1	1.16	SLEF-14	Q_trn1	0.6
SLU-STR-05	Sisma_SLV_H	0	SLEF-14	Sisma_SLV_H	0
SLU-STR-05	Sisma_SLV_V	0	SLEF-14	Sisma_SLV_V	0
SLU-STR-05	SLVc_H	0	SLEF-14	SLVc_H	0
SLU-STR-05	SLVi_H	0	SLEF-14	SLVi_H	0
SLU-STR-06	G1_DEAD	1.35	SLEF-15	G1_DEAD	1
SLU-STR-06	G2_Ballast	1.5	SLEF-15	G2_Ballast	1
SLU-STR-06	G2_Sovraccarico permanente	1.5	SLEF-15	G2_Sovraccarico permanente	1
SLU-STR-06	G3_acqua	1.5	SLEF-15	G3_acqua	0
SLU-STR-06	G3_Pcop_Spinta verticale	1.5	SLEF-15	G3_Pcop_Spinta verticale	1
SLU-STR-06	G3_SP.dx_Spinta destra	1.5	SLEF-15	G3_SP.dx_Spinta destra	1
SLU-STR-06	G3_SP.sx_Spinta sinistra	1.5	SLEF-15	G3_SP.sx_Spinta sinistra	1
SLU-STR-06	Q_lak	0	SLEF-15	Q_lak	0.6
SLU-STR-06	Q_lbk	1.16	SLEF-15	Q_lbk	0
SLU-STR-06	Q_Ritiro	1.2	SLEF-15	Q_Ritiro	0
SLU-STR-06	Q_SQ.dx	1.16	SLEF-15	Q_SQ.dx	0.6
SLU-STR-06	Q_SQ.sx	1.16	SLEF-15	Q_SQ.sx	0.6
SLU-STR-06	Q_Temp_Farfalla -	0	SLEF-15	Q_Temp_Farfalla -	0.6
SLU-STR-06	Q_Temp_Farfalla +	1.2	SLEF-15	Q_Temp_Farfalla +	0
SLU-STR-06	Q_Temp_Uni -	0	SLEF-15	Q_Temp_Uni -	0.6
SLU-STR-06	Q_Temp_Uni +	1.2	SLEF-15	Q_Temp_Uni +	0
SLU-STR-06	Q_trn1	1.16	SLEF-15	Q_trn1	0.6
SLU-STR-06	Sisma_SLV_H	0	SLEF-15	Sisma_SLV_H	0
SLU-STR-06	Sisma_SLV_V	0	SLEF-15	Sisma_SLV_V	0
SLU-STR-06	SLVc_H	0	SLEF-15	SLVc_H	0
SLU-STR-06	SLVi_H	0	SLEF-15	SLVi_H	0

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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	85 di 325

SLU-STR-07	G1_DEAD	1.35	SLEF-16	G1_DEAD	1
SLU-STR-07	G2_Ballast	1.5	SLEF-16	G2_Ballast	1
SLU-STR-07	G2_Sovraccarico permanente	1.5	SLEF-16	G2_Sovraccarico permanente	1
SLU-STR-07	G3_acqua	0	SLEF-16	G3_acqua	0
SLU-STR-07	G3_Pcop_Spinta verticale	1.5	SLEF-16	G3_Pcop_Spinta verticale	1
SLU-STR-07	G3_SP.dx_Spinta destra	1.5	SLEF-16	G3_SP.dx_Spinta destra	1
SLU-STR-07	G3_SP.sx_Spinta sinistra	1.5	SLEF-16	G3_SP.sx_Spinta sinistra	1
SLU-STR-07	Q_lak	1.16	SLEF-16	Q_lak	0
SLU-STR-07	Q_lbk	0	SLEF-16	Q_lbk	0.6
SLU-STR-07	Q_Ritiro	1.2	SLEF-16	Q_Ritiro	0
SLU-STR-07	Q_SQ.dx	1.16	SLEF-16	Q_SQ.dx	0.6
SLU-STR-07	Q_SQ.sx	1.16	SLEF-16	Q_SQ.sx	0.6
SLU-STR-07	Q_Temp_Farfalla -	0	SLEF-16	Q_Temp_Farfalla -	0.6
SLU-STR-07	Q_Temp_Farfalla +	1.2	SLEF-16	Q_Temp_Farfalla +	0
SLU-STR-07	Q_Temp_Uni -	0	SLEF-16	Q_Temp_Uni -	0.6
SLU-STR-07	Q_Temp_Uni +	1.2	SLEF-16	Q_Temp_Uni +	0
SLU-STR-07	Q_trn1	1.16	SLEF-16	Q_trn1	0.6
SLU-STR-07	Sisma_SLV_H	0	SLEF-16	Sisma_SLV_H	0
SLU-STR-07	Sisma_SLV_V	0	SLEF-16	Sisma_SLV_V	0
SLU-STR-07	SLVc_H	0	SLEF-16	SLVc_H	0
SLU-STR-07	SLVi_H	0	SLEF-16	SLVi_H	0
SLU-STR-08	G1_DEAD	1.35	SLEQP-01	G1_DEAD	1
SLU-STR-08	G2_Ballast	1.5	SLEQP-01	G2_Ballast	1
SLU-STR-08	G2_Sovraccarico permanente	1.5	SLEQP-01	G2_Sovraccarico permanente	1
SLU-STR-08	G3_acqua	0	SLEQP-01	G3_acqua	1
SLU-STR-08	G3_Pcop_Spinta verticale	1.5	SLEQP-01	G3_Pcop_Spinta verticale	1
SLU-STR-08	G3_SP.dx_Spinta destra	1.5	SLEQP-01	G3_SP.dx_Spinta destra	1
SLU-STR-08	G3_SP.sx_Spinta sinistra	1.5	SLEQP-01	G3_SP.sx_Spinta sinistra	1
SLU-STR-08	Q_lak	0	SLEQP-01	Q_lak	0
SLU-STR-08	Q_lbk	1.16	SLEQP-01	Q_lbk	0
SLU-STR-08	Q_Ritiro	1.2	SLEQP-01	Q_Ritiro	0.5
SLU-STR-08	Q_SQ.dx	1.16	SLEQP-01	Q_SQ.dx	0
SLU-STR-08	Q_SQ.sx	1.16	SLEQP-01	Q_SQ.sx	0
SLU-STR-08	Q_Temp_Farfalla -	0	SLEQP-01	Q_Temp_Farfalla -	0
SLU-STR-08	Q_Temp_Farfalla +	1.2	SLEQP-01	Q_Temp_Farfalla +	0.5
SLU-STR-08	Q_Temp_Uni -	0	SLEQP-01	Q_Temp_Uni -	0
SLU-STR-08	Q_Temp_Uni +	1.2	SLEQP-01	Q_Temp_Uni +	0.5
SLU-STR-08	Q_trn1	1.16	SLEQP-01	Q_trn1	0
SLU-STR-08	Sisma_SLV_H	0	SLEQP-01	Sisma_SLV_H	0
SLU-STR-08	Sisma_SLV_V	0	SLEQP-01	Sisma_SLV_V	0
SLU-STR-08	SLVc_H	0	SLEQP-01	SLVc_H	0
SLU-STR-08	SLVi_H	0	SLEQP-01	SLVi_H	0
SLU-STR-09	G1_DEAD	1.35	SLEQP-02	G1_DEAD	1
SLU-STR-09	G2_Ballast	1.5	SLEQP-02	G2_Ballast	1
SLU-STR-09	G2_Sovraccarico permanente	1.5	SLEQP-02	G2_Sovraccarico permanente	1
SLU-STR-09	G3_acqua	1.5	SLEQP-02	G3_acqua	1
SLU-STR-09	G3_Pcop_Spinta verticale	1.5	SLEQP-02	G3_Pcop_Spinta verticale	1
SLU-STR-09	G3_SP.dx_Spinta destra	1.5	SLEQP-02	G3_SP.dx_Spinta destra	1
SLU-STR-09	G3_SP.sx_Spinta sinistra	1.5	SLEQP-02	G3_SP.sx_Spinta sinistra	1

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SLU-STR-09	Q_lak	1.45	SLEQP-02	Q_lak	0
SLU-STR-09	Q_lbk	0	SLEQP-02	Q_lbk	0
SLU-STR-09	Q_Ritiro	0	SLEQP-02	Q_Ritiro	0.5
SLU-STR-09	Q_SQ.dx	1.5	SLEQP-02	Q_SQ.dx	0
SLU-STR-09	Q_SQ.sx	1.5	SLEQP-02	Q_SQ.sx	0
SLU-STR-09	Q_Temp_Farfalla -	0.72	SLEQP-02	Q_Temp_Farfalla -	0.5
SLU-STR-09	Q_Temp_Farfalla +	0	SLEQP-02	Q_Temp_Farfalla +	0
SLU-STR-09	Q_Temp_Uni -	0.72	SLEQP-02	Q_Temp_Uni -	0.5
SLU-STR-09	Q_Temp_Uni +	0	SLEQP-02	Q_Temp_Uni +	0
SLU-STR-09	Q_trn1	1.45	SLEQP-02	Q_trn1	0
SLU-STR-09	Sisma_SLV_H	0	SLEQP-02	Sisma_SLV_H	0
SLU-STR-09	Sisma_SLV_V	0	SLEQP-02	Sisma_SLV_V	0
SLU-STR-09	SLVc_H	0	SLEQP-02	SLVc_H	0
SLU-STR-09	SLVi_H	0	SLEQP-02	SLVi_H	0
SLU-STR-10	G1_DEAD	1.35	SLEQP-03	G1_DEAD	1
SLU-STR-10	G2_Ballast	1.5	SLEQP-03	G2_Ballast	1
SLU-STR-10	G2_Sovraccarico permanente	1.5	SLEQP-03	G2_Sovraccarico permanente	1
SLU-STR-10	G3_acqua	1.5	SLEQP-03	G3_acqua	0
SLU-STR-10	G3_Pcop_Spinta verticale	1.5	SLEQP-03	G3_Pcop_Spinta verticale	1
SLU-STR-10	G3_SP.dx_Spinta destra	1.5	SLEQP-03	G3_SP.dx_Spinta destra	1
SLU-STR-10	G3_SP.sx_Spinta sinistra	1.5	SLEQP-03	G3_SP.sx_Spinta sinistra	1
SLU-STR-10	Q_lak	0	SLEQP-03	Q_lak	0
SLU-STR-10	Q_lbk	1.45	SLEQP-03	Q_lbk	0
SLU-STR-10	Q_Ritiro	0	SLEQP-03	Q_Ritiro	0
SLU-STR-10	Q_SQ.dx	1.5	SLEQP-03	Q_SQ.dx	0
SLU-STR-10	Q_SQ.sx	1.5	SLEQP-03	Q_SQ.sx	0
SLU-STR-10	Q_Temp_Farfalla -	0.72	SLEQP-03	Q_Temp_Farfalla -	0
SLU-STR-10	Q_Temp_Farfalla +	0	SLEQP-03	Q_Temp_Farfalla +	0.5
SLU-STR-10	Q_Temp_Uni -	0.72	SLEQP-03	Q_Temp_Uni -	0
SLU-STR-10	Q_Temp_Uni +	0	SLEQP-03	Q_Temp_Uni +	0.5
SLU-STR-10	Q_trn1	1.45	SLEQP-03	Q_trn1	0
SLU-STR-10	Sisma_SLV_H	0	SLEQP-03	Sisma_SLV_H	0
SLU-STR-10	Sisma_SLV_V	0	SLEQP-03	Sisma_SLV_V	0
SLU-STR-10	SLVc_H	0	SLEQP-03	SLVc_H	0
SLU-STR-10	SLVi_H	0	SLEQP-03	SLVi_H	0
SLU-STR-11	G1_DEAD	1.35	SLEQP-04	G1_DEAD	1
SLU-STR-11	G2_Ballast	1.5	SLEQP-04	G2_Ballast	1
SLU-STR-11	G2_Sovraccarico permanente	1.5	SLEQP-04	G2_Sovraccarico permanente	1
SLU-STR-11	G3_acqua	0	SLEQP-04	G3_acqua	0
SLU-STR-11	G3_Pcop_Spinta verticale	1.5	SLEQP-04	G3_Pcop_Spinta verticale	1
SLU-STR-11	G3_SP.dx_Spinta destra	1.5	SLEQP-04	G3_SP.dx_Spinta destra	1
SLU-STR-11	G3_SP.sx_Spinta sinistra	1.5	SLEQP-04	G3_SP.sx_Spinta sinistra	1
SLU-STR-11	Q_lak	1.45	SLEQP-04	Q_lak	0
SLU-STR-11	Q_lbk	0	SLEQP-04	Q_lbk	0
SLU-STR-11	Q_Ritiro	0	SLEQP-04	Q_Ritiro	0
SLU-STR-11	Q_SQ.dx	1.5	SLEQP-04	Q_SQ.dx	0
SLU-STR-11	Q_SQ.sx	1.5	SLEQP-04	Q_SQ.sx	0
SLU-STR-11	Q_Temp_Farfalla -	0.72	SLEQP-04	Q_Temp_Farfalla -	0.5
SLU-STR-11	Q_Temp_Farfalla +	0	SLEQP-04	Q_Temp_Farfalla +	0

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SLU-STR-11	Q_Temp_Uni -	0.72	SLEQP-04	Q_Temp_Uni -	0.5
SLU-STR-11	Q_Temp_Uni +	0	SLEQP-04	Q_Temp_Uni +	0
SLU-STR-11	Q_trn1	1.45	SLEQP-04	Q_trn1	0
SLU-STR-11	Sisma_SLV_H	0	SLEQP-04	Sisma_SLV_H	0
SLU-STR-11	Sisma_SLV_V	0	SLEQP-04	Sisma_SLV_V	0
SLU-STR-11	SLVc_H	0	SLEQP-04	SLVc_H	0
SLU-STR-11	SLVi_H	0	SLEQP-04	SLVi_H	0
SLU-STR-12	G1_DEAD	1.35	SLU-GEO-01	G1_DEAD	1
SLU-STR-12	G2_Ballast	1.5	SLU-GEO-01	G2_Ballast	1.3
SLU-STR-12	G2_Sovraccarico permanente	1.5	SLU-GEO-01	G2_Sovraccarico permanente	1.3
SLU-STR-12	G3_acqua	0	SLU-GEO-01	G3_acqua	1.3
SLU-STR-12	G3_Pcop_Spinta verticale	1.5	SLU-GEO-01	G3_Pcop_Spinta verticale	1.3
SLU-STR-12	G3_SP.dx_Spinta destra	1.5	SLU-GEO-01	G3_SP.dx_Spinta destra	1.3
SLU-STR-12	G3_SP.sx_Spinta sinistra	1.5	SLU-GEO-01	G3_SP.sx_Spinta sinistra	1.3
SLU-STR-12	Q_lak	0	SLU-GEO-01	Q_lak	1.25
SLU-STR-12	Q_lbk	1.45	SLU-GEO-01	Q_lbk	0
SLU-STR-12	Q_Ritiro	0.72	SLU-GEO-01	Q_Ritiro	0.72
SLU-STR-12	Q_SQ.dx	1.5	SLU-GEO-01	Q_SQ.dx	1.3
SLU-STR-12	Q_SQ.sx	1.5	SLU-GEO-01	Q_SQ.sx	1.3
SLU-STR-12	Q_Temp_Farfalla -	0.72	SLU-GEO-01	Q_Temp_Farfalla -	0
SLU-STR-12	Q_Temp_Farfalla +	0	SLU-GEO-01	Q_Temp_Farfalla +	0.72
SLU-STR-12	Q_Temp_Uni -	0.72	SLU-GEO-01	Q_Temp_Uni -	0
SLU-STR-12	Q_Temp_Uni +	0	SLU-GEO-01	Q_Temp_Uni +	0.72
SLU-STR-12	Q_trn1	1.45	SLU-GEO-01	Q_trn1	1.25
SLU-STR-12	Sisma_SLV_H	0	SLU-GEO-01	Sisma_SLV_H	0
SLU-STR-12	Sisma_SLV_V	0	SLU-GEO-01	Sisma_SLV_V	0
SLU-STR-12	SLVc_H	0	SLU-GEO-01	SLVc_H	0
SLU-STR-12	SLVi_H	0	SLU-GEO-01	SLVi_H	0
SLU-STR-13	G1_DEAD	1.35	SLU-GEO-02	G1_DEAD	1
SLU-STR-13	G2_Ballast	1.5	SLU-GEO-02	G2_Ballast	1.3
SLU-STR-13	G2_Sovraccarico permanente	1.5	SLU-GEO-02	G2_Sovraccarico permanente	1.3
SLU-STR-13	G3_acqua	1.5	SLU-GEO-02	G3_acqua	1.3
SLU-STR-13	G3_Pcop_Spinta verticale	1.5	SLU-GEO-02	G3_Pcop_Spinta verticale	1.3
SLU-STR-13	G3_SP.dx_Spinta destra	1.5	SLU-GEO-02	G3_SP.dx_Spinta destra	1.3
SLU-STR-13	G3_SP.sx_Spinta sinistra	1.5	SLU-GEO-02	G3_SP.sx_Spinta sinistra	1.3
SLU-STR-13	Q_lak	1.16	SLU-GEO-02	Q_lak	0
SLU-STR-13	Q_lbk	0	SLU-GEO-02	Q_lbk	1.25
SLU-STR-13	Q_Ritiro	0	SLU-GEO-02	Q_Ritiro	0.72
SLU-STR-13	Q_SQ.dx	1.16	SLU-GEO-02	Q_SQ.dx	1.3
SLU-STR-13	Q_SQ.sx	1.16	SLU-GEO-02	Q_SQ.sx	1.3
SLU-STR-13	Q_Temp_Farfalla -	1.2	SLU-GEO-02	Q_Temp_Farfalla -	0
SLU-STR-13	Q_Temp_Farfalla +	0	SLU-GEO-02	Q_Temp_Farfalla +	0.72
SLU-STR-13	Q_Temp_Uni -	1.2	SLU-GEO-02	Q_Temp_Uni -	0
SLU-STR-13	Q_Temp_Uni +	0	SLU-GEO-02	Q_Temp_Uni +	0.72
SLU-STR-13	Q_trn1	1.16	SLU-GEO-02	Q_trn1	1.25
SLU-STR-13	Sisma_SLV_H	0	SLU-GEO-02	Sisma_SLV_H	0
SLU-STR-13	Sisma_SLV_V	0	SLU-GEO-02	Sisma_SLV_V	0
SLU-STR-13	SLVc_H	0	SLU-GEO-02	SLVc_H	0
SLU-STR-13	SLVi_H	0	SLU-GEO-02	SLVi_H	0

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SLU-STR-14	G1_DEAD	1.35	SLU-GEO-03	G1_DEAD	1
SLU-STR-14	G2_Ballast	1.5	SLU-GEO-03	G2_Ballast	1.3
SLU-STR-14	G2_Sovraccarico permanente	1.5	SLU-GEO-03	G2_Sovraccarico permanente	1.3
SLU-STR-14	G3_acqua	1.5	SLU-GEO-03	G3_acqua	0
SLU-STR-14	G3_Pcop_Spinta verticale	1.5	SLU-GEO-03	G3_Pcop_Spinta verticale	1.3
SLU-STR-14	G3_SP.dx_Spinta destra	1.5	SLU-GEO-03	G3_SP.dx_Spinta destra	1.3
SLU-STR-14	G3_SP.sx_Spinta sinistra	1.5	SLU-GEO-03	G3_SP.sx_Spinta sinistra	1.3
SLU-STR-14	Q_lak	0	SLU-GEO-03	Q_lak	1.25
SLU-STR-14	Q_lbk	1.16	SLU-GEO-03	Q_lbk	0
SLU-STR-14	Q_Ritiro	0	SLU-GEO-03	Q_Ritiro	0.72
SLU-STR-14	Q_SQ.dx	1.16	SLU-GEO-03	Q_SQ.dx	1.3
SLU-STR-14	Q_SQ.sx	1.16	SLU-GEO-03	Q_SQ.sx	1.3
SLU-STR-14	Q_Temp_Farfalla -	1.2	SLU-GEO-03	Q_Temp_Farfalla -	0
SLU-STR-14	Q_Temp_Farfalla +	0	SLU-GEO-03	Q_Temp_Farfalla +	0.72
SLU-STR-14	Q_Temp_Uni -	1.2	SLU-GEO-03	Q_Temp_Uni -	0
SLU-STR-14	Q_Temp_Uni +	0	SLU-GEO-03	Q_Temp_Uni +	0.72
SLU-STR-14	Q_trn1	1.16	SLU-GEO-03	Q_trn1	1.25
SLU-STR-14	Sisma_SLV_H	0	SLU-GEO-03	Sisma_SLV_H	0
SLU-STR-14	Sisma_SLV_V	0	SLU-GEO-03	Sisma_SLV_V	0
SLU-STR-14	SLVc_H	0	SLU-GEO-03	SLVc_H	0
SLU-STR-14	SLVi_H	0	SLU-GEO-03	SLVi_H	0
SLU-STR-15	G1_DEAD	1.35	SLU-GEO-04	G1_DEAD	1
SLU-STR-15	G2_Ballast	1.5	SLU-GEO-04	G2_Ballast	1.3
SLU-STR-15	G2_Sovraccarico permanente	1.5	SLU-GEO-04	G2_Sovraccarico permanente	1.3
SLU-STR-15	G3_acqua	0	SLU-GEO-04	G3_acqua	0
SLU-STR-15	G3_Pcop_Spinta verticale	1.5	SLU-GEO-04	G3_Pcop_Spinta verticale	1.3
SLU-STR-15	G3_SP.dx_Spinta destra	1.5	SLU-GEO-04	G3_SP.dx_Spinta destra	1.3
SLU-STR-15	G3_SP.sx_Spinta sinistra	1.5	SLU-GEO-04	G3_SP.sx_Spinta sinistra	1.3
SLU-STR-15	Q_lak	1.16	SLU-GEO-04	Q_lak	0
SLU-STR-15	Q_lbk	0	SLU-GEO-04	Q_lbk	1.25
SLU-STR-15	Q_Ritiro	0	SLU-GEO-04	Q_Ritiro	0.72
SLU-STR-15	Q_SQ.dx	1.16	SLU-GEO-04	Q_SQ.dx	1.3
SLU-STR-15	Q_SQ.sx	1.16	SLU-GEO-04	Q_SQ.sx	1.3
SLU-STR-15	Q_Temp_Farfalla -	1.2	SLU-GEO-04	Q_Temp_Farfalla -	0
SLU-STR-15	Q_Temp_Farfalla +	0	SLU-GEO-04	Q_Temp_Farfalla +	0.72
SLU-STR-15	Q_Temp_Uni -	1.2	SLU-GEO-04	Q_Temp_Uni -	0
SLU-STR-15	Q_Temp_Uni +	0	SLU-GEO-04	Q_Temp_Uni +	0.72
SLU-STR-15	Q_trn1	1.16	SLU-GEO-04	Q_trn1	1.25
SLU-STR-15	Sisma_SLV_H	0	SLU-GEO-04	Sisma_SLV_H	0
SLU-STR-15	Sisma_SLV_V	0	SLU-GEO-04	Sisma_SLV_V	0
SLU-STR-15	SLVc_H	0	SLU-GEO-04	SLVc_H	0
SLU-STR-15	SLVi_H	0	SLU-GEO-04	SLVi_H	0
SLU-STR-16	G1_DEAD	1.35	SLU-GEO-05	G1_DEAD	1
SLU-STR-16	G2_Ballast	1.5	SLU-GEO-05	G2_Ballast	1.3
SLU-STR-16	G2_Sovraccarico permanente	1.5	SLU-GEO-05	G2_Sovraccarico permanente	1.3
SLU-STR-16	G3_acqua	0	SLU-GEO-05	G3_acqua	1.3
SLU-STR-16	G3_Pcop_Spinta verticale	1.5	SLU-GEO-05	G3_Pcop_Spinta verticale	1.3
SLU-STR-16	G3_SP.dx_Spinta destra	1.5	SLU-GEO-05	G3_SP.dx_Spinta destra	1.3
SLU-STR-16	G3_SP.sx_Spinta sinistra	1.5	SLU-GEO-05	G3_SP.sx_Spinta sinistra	1.3

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SLU-STR-16	Q_lak	0	SLU-GEO-05	Q_lak	1.16
SLU-STR-16	Q_lbk	1.16	SLU-GEO-05	Q_lbk	0
SLU-STR-16	Q_Ritiro	0	SLU-GEO-05	Q_Ritiro	1.2
SLU-STR-16	Q_SQ.dx	1.16	SLU-GEO-05	Q_SQ.dx	1.16
SLU-STR-16	Q_SQ.sx	1.16	SLU-GEO-05	Q_SQ.sx	1.16
SLU-STR-16	Q_Temp_Farfalla -	1.2	SLU-GEO-05	Q_Temp_Farfalla -	0
SLU-STR-16	Q_Temp_Farfalla +	0	SLU-GEO-05	Q_Temp_Farfalla +	1.2
SLU-STR-16	Q_Temp_Uni -	1.2	SLU-GEO-05	Q_Temp_Uni -	0
SLU-STR-16	Q_Temp_Uni +	0	SLU-GEO-05	Q_Temp_Uni +	1.2
SLU-STR-16	Q_trn1	1.16	SLU-GEO-05	Q_trn1	1.16
SLU-STR-16	Sisma_SLV_H	0	SLU-GEO-05	Sisma_SLV_H	0
SLU-STR-16	Sisma_SLV_V	0	SLU-GEO-05	Sisma_SLV_V	0
SLU-STR-16	SLVc_H	0	SLU-GEO-05	SLVc_H	0
SLU-STR-16	SLVi_H	0	SLU-GEO-05	SLVi_H	0
SLEC-01	G1_DEAD	1	SLU-GEO-06	G1_DEAD	1
SLEC-01	G2_Ballast	1	SLU-GEO-06	G2_Ballast	1.3
SLEC-01	G2_Sovraccarico permanente	1	SLU-GEO-06	G2_Sovraccarico permanente	1.3
SLEC-01	G3_acqua	1	SLU-GEO-06	G3_acqua	1.3
SLEC-01	G3_Pcop_Spinta verticale	1	SLU-GEO-06	G3_Pcop_Spinta verticale	1.3
SLEC-01	G3_SP.dx_Spinta destra	1	SLU-GEO-06	G3_SP.dx_Spinta destra	1.3
SLEC-01	G3_SP.sx_Spinta sinistra	1	SLU-GEO-06	G3_SP.sx_Spinta sinistra	1.3
SLEC-01	Q_lak	1	SLU-GEO-06	Q_lak	0
SLEC-01	Q_lbk	0	SLU-GEO-06	Q_lbk	1.16
SLEC-01	Q_Ritiro	0.72	SLU-GEO-06	Q_Ritiro	1.2
SLEC-01	Q_SQ.dx	1	SLU-GEO-06	Q_SQ.dx	1.16
SLEC-01	Q_SQ.sx	1	SLU-GEO-06	Q_SQ.sx	1.16
SLEC-01	Q_Temp_Farfalla -	0	SLU-GEO-06	Q_Temp_Farfalla -	0
SLEC-01	Q_Temp_Farfalla +	0.72	SLU-GEO-06	Q_Temp_Farfalla +	1.2
SLEC-01	Q_Temp_Uni -	0	SLU-GEO-06	Q_Temp_Uni -	0
SLEC-01	Q_Temp_Uni +	0.72	SLU-GEO-06	Q_Temp_Uni +	1.2
SLEC-01	Q_trn1	1	SLU-GEO-06	Q_trn1	1.16
SLEC-01	Sisma_SLV_H	0	SLU-GEO-06	Sisma_SLV_H	0
SLEC-01	Sisma_SLV_V	0	SLU-GEO-06	Sisma_SLV_V	0
SLEC-01	SLVc_H	0	SLU-GEO-06	SLVc_H	0
SLEC-01	SLVi_H	0	SLU-GEO-06	SLVi_H	0
SLEC-02	G1_DEAD	1	SLU-GEO-07	G1_DEAD	1
SLEC-02	G2_Ballast	1	SLU-GEO-07	G2_Ballast	1.3
SLEC-02	G2_Sovraccarico permanente	1	SLU-GEO-07	G2_Sovraccarico permanente	1.3
SLEC-02	G3_acqua	1	SLU-GEO-07	G3_acqua	0
SLEC-02	G3_Pcop_Spinta verticale	1	SLU-GEO-07	G3_Pcop_Spinta verticale	1.3
SLEC-02	G3_SP.dx_Spinta destra	1	SLU-GEO-07	G3_SP.dx_Spinta destra	1.3
SLEC-02	G3_SP.sx_Spinta sinistra	1	SLU-GEO-07	G3_SP.sx_Spinta sinistra	1.3
SLEC-02	Q_lak	0	SLU-GEO-07	Q_lak	1.16
SLEC-02	Q_lbk	1	SLU-GEO-07	Q_lbk	0
SLEC-02	Q_Ritiro	0.72	SLU-GEO-07	Q_Ritiro	1.2
SLEC-02	Q_SQ.dx	1	SLU-GEO-07	Q_SQ.dx	1.16
SLEC-02	Q_SQ.sx	1	SLU-GEO-07	Q_SQ.sx	1.16
SLEC-02	Q_Temp_Farfalla -	0	SLU-GEO-07	Q_Temp_Farfalla -	0
SLEC-02	Q_Temp_Farfalla +	0.72	SLU-GEO-07	Q_Temp_Farfalla +	1.2

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SLEC-02	Q_Temp_Uni -	0	SLU-GEO-07	Q_Temp_Uni -	0
SLEC-02	Q_Temp_Uni +	0.72	SLU-GEO-07	Q_Temp_Uni +	1.2
SLEC-02	Q_trn1	1	SLU-GEO-07	Q_trn1	1.16
SLEC-02	Sisma_SLV_H	0	SLU-GEO-07	Sisma_SLV_H	0
SLEC-02	Sisma_SLV_V	0	SLU-GEO-07	Sisma_SLV_V	0
SLEC-02	SLVc_H	0	SLU-GEO-07	SLVc_H	0
SLEC-02	SLVi_H	0	SLU-GEO-07	SLVi_H	0
SLEC-03	G1_DEAD	1	SLU-GEO-08	G1_DEAD	1
SLEC-03	G2_Ballast	1	SLU-GEO-08	G2_Ballast	1.3
SLEC-03	G2_Sovraccarico permanente	1	SLU-GEO-08	G2_Sovraccarico permanente	1.3
SLEC-03	G3_acqua	0	SLU-GEO-08	G3_acqua	0
SLEC-03	G3_Pcop_Spinta verticale	1	SLU-GEO-08	G3_Pcop_Spinta verticale	1.3
SLEC-03	G3_SP.dx_Spinta destra	1	SLU-GEO-08	G3_SP.dx_Spinta destra	1.3
SLEC-03	G3_SP.sx_Spinta sinistra	1	SLU-GEO-08	G3_SP.sx_Spinta sinistra	1.3
SLEC-03	Q_lak	1	SLU-GEO-08	Q_lak	0
SLEC-03	Q_lbk	0	SLU-GEO-08	Q_lbk	1.16
SLEC-03	Q_Ritiro	0.72	SLU-GEO-08	Q_Ritiro	1.2
SLEC-03	Q_SQ.dx	1	SLU-GEO-08	Q_SQ.dx	1.16
SLEC-03	Q_SQ.sx	1	SLU-GEO-08	Q_SQ.sx	1.16
SLEC-03	Q_Temp_Farfalla -	0	SLU-GEO-08	Q_Temp_Farfalla -	0
SLEC-03	Q_Temp_Farfalla +	0.72	SLU-GEO-08	Q_Temp_Farfalla +	1.2
SLEC-03	Q_Temp_Uni -	0	SLU-GEO-08	Q_Temp_Uni -	0
SLEC-03	Q_Temp_Uni +	0.72	SLU-GEO-08	Q_Temp_Uni +	1.2
SLEC-03	Q_trn1	1	SLU-GEO-08	Q_trn1	1.16
SLEC-03	Sisma_SLV_H	0	SLU-GEO-08	Sisma_SLV_H	0
SLEC-03	Sisma_SLV_V	0	SLU-GEO-08	Sisma_SLV_V	0
SLEC-03	SLVc_H	0	SLU-GEO-08	SLVc_H	0
SLEC-03	SLVi_H	0	SLU-GEO-08	SLVi_H	0
SLEC-04	G1_DEAD	1	SLU-GEO-09	G1_DEAD	1
SLEC-04	G2_Ballast	1	SLU-GEO-09	G2_Ballast	1.3
SLEC-04	G2_Sovraccarico permanente	1	SLU-GEO-09	G2_Sovraccarico permanente	1.3
SLEC-04	G3_acqua	0	SLU-GEO-09	G3_acqua	1.3
SLEC-04	G3_Pcop_Spinta verticale	1	SLU-GEO-09	G3_Pcop_Spinta verticale	1.3
SLEC-04	G3_SP.dx_Spinta destra	1	SLU-GEO-09	G3_SP.dx_Spinta destra	1.3
SLEC-04	G3_SP.sx_Spinta sinistra	1	SLU-GEO-09	G3_SP.sx_Spinta sinistra	1.3
SLEC-04	Q_lak	0	SLU-GEO-09	Q_lak	1.25
SLEC-04	Q_lbk	1	SLU-GEO-09	Q_lbk	0
SLEC-04	Q_Ritiro	0.72	SLU-GEO-09	Q_Ritiro	0
SLEC-04	Q_SQ.dx	1	SLU-GEO-09	Q_SQ.dx	1.3
SLEC-04	Q_SQ.sx	1	SLU-GEO-09	Q_SQ.sx	1.3
SLEC-04	Q_Temp_Farfalla -	0	SLU-GEO-09	Q_Temp_Farfalla -	0.72
SLEC-04	Q_Temp_Farfalla +	0.72	SLU-GEO-09	Q_Temp_Farfalla +	0
SLEC-04	Q_Temp_Uni -	0	SLU-GEO-09	Q_Temp_Uni -	0.72
SLEC-04	Q_Temp_Uni +	0.72	SLU-GEO-09	Q_Temp_Uni +	0
SLEC-04	Q_trn1	1	SLU-GEO-09	Q_trn1	1.25
SLEC-04	Sisma_SLV_H	0	SLU-GEO-09	Sisma_SLV_H	0
SLEC-04	Sisma_SLV_V	0	SLU-GEO-09	Sisma_SLV_V	0
SLEC-04	SLVc_H	0	SLU-GEO-09	SLVc_H	0
SLEC-04	SLVi_H	0	SLU-GEO-09	SLVi_H	0

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SLEC-05	G1_DEAD	1	SLU-GEO-10	G1_DEAD	1
SLEC-05	G2_Ballast	1	SLU-GEO-10	G2_Ballast	1.3
SLEC-05	G2_Sovraccarico permanente	1	SLU-GEO-10	G2_Sovraccarico permanente	1.3
SLEC-05	G3_acqua	1	SLU-GEO-10	G3_acqua	1.3
SLEC-05	G3_Pcop_Spinta verticale	1	SLU-GEO-10	G3_Pcop_Spinta verticale	1.3
SLEC-05	G3_SP.dx_Spinta destra	1	SLU-GEO-10	G3_SP.dx_Spinta destra	1.3
SLEC-05	G3_SP.sx_Spinta sinistra	1	SLU-GEO-10	G3_SP.sx_Spinta sinistra	1.3
SLEC-05	Q_lak	0.8	SLU-GEO-10	Q_lak	0
SLEC-05	Q_lbk	0	SLU-GEO-10	Q_lbk	1.25
SLEC-05	Q_Ritiro	1.2	SLU-GEO-10	Q_Ritiro	0
SLEC-05	Q_SQ.dx	0.8	SLU-GEO-10	Q_SQ.dx	1.3
SLEC-05	Q_SQ.sx	0.8	SLU-GEO-10	Q_SQ.sx	1.3
SLEC-05	Q_Temp_Farfalla -	0	SLU-GEO-10	Q_Temp_Farfalla -	0.72
SLEC-05	Q_Temp_Farfalla +	1.2	SLU-GEO-10	Q_Temp_Farfalla +	0
SLEC-05	Q_Temp_Uni -	0	SLU-GEO-10	Q_Temp_Uni -	0.72
SLEC-05	Q_Temp_Uni +	1.2	SLU-GEO-10	Q_Temp_Uni +	0
SLEC-05	Q_trn1	0.8	SLU-GEO-10	Q_trn1	1.25
SLEC-05	Sisma_SLV_H	0	SLU-GEO-10	Sisma_SLV_H	0
SLEC-05	Sisma_SLV_V	0	SLU-GEO-10	Sisma_SLV_V	0
SLEC-05	SLVc_H	0	SLU-GEO-10	SLVc_H	0
SLEC-05	SLVi_H	0	SLU-GEO-10	SLVi_H	0
SLEC-06	G1_DEAD	1	SLU-GEO-11	G1_DEAD	1
SLEC-06	G2_Ballast	1	SLU-GEO-11	G2_Ballast	1.3
SLEC-06	G2_Sovraccarico permanente	1	SLU-GEO-11	G2_Sovraccarico permanente	1.3
SLEC-06	G3_acqua	1	SLU-GEO-11	G3_acqua	0
SLEC-06	G3_Pcop_Spinta verticale	1	SLU-GEO-11	G3_Pcop_Spinta verticale	1.3
SLEC-06	G3_SP.dx_Spinta destra	1	SLU-GEO-11	G3_SP.dx_Spinta destra	1.3
SLEC-06	G3_SP.sx_Spinta sinistra	1	SLU-GEO-11	G3_SP.sx_Spinta sinistra	1.3
SLEC-06	Q_lak	0	SLU-GEO-11	Q_lak	1.25
SLEC-06	Q_lbk	0.8	SLU-GEO-11	Q_lbk	0
SLEC-06	Q_Ritiro	1.2	SLU-GEO-11	Q_Ritiro	0
SLEC-06	Q_SQ.dx	0.8	SLU-GEO-11	Q_SQ.dx	1.3
SLEC-06	Q_SQ.sx	0.8	SLU-GEO-11	Q_SQ.sx	1.3
SLEC-06	Q_Temp_Farfalla -	0	SLU-GEO-11	Q_Temp_Farfalla -	0.72
SLEC-06	Q_Temp_Farfalla +	1.2	SLU-GEO-11	Q_Temp_Farfalla +	0
SLEC-06	Q_Temp_Uni -	0	SLU-GEO-11	Q_Temp_Uni -	0.72
SLEC-06	Q_Temp_Uni +	1.2	SLU-GEO-11	Q_Temp_Uni +	0
SLEC-06	Q_trn1	0.8	SLU-GEO-11	Q_trn1	1.25
SLEC-06	Sisma_SLV_H	0	SLU-GEO-11	Sisma_SLV_H	0
SLEC-06	Sisma_SLV_V	0	SLU-GEO-11	Sisma_SLV_V	0
SLEC-06	SLVc_H	0	SLU-GEO-11	SLVc_H	0
SLEC-06	SLVi_H	0	SLU-GEO-11	SLVi_H	0
SLEC-07	G1_DEAD	1	SLU-GEO-12	G1_DEAD	1
SLEC-07	G2_Ballast	1	SLU-GEO-12	G2_Ballast	1.3
SLEC-07	G2_Sovraccarico permanente	1	SLU-GEO-12	G2_Sovraccarico permanente	1.3
SLEC-07	G3_acqua	0	SLU-GEO-12	G3_acqua	0
SLEC-07	G3_Pcop_Spinta verticale	1	SLU-GEO-12	G3_Pcop_Spinta verticale	1.3
SLEC-07	G3_SP.dx_Spinta destra	1	SLU-GEO-12	G3_SP.dx_Spinta destra	1.3
SLEC-07	G3_SP.sx_Spinta sinistra	1	SLU-GEO-12	G3_SP.sx_Spinta sinistra	1.3



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SLEC-07	Q_lak	0.8	SLU-GEO-12	Q_lak	0
SLEC-07	Q_lbk	0	SLU-GEO-12	Q_lbk	1.25
SLEC-07	Q_Ritiro	1.2	SLU-GEO-12	Q_Ritiro	0.72
SLEC-07	Q_SQ.dx	0.8	SLU-GEO-12	Q_SQ.dx	1.3
SLEC-07	Q_SQ.sx	0.8	SLU-GEO-12	Q_SQ.sx	1.3
SLEC-07	Q_Temp_Farfalla -	0	SLU-GEO-12	Q_Temp_Farfalla -	0.72
SLEC-07	Q_Temp_Farfalla +	1.2	SLU-GEO-12	Q_Temp_Farfalla +	0
SLEC-07	Q_Temp_Uni -	0	SLU-GEO-12	Q_Temp_Uni -	0.72
SLEC-07	Q_Temp_Uni +	1.2	SLU-GEO-12	Q_Temp_Uni +	0
SLEC-07	Q_trn1	0.8	SLU-GEO-12	Q_trn1	1.25
SLEC-07	Sisma_SLV_H	0	SLU-GEO-12	Sisma_SLV_H	0
SLEC-07	Sisma_SLV_V	0	SLU-GEO-12	Sisma_SLV_V	0
SLEC-07	SLVc_H	0	SLU-GEO-12	SLVc_H	0
SLEC-07	SLVi_H	0	SLU-GEO-12	SLVi_H	0
SLEC-08	G1_DEAD	1	SLU-GEO-13	G1_DEAD	1
SLEC-08	G2_Ballast	1	SLU-GEO-13	G2_Ballast	1.3
SLEC-08	G2_Sovraccarico permanente	1	SLU-GEO-13	G2_Sovraccarico permanente	1.3
SLEC-08	G3_acqua	0	SLU-GEO-13	G3_acqua	1.3
SLEC-08	G3_Pcop_Spinta verticale	1	SLU-GEO-13	G3_Pcop_Spinta verticale	1.3
SLEC-08	G3_SP.dx_Spinta destra	1	SLU-GEO-13	G3_SP.dx_Spinta destra	1.3
SLEC-08	G3_SP.sx_Spinta sinistra	1	SLU-GEO-13	G3_SP.sx_Spinta sinistra	1.3
SLEC-08	Q_lak	0	SLU-GEO-13	Q_lak	1.16
SLEC-08	Q_lbk	0.8	SLU-GEO-13	Q_lbk	0
SLEC-08	Q_Ritiro	1.2	SLU-GEO-13	Q_Ritiro	0
SLEC-08	Q_SQ.dx	0.8	SLU-GEO-13	Q_SQ.dx	1.16
SLEC-08	Q_SQ.sx	0.8	SLU-GEO-13	Q_SQ.sx	1.16
SLEC-08	Q_Temp_Farfalla -	0	SLU-GEO-13	Q_Temp_Farfalla -	1.2
SLEC-08	Q_Temp_Farfalla +	1.2	SLU-GEO-13	Q_Temp_Farfalla +	0
SLEC-08	Q_Temp_Uni -	0	SLU-GEO-13	Q_Temp_Uni -	1.2
SLEC-08	Q_Temp_Uni +	1.2	SLU-GEO-13	Q_Temp_Uni +	0
SLEC-08	Q_trn1	0.8	SLU-GEO-13	Q_trn1	1.16
SLEC-08	Sisma_SLV_H	0	SLU-GEO-13	Sisma_SLV_H	0
SLEC-08	Sisma_SLV_V	0	SLU-GEO-13	Sisma_SLV_V	0
SLEC-08	SLVc_H	0	SLU-GEO-13	SLVc_H	0
SLEC-08	SLVi_H	0	SLU-GEO-13	SLVi_H	0
SLEC-09	G1_DEAD	1	SLU-GEO-14	G1_DEAD	1
SLEC-09	G2_Ballast	1	SLU-GEO-14	G2_Ballast	1.3
SLEC-09	G2_Sovraccarico permanente	1	SLU-GEO-14	G2_Sovraccarico permanente	1.3
SLEC-09	G3_acqua	1	SLU-GEO-14	G3_acqua	1.3
SLEC-09	G3_Pcop_Spinta verticale	1	SLU-GEO-14	G3_Pcop_Spinta verticale	1.3
SLEC-09	G3_SP.dx_Spinta destra	1	SLU-GEO-14	G3_SP.dx_Spinta destra	1.3
SLEC-09	G3_SP.sx_Spinta sinistra	1	SLU-GEO-14	G3_SP.sx_Spinta sinistra	1.3
SLEC-09	Q_lak	1	SLU-GEO-14	Q_lak	0
SLEC-09	Q_lbk	0	SLU-GEO-14	Q_lbk	1.16
SLEC-09	Q_Ritiro	0	SLU-GEO-14	Q_Ritiro	0
SLEC-09	Q_SQ.dx	1	SLU-GEO-14	Q_SQ.dx	1.16
SLEC-09	Q_SQ.sx	1	SLU-GEO-14	Q_SQ.sx	1.16
SLEC-09	Q_Temp_Farfalla -	0.72	SLU-GEO-14	Q_Temp_Farfalla -	1.2
SLEC-09	Q_Temp_Farfalla +	0	SLU-GEO-14	Q_Temp_Farfalla +	0

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IP00	00	D26CL	GA0700001	B	93 di 325

SLEC-09	Q_Temp_Uni -	0.72	SLU-GEO-14	Q_Temp_Uni -	1.2
SLEC-09	Q_Temp_Uni +	0	SLU-GEO-14	Q_Temp_Uni +	0
SLEC-09	Q_trn1	1	SLU-GEO-14	Q_trn1	1.16
SLEC-09	Sisma_SLV_H	0	SLU-GEO-14	Sisma_SLV_H	0
SLEC-09	Sisma_SLV_V	0	SLU-GEO-14	Sisma_SLV_V	0
SLEC-09	SLVc_H	0	SLU-GEO-14	SLVc_H	0
SLEC-09	SLVi_H	0	SLU-GEO-14	SLVi_H	0
SLEC-10	G1_DEAD	1	SLU-GEO-15	G1_DEAD	1
SLEC-10	G2_Ballast	1	SLU-GEO-15	G2_Ballast	1.3
SLEC-10	G2_Sovraccarico permanente	1	SLU-GEO-15	G2_Sovraccarico permanente	1.3
SLEC-10	G3_acqua	1	SLU-GEO-15	G3_acqua	0
SLEC-10	G3_Pcop_Spinta verticale	1	SLU-GEO-15	G3_Pcop_Spinta verticale	1.3
SLEC-10	G3_SP.dx_Spinta destra	1	SLU-GEO-15	G3_SP.dx_Spinta destra	1.3
SLEC-10	G3_SP.sx_Spinta sinistra	1	SLU-GEO-15	G3_SP.sx_Spinta sinistra	1.3
SLEC-10	Q_lak	0	SLU-GEO-15	Q_lak	1.16
SLEC-10	Q_lbk	1	SLU-GEO-15	Q_lbk	0
SLEC-10	Q_Ritiro	0	SLU-GEO-15	Q_Ritiro	0
SLEC-10	Q_SQ.dx	1	SLU-GEO-15	Q_SQ.dx	1.16
SLEC-10	Q_SQ.sx	1	SLU-GEO-15	Q_SQ.sx	1.16
SLEC-10	Q_Temp_Farfalla -	0.72	SLU-GEO-15	Q_Temp_Farfalla -	1.2
SLEC-10	Q_Temp_Farfalla +	0	SLU-GEO-15	Q_Temp_Farfalla +	0
SLEC-10	Q_Temp_Uni -	0.72	SLU-GEO-15	Q_Temp_Uni -	1.2
SLEC-10	Q_Temp_Uni +	0	SLU-GEO-15	Q_Temp_Uni +	0
SLEC-10	Q_trn1	1	SLU-GEO-15	Q_trn1	1.16
SLEC-10	Sisma_SLV_H	0	SLU-GEO-15	Sisma_SLV_H	0
SLEC-10	Sisma_SLV_V	0	SLU-GEO-15	Sisma_SLV_V	0
SLEC-10	SLVc_H	0	SLU-GEO-15	SLVc_H	0
SLEC-10	SLVi_H	0	SLU-GEO-15	SLVi_H	0
SLEC-11	G1_DEAD	1	SLU-GEO-16	G1_DEAD	1
SLEC-11	G2_Ballast	1	SLU-GEO-16	G2_Ballast	1.3
SLEC-11	G2_Sovraccarico permanente	1	SLU-GEO-16	G2_Sovraccarico permanente	1.3
SLEC-11	G3_acqua	0	SLU-GEO-16	G3_acqua	0
SLEC-11	G3_Pcop_Spinta verticale	1	SLU-GEO-16	G3_Pcop_Spinta verticale	1.3
SLEC-11	G3_SP.dx_Spinta destra	1	SLU-GEO-16	G3_SP.dx_Spinta destra	1.3
SLEC-11	G3_SP.sx_Spinta sinistra	1	SLU-GEO-16	G3_SP.sx_Spinta sinistra	1.3
SLEC-11	Q_lak	1	SLU-GEO-16	Q_lak	0
SLEC-11	Q_lbk	0	SLU-GEO-16	Q_lbk	1.16
SLEC-11	Q_Ritiro	0	SLU-GEO-16	Q_Ritiro	0
SLEC-11	Q_SQ.dx	1	SLU-GEO-16	Q_SQ.dx	1.16
SLEC-11	Q_SQ.sx	1	SLU-GEO-16	Q_SQ.sx	1.16
SLEC-11	Q_Temp_Farfalla -	0.72	SLU-GEO-16	Q_Temp_Farfalla -	1.2
SLEC-11	Q_Temp_Farfalla +	0	SLU-GEO-16	Q_Temp_Farfalla +	0
SLEC-11	Q_Temp_Uni -	0.72	SLU-GEO-16	Q_Temp_Uni -	1.2
SLEC-11	Q_Temp_Uni +	0	SLU-GEO-16	Q_Temp_Uni +	0
SLEC-11	Q_trn1	1.45	SLU-GEO-16	Q_trn1	1.16
SLEC-11	Sisma_SLV_H	0	SLU-GEO-16	Sisma_SLV_H	0
SLEC-11	Sisma_SLV_V	0	SLU-GEO-16	Sisma_SLV_V	0
SLEC-11	SLVc_H	0	SLU-GEO-16	SLVc_H	0
SLEC-11	SLVi_H	0	SLU-GEO-16	SLVi_H	0

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IP00	00	D26CL	GA0700001	B	94 di 325

SLEC-12	G1_DEAD	1	SLV-01	G1_DEAD	1
SLEC-12	G2_Ballast	1	SLV-01	G2_Ballast	1
SLEC-12	G2_Sovraccarico permanente	1	SLV-01	G2_Sovraccarico permanente	1
SLEC-12	G3_acqua	0	SLV-01	G3_acqua	1
SLEC-12	G3_Pcop_Spinta verticale	1	SLV-01	G3_Pcop_Spinta verticale	1
SLEC-12	G3_SP.dx_Spinta destra	1	SLV-01	G3_SP.dx_Spinta destra	1
SLEC-12	G3_SP.sx_Spinta sinistra	1	SLV-01	G3_SP.sx_Spinta sinistra	1
SLEC-12	Q_lak	0	SLV-01	Q_lak	0
SLEC-12	Q_lbk	1	SLV-01	Q_lbk	0
SLEC-12	Q_Ritiro	0.72	SLV-01	Q_Ritiro	0.5
SLEC-12	Q_SQ.dx	1	SLV-01	Q_SQ.dx	0
SLEC-12	Q_SQ.sx	1	SLV-01	Q_SQ.sx	0
SLEC-12	Q_Temp_Farfalla -	0.72	SLV-01	Q_Temp_Farfalla -	0
SLEC-12	Q_Temp_Farfalla +	0	SLV-01	Q_Temp_Farfalla +	0.5
SLEC-12	Q_Temp_Uni -	0.72	SLV-01	Q_Temp_Uni -	0
SLEC-12	Q_Temp_Uni +	0	SLV-01	Q_Temp_Uni +	0.5
SLEC-12	Q_trn1	1	SLV-01	Q_trn1	0
SLEC-12	Sisma_SLV_H	0	SLV-01	Sisma_SLV_H	1
SLEC-12	Sisma_SLV_V	0	SLV-01	Sisma_SLV_V	1
SLEC-12	SLVc_H	0	SLV-01	SLVc_H	1
SLEC-12	SLVi_H	0	SLV-01	SLVi_H	1
SLEC-13	G1_DEAD	1	SLV-02	G1_DEAD	1
SLEC-13	G2_Ballast	1	SLV-02	G2_Ballast	1
SLEC-13	G2_Sovraccarico permanente	1	SLV-02	G2_Sovraccarico permanente	1
SLEC-13	G3_acqua	1	SLV-02	G3_acqua	1
SLEC-13	G3_Pcop_Spinta verticale	1	SLV-02	G3_Pcop_Spinta verticale	1
SLEC-13	G3_SP.dx_Spinta destra	1	SLV-02	G3_SP.dx_Spinta destra	1
SLEC-13	G3_SP.sx_Spinta sinistra	1	SLV-02	G3_SP.sx_Spinta sinistra	1
SLEC-13	Q_lak	0.8	SLV-02	Q_lak	0
SLEC-13	Q_lbk	0	SLV-02	Q_lbk	0
SLEC-13	Q_Ritiro	0	SLV-02	Q_Ritiro	0.5
SLEC-13	Q_SQ.dx	0.8	SLV-02	Q_SQ.dx	0
SLEC-13	Q_SQ.sx	0.8	SLV-02	Q_SQ.sx	0
SLEC-13	Q_Temp_Farfalla -	1.2	SLV-02	Q_Temp_Farfalla -	0.5
SLEC-13	Q_Temp_Farfalla +	0	SLV-02	Q_Temp_Farfalla +	0
SLEC-13	Q_Temp_Uni -	1.2	SLV-02	Q_Temp_Uni -	0.5
SLEC-13	Q_Temp_Uni +	0	SLV-02	Q_Temp_Uni +	0
SLEC-13	Q_trn1	0.8	SLV-02	Q_trn1	0
SLEC-13	Sisma_SLV_H	0	SLV-02	Sisma_SLV_H	1
SLEC-13	Sisma_SLV_V	0	SLV-02	Sisma_SLV_V	1
SLEC-13	SLVc_H	0	SLV-02	SLVc_H	1
SLEC-13	SLVi_H	0	SLV-02	SLVi_H	1
SLEC-14	G1_DEAD	1	SLV-03	G1_DEAD	1
SLEC-14	G2_Ballast	1	SLV-03	G2_Ballast	1
SLEC-14	G2_Sovraccarico permanente	1	SLV-03	G2_Sovraccarico permanente	1
SLEC-14	G3_acqua	1	SLV-03	G3_acqua	0
SLEC-14	G3_Pcop_Spinta verticale	1	SLV-03	G3_Pcop_Spinta verticale	1
SLEC-14	G3_SP.dx_Spinta destra	1	SLV-03	G3_SP.dx_Spinta destra	1
SLEC-14	G3_SP.sx_Spinta sinistra	1	SLV-03	G3_SP.sx_Spinta sinistra	1

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SLEC-14	Q_lak	0	SLV-03	Q_lak	0
SLEC-14	Q_lbk	0.8	SLV-03	Q_lbk	0
SLEC-14	Q_Ritiro	0	SLV-03	Q_Ritiro	0
SLEC-14	Q_SQ.dx	0.8	SLV-03	Q_SQ.dx	0
SLEC-14	Q_SQ.sx	0.8	SLV-03	Q_SQ.sx	0
SLEC-14	Q_Temp_Farfalla -	1.2	SLV-03	Q_Temp_Farfalla -	0
SLEC-14	Q_Temp_Farfalla +	0	SLV-03	Q_Temp_Farfalla +	0.5
SLEC-14	Q_Temp_Uni -	1.2	SLV-03	Q_Temp_Uni -	0
SLEC-14	Q_Temp_Uni +	0	SLV-03	Q_Temp_Uni +	0.5
SLEC-14	Q_trn1	0.8	SLV-03	Q_trn1	0
SLEC-14	Sisma_SLV_H	0	SLV-03	Sisma_SLV_H	1
SLEC-14	Sisma_SLV_V	0	SLV-03	Sisma_SLV_V	1
SLEC-14	SLVc_H	0	SLV-03	SLVc_H	1
SLEC-14	SLVi_H	0	SLV-03	SLVi_H	1
SLEC-15	G1_DEAD	1	SLV-04	G1_DEAD	1
SLEC-15	G2_Ballast	1	SLV-04	G2_Ballast	1
SLEC-15	G2_Sovraccarico permanente	1	SLV-04	G2_Sovraccarico permanente	1
SLEC-15	G3_acqua	0	SLV-04	G3_acqua	0
SLEC-15	G3_Pcop_Spinta verticale	1	SLV-04	G3_Pcop_Spinta verticale	1
SLEC-15	G3_SP.dx_Spinta destra	1	SLV-04	G3_SP.dx_Spinta destra	1
SLEC-15	G3_SP.sx_Spinta sinistra	1	SLV-04	G3_SP.sx_Spinta sinistra	1
SLEC-15	Q_lak	0.8	SLV-04	Q_lak	0
SLEC-15	Q_lbk	0	SLV-04	Q_lbk	0
SLEC-15	Q_Ritiro	0	SLV-04	Q_Ritiro	0
SLEC-15	Q_SQ.dx	0.8	SLV-04	Q_SQ.dx	0
SLEC-15	Q_SQ.sx	0.8	SLV-04	Q_SQ.sx	0
SLEC-15	Q_Temp_Farfalla -	1.2	SLV-04	Q_Temp_Farfalla -	0.5
SLEC-15	Q_Temp_Farfalla +	0	SLV-04	Q_Temp_Farfalla +	0
SLEC-15	Q_Temp_Uni -	1.2	SLV-04	Q_Temp_Uni -	0.5
SLEC-15	Q_Temp_Uni +	0	SLV-04	Q_Temp_Uni +	0
SLEC-15	Q_trn1	0.8	SLV-04	Q_trn1	0
SLEC-15	Sisma_SLV_H	0	SLV-04	Sisma_SLV_H	1
SLEC-15	Sisma_SLV_V	0	SLV-04	Sisma_SLV_V	1
SLEC-15	SLVc_H	0	SLV-04	SLVc_H	1
SLEC-15	SLVi_H	0	SLV-04	SLVi_H	1
SLEC-16	G1_DEAD	1	SLV-05	G1_DEAD	1
SLEC-16	G2_Ballast	1	SLV-05	G2_Ballast	1
SLEC-16	G2_Sovraccarico permanente	1	SLV-05	G2_Sovraccarico permanente	1
SLEC-16	G3_acqua	0	SLV-05	G3_acqua	1
SLEC-16	G3_Pcop_Spinta verticale	1	SLV-05	G3_Pcop_Spinta verticale	1
SLEC-16	G3_SP.dx_Spinta destra	1	SLV-05	G3_SP.dx_Spinta destra	1
SLEC-16	G3_SP.sx_Spinta sinistra	1	SLV-05	G3_SP.sx_Spinta sinistra	1
SLEC-16	Q_lak	0	SLV-05	Q_lak	0
SLEC-16	Q_lbk	0.8	SLV-05	Q_lbk	0
SLEC-16	Q_Ritiro	0	SLV-05	Q_Ritiro	0.5
SLEC-16	Q_SQ.dx	0.8	SLV-05	Q_SQ.dx	0
SLEC-16	Q_SQ.sx	0.8	SLV-05	Q_SQ.sx	0
SLEC-16	Q_Temp_Farfalla -	1.2	SLV-05	Q_Temp_Farfalla -	0
SLEC-16	Q_Temp_Farfalla +	0	SLV-05	Q_Temp_Farfalla +	0.5

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IP00	00	D26CL	GA0700001	B	96 di 325

SLEC-16	Q_Temp_Uni -	1.2	SLV-05	Q_Temp_Uni -	0
SLEC-16	Q_Temp_Uni +	0	SLV-05	Q_Temp_Uni +	0.5
SLEC-16	Q_trn1	0.8	SLV-05	Q_trn1	0.6
SLEC-16	Sisma_SLV_H	0	SLV-05	Sisma_SLV_H	1
SLEC-16	Sisma_SLV_V	0	SLV-05	Sisma_SLV_V	1
SLEC-16	SLVc_H	0	SLV-05	SLVc_H	1
SLEC-16	SLVi_H	0	SLV-05	SLVi_H	1
SLEF-01	G1_DEAD	1	SLV-06	G1_DEAD	1
SLEF-01	G2_Ballast	1	SLV-06	G2_Ballast	1
SLEF-01	G2_Sovraccarico permanente	1	SLV-06	G2_Sovraccarico permanente	1
SLEF-01	G3_acqua	1	SLV-06	G3_acqua	1
SLEF-01	G3_Pcop_Spinta verticale	1	SLV-06	G3_Pcop_Spinta verticale	1
SLEF-01	G3_SP.dx_Spinta destra	1	SLV-06	G3_SP.dx_Spinta destra	1
SLEF-01	G3_SP.sx_Spinta sinistra	1	SLV-06	G3_SP.sx_Spinta sinistra	1
SLEF-01	Q_lak	0.6	SLV-06	Q_lak	0
SLEF-01	Q_lbk	0	SLV-06	Q_lbk	0
SLEF-01	Q_Ritiro	0	SLV-06	Q_Ritiro	0.5
SLEF-01	Q_SQ.dx	0.6	SLV-06	Q_SQ.dx	0
SLEF-01	Q_SQ.sx	0.6	SLV-06	Q_SQ.sx	0
SLEF-01	Q_Temp_Farfalla -	0	SLV-06	Q_Temp_Farfalla -	0.5
SLEF-01	Q_Temp_Farfalla +	0	SLV-06	Q_Temp_Farfalla +	0
SLEF-01	Q_Temp_Uni -	0	SLV-06	Q_Temp_Uni -	0.5
SLEF-01	Q_Temp_Uni +	0	SLV-06	Q_Temp_Uni +	0
SLEF-01	Q_trn1	0.6	SLV-06	Q_trn1	0.6
SLEF-01	Sisma_SLV_H	0	SLV-06	Sisma_SLV_H	1
SLEF-01	Sisma_SLV_V	0	SLV-06	Sisma_SLV_V	1
SLEF-01	SLVc_H	0	SLV-06	SLVc_H	1
SLEF-01	SLVi_H	0	SLV-06	SLVi_H	1
SLEF-02	G1_DEAD	1	SLV-07	G1_DEAD	1
SLEF-02	G2_Ballast	1	SLV-07	G2_Ballast	1
SLEF-02	G2_Sovraccarico permanente	1	SLV-07	G2_Sovraccarico permanente	1
SLEF-02	G3_acqua	1	SLV-07	G3_acqua	0
SLEF-02	G3_Pcop_Spinta verticale	1	SLV-07	G3_Pcop_Spinta verticale	1
SLEF-02	G3_SP.dx_Spinta destra	1	SLV-07	G3_SP.dx_Spinta destra	1
SLEF-02	G3_SP.sx_Spinta sinistra	1	SLV-07	G3_SP.sx_Spinta sinistra	1
SLEF-02	Q_lak	0	SLV-07	Q_lak	0
SLEF-02	Q_lbk	0.6	SLV-07	Q_lbk	0
SLEF-02	Q_Ritiro	0	SLV-07	Q_Ritiro	0
SLEF-02	Q_SQ.dx	0.6	SLV-07	Q_SQ.dx	0
SLEF-02	Q_SQ.sx	0.6	SLV-07	Q_SQ.sx	0
SLEF-02	Q_Temp_Farfalla -	0	SLV-07	Q_Temp_Farfalla -	0
SLEF-02	Q_Temp_Farfalla +	0	SLV-07	Q_Temp_Farfalla +	0.5
SLEF-02	Q_Temp_Uni -	0	SLV-07	Q_Temp_Uni -	0
SLEF-02	Q_Temp_Uni +	0	SLV-07	Q_Temp_Uni +	0.5
SLEF-02	Q_trn1	0.6	SLV-07	Q_trn1	0.6
SLEF-02	Sisma_SLV_H	0	SLV-07	Sisma_SLV_H	1
SLEF-02	Sisma_SLV_V	0	SLV-07	Sisma_SLV_V	1
SLEF-02	SLVc_H	0	SLV-07	SLVc_H	1
SLEF-02	SLVi_H	0	SLV-07	SLVi_H	1

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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	97 di 325

SLEF-03	G1_DEAD	1	SLV-08	G1_DEAD	1
SLEF-03	G2_Ballast	1	SLV-08	G2_Ballast	1
SLEF-03	G2_Sovraccarico permanente	1	SLV-08	G2_Sovraccarico permanente	1
SLEF-03	G3_acqua	0	SLV-08	G3_acqua	0
SLEF-03	G3_Pcop_Spinta verticale	1	SLV-08	G3_Pcop_Spinta verticale	1
SLEF-03	G3_SP.dx_Spinta destra	1	SLV-08	G3_SP.dx_Spinta destra	1
SLEF-03	G3_SP.sx_Spinta sinistra	1	SLV-08	G3_SP.sx_Spinta sinistra	1
SLEF-03	Q_lak	0.6	SLV-08	Q_lak	0
SLEF-03	Q_lbk	0	SLV-08	Q_lbk	0
SLEF-03	Q_Ritiro	0	SLV-08	Q_Ritiro	0
SLEF-03	Q_SQ.dx	0.6	SLV-08	Q_SQ.dx	0
SLEF-03	Q_SQ.sx	0.6	SLV-08	Q_SQ.sx	0
SLEF-03	Q_Temp_Farfalla -	0	SLV-08	Q_Temp_Farfalla -	0.5
SLEF-03	Q_Temp_Farfalla +	0	SLV-08	Q_Temp_Farfalla +	0
SLEF-03	Q_Temp_Uni -	0	SLV-08	Q_Temp_Uni -	0.5
SLEF-03	Q_Temp_Uni +	0	SLV-08	Q_Temp_Uni +	0
SLEF-03	Q_trn1	0.6	SLV-08	Q_trn1	0.6
SLEF-03	Sisma_SLV_H	0	SLV-08	Sisma_SLV_H	1
SLEF-03	Sisma_SLV_V	0	SLV-08	Sisma_SLV_V	1
SLEF-03	SLVc_H	0	SLV-08	SLVc_H	1
SLEF-03	SLVi_H	0	SLV-08	SLVi_H	1
SLEF-04	G1_DEAD	1	SLV-09	G1_DEAD	1
SLEF-04	G2_Ballast	1	SLV-09	G2_Ballast	1
SLEF-04	G2_Sovraccarico permanente	1	SLV-09	G2_Sovraccarico permanente	1
SLEF-04	G3_acqua	0	SLV-09	G3_acqua	1
SLEF-04	G3_Pcop_Spinta verticale	1	SLV-09	G3_Pcop_Spinta verticale	1
SLEF-04	G3_SP.dx_Spinta destra	1	SLV-09	G3_SP.dx_Spinta destra	1
SLEF-04	G3_SP.sx_Spinta sinistra	1	SLV-09	G3_SP.sx_Spinta sinistra	1
SLEF-04	Q_lak	0	SLV-09	Q_lak	0
SLEF-04	Q_lbk	0.6	SLV-09	Q_lbk	0
SLEF-04	Q_Ritiro	0	SLV-09	Q_Ritiro	0.5
SLEF-04	Q_SQ.dx	0.6	SLV-09	Q_SQ.dx	0
SLEF-04	Q_SQ.sx	0.6	SLV-09	Q_SQ.sx	0
SLEF-04	Q_Temp_Farfalla -	0	SLV-09	Q_Temp_Farfalla -	0
SLEF-04	Q_Temp_Farfalla +	0	SLV-09	Q_Temp_Farfalla +	0.5
SLEF-04	Q_Temp_Uni -	0	SLV-09	Q_Temp_Uni -	0
SLEF-04	Q_Temp_Uni +	0	SLV-09	Q_Temp_Uni +	0.5
SLEF-04	Q_trn1	0.6	SLV-09	Q_trn1	0
SLEF-04	Sisma_SLV_H	0	SLV-09	Sisma_SLV_H	1
SLEF-04	Sisma_SLV_V	0	SLV-09	Sisma_SLV_V	1
SLEF-04	SLVc_H	0	SLV-09	SLVc_H	0
SLEF-04	SLVi_H	0	SLV-09	SLVi_H	0
SLEF-05	G1_DEAD	1	SLV-10	G1_DEAD	1
SLEF-05	G2_Ballast	1	SLV-10	G2_Ballast	1
SLEF-05	G2_Sovraccarico permanente	1	SLV-10	G2_Sovraccarico permanente	1
SLEF-05	G3_acqua	1	SLV-10	G3_acqua	1
SLEF-05	G3_Pcop_Spinta verticale	1	SLV-10	G3_Pcop_Spinta verticale	1
SLEF-05	G3_SP.dx_Spinta destra	1	SLV-10	G3_SP.dx_Spinta destra	1
SLEF-05	G3_SP.sx_Spinta sinistra	1	SLV-10	G3_SP.sx_Spinta sinistra	1

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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	98 di 325

SLEF-05	Q_lak	0	SLV-10	Q_lak	0
SLEF-05	Q_lbk	0	SLV-10	Q_lbk	0
SLEF-05	Q_Ritiro	0.6	SLV-10	Q_Ritiro	0.5
SLEF-05	Q_SQ.dx	0	SLV-10	Q_SQ.dx	0
SLEF-05	Q_SQ.sx	0	SLV-10	Q_SQ.sx	0
SLEF-05	Q_Temp_Farfalla -	0	SLV-10	Q_Temp_Farfalla -	0.5
SLEF-05	Q_Temp_Farfalla +	0.6	SLV-10	Q_Temp_Farfalla +	0
SLEF-05	Q_Temp_Uni -	0	SLV-10	Q_Temp_Uni -	0.5
SLEF-05	Q_Temp_Uni +	0.6	SLV-10	Q_Temp_Uni +	0
SLEF-05	Q_trn1	0	SLV-10	Q_trn1	0
SLEF-05	Sisma_SLV_H	0	SLV-10	Sisma_SLV_H	1
SLEF-05	Sisma_SLV_V	0	SLV-10	Sisma_SLV_V	1
SLEF-05	SLVc_H	0	SLV-10	SLVc_H	0
SLEF-05	SLVi_H	0	SLV-10	SLVi_H	0
SLEF-06	G1_DEAD	1	SLV-11	G1_DEAD	1
SLEF-06	G2_Ballast	1	SLV-11	G2_Ballast	1
SLEF-06	G2_Sovraccarico permanente	1	SLV-11	G2_Sovraccarico permanente	1
SLEF-06	G3_acqua	1	SLV-11	G3_acqua	0
SLEF-06	G3_Pcop_Spinta verticale	1	SLV-11	G3_Pcop_Spinta verticale	1
SLEF-06	G3_SP.dx_Spinta destra	1	SLV-11	G3_SP.dx_Spinta destra	1
SLEF-06	G3_SP.sx_Spinta sinistra	1	SLV-11	G3_SP.sx_Spinta sinistra	1
SLEF-06	Q_lak	0	SLV-11	Q_lak	0
SLEF-06	Q_lbk	0	SLV-11	Q_lbk	0
SLEF-06	Q_Ritiro	0.6	SLV-11	Q_Ritiro	0
SLEF-06	Q_SQ.dx	0	SLV-11	Q_SQ.dx	0
SLEF-06	Q_SQ.sx	0	SLV-11	Q_SQ.sx	0
SLEF-06	Q_Temp_Farfalla -	0	SLV-11	Q_Temp_Farfalla -	0
SLEF-06	Q_Temp_Farfalla +	0.6	SLV-11	Q_Temp_Farfalla +	0.5
SLEF-06	Q_Temp_Uni -	0	SLV-11	Q_Temp_Uni -	0
SLEF-06	Q_Temp_Uni +	0.6	SLV-11	Q_Temp_Uni +	0.5
SLEF-06	Q_trn1	0	SLV-11	Q_trn1	0
SLEF-06	Sisma_SLV_H	0	SLV-11	Sisma_SLV_H	1
SLEF-06	Sisma_SLV_V	0	SLV-11	Sisma_SLV_V	1
SLEF-06	SLVc_H	0	SLV-11	SLVc_H	0
SLEF-06	SLVi_H	0	SLV-11	SLVi_H	0
SLEF-07	G1_DEAD	1	SLV-12	G1_DEAD	1
SLEF-07	G2_Ballast	1	SLV-12	G2_Ballast	1
SLEF-07	G2_Sovraccarico permanente	1	SLV-12	G2_Sovraccarico permanente	1
SLEF-07	G3_acqua	0	SLV-12	G3_acqua	0
SLEF-07	G3_Pcop_Spinta verticale	1	SLV-12	G3_Pcop_Spinta verticale	1
SLEF-07	G3_SP.dx_Spinta destra	1	SLV-12	G3_SP.dx_Spinta destra	1
SLEF-07	G3_SP.sx_Spinta sinistra	1	SLV-12	G3_SP.sx_Spinta sinistra	1
SLEF-07	Q_lak	0	SLV-12	Q_lak	0
SLEF-07	Q_lbk	0	SLV-12	Q_lbk	0
SLEF-07	Q_Ritiro	0.6	SLV-12	Q_Ritiro	0
SLEF-07	Q_SQ.dx	0	SLV-12	Q_SQ.dx	0
SLEF-07	Q_SQ.sx	0	SLV-12	Q_SQ.sx	0
SLEF-07	Q_Temp_Farfalla -	0	SLV-12	Q_Temp_Farfalla -	0.5
SLEF-07	Q_Temp_Farfalla +	0.6	SLV-12	Q_Temp_Farfalla +	0

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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	99 di 325

SLEF-07	Q_Temp_Uni -	0	SLV-12	Q_Temp_Uni -	0.5
SLEF-07	Q_Temp_Uni +	0.6	SLV-12	Q_Temp_Uni +	0
SLEF-07	Q_trn1	0.8	SLV-12	Q_trn1	0
SLEF-07	Sisma_SLV_H	0	SLV-12	Sisma_SLV_H	1
SLEF-07	Sisma_SLV_V	0	SLV-12	Sisma_SLV_V	1
SLEF-07	SLVc_H	0	SLV-12	SLVc_H	0
SLEF-07	SLVi_H	0	SLV-12	SLVi_H	0
SLEF-08	G1_DEAD	1	SLV-13	G1_DEAD	1
SLEF-08	G2_Ballast	1	SLV-13	G2_Ballast	1
SLEF-08	G2_Sovraccarico permanente	1	SLV-13	G2_Sovraccarico permanente	1
SLEF-08	G3_acqua	0	SLV-13	G3_acqua	1
SLEF-08	G3_Pcop_Spinta verticale	1	SLV-13	G3_Pcop_Spinta verticale	1
SLEF-08	G3_SP.dx_Spinta destra	1	SLV-13	G3_SP.dx_Spinta destra	1
SLEF-08	G3_SP.sx_Spinta sinistra	1	SLV-13	G3_SP.sx_Spinta sinistra	1
SLEF-08	Q_lak	0	SLV-13	Q_lak	0
SLEF-08	Q_lbk	0	SLV-13	Q_lbk	0
SLEF-08	Q_Ritiro	0.6	SLV-13	Q_Ritiro	0.5
SLEF-08	Q_SQ.dx	0	SLV-13	Q_SQ.dx	0
SLEF-08	Q_SQ.sx	0	SLV-13	Q_SQ.sx	0
SLEF-08	Q_Temp_Farfalla -	0	SLV-13	Q_Temp_Farfalla -	0
SLEF-08	Q_Temp_Farfalla +	0.6	SLV-13	Q_Temp_Farfalla +	0.5
SLEF-08	Q_Temp_Uni -	0	SLV-13	Q_Temp_Uni -	0
SLEF-08	Q_Temp_Uni +	0.6	SLV-13	Q_Temp_Uni +	0.5
SLEF-08	Q_trn1	0	SLV-13	Q_trn1	0.6
SLEF-08	Sisma_SLV_H	0	SLV-13	Sisma_SLV_H	1
SLEF-08	Sisma_SLV_V	0	SLV-13	Sisma_SLV_V	1
SLEF-08	SLVc_H	0	SLV-13	SLVc_H	0
SLEF-08	SLVi_H	0	SLV-13	SLVi_H	0
SLEF-09	G1_DEAD	1	SLV-14	G1_DEAD	1
SLEF-09	G2_Ballast	1	SLV-14	G2_Ballast	1
SLEF-09	G2_Sovraccarico permanente	1	SLV-14	G2_Sovraccarico permanente	1
SLEF-09	G3_acqua	1	SLV-14	G3_acqua	1
SLEF-09	G3_Pcop_Spinta verticale	1	SLV-14	G3_Pcop_Spinta verticale	1
SLEF-09	G3_SP.dx_Spinta destra	1	SLV-14	G3_SP.dx_Spinta destra	1
SLEF-09	G3_SP.sx_Spinta sinistra	1	SLV-14	G3_SP.sx_Spinta sinistra	1
SLEF-09	Q_lak	0.6	SLV-14	Q_lak	0
SLEF-09	Q_lbk	0	SLV-14	Q_lbk	0
SLEF-09	Q_Ritiro	0	SLV-14	Q_Ritiro	0.5
SLEF-09	Q_SQ.dx	0.6	SLV-14	Q_SQ.dx	0
SLEF-09	Q_SQ.sx	0.6	SLV-14	Q_SQ.sx	0
SLEF-09	Q_Temp_Farfalla -	0.6	SLV-14	Q_Temp_Farfalla -	0.5
SLEF-09	Q_Temp_Farfalla +	0	SLV-14	Q_Temp_Farfalla +	0
SLEF-09	Q_Temp_Uni -	0.6	SLV-14	Q_Temp_Uni -	0.5
SLEF-09	Q_Temp_Uni +	0	SLV-14	Q_Temp_Uni +	0
SLEF-09	Q_trn1	0.6	SLV-14	Q_trn1	0.6
SLEF-09	Sisma_SLV_H	0	SLV-14	Sisma_SLV_H	1
SLEF-09	Sisma_SLV_V	0	SLV-14	Sisma_SLV_V	1
SLEF-09	SLVc_H	0	SLV-14	SLVc_H	0
SLEF-09	SLVi_H	0	SLV-14	SLVi_H	0



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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	100 di 325

SLV-16	G1_DEAD	1	SLV-15	G1_DEAD	1
SLV-16	G2_Ballast	1	SLV-15	G2_Ballast	1
SLV-16	G2_Sovraccarico permanente	1	SLV-15	G2_Sovraccarico permanente	1
SLV-16	G3_acqua	0	SLV-15	G3_acqua	0
SLV-16	G3_Pcop_Spinta verticale	1	SLV-15	G3_Pcop_Spinta verticale	1
SLV-16	G3_SP.dx_Spinta destra	1	SLV-15	G3_SP.dx_Spinta destra	1
SLV-16	G3_SP.sx_Spinta sinistra	1	SLV-15	G3_SP.sx_Spinta sinistra	1
SLV-16	Q_lak	0	SLV-15	Q_lak	0
SLV-16	Q_lbk	0	SLV-15	Q_lbk	0
SLV-16	Q_Ritiro	0	SLV-15	Q_Ritiro	0
SLV-16	Q_SQ.dx	0	SLV-15	Q_SQ.dx	0
SLV-16	Q_SQ.sx	0	SLV-15	Q_SQ.sx	0
SLV-16	Q_Temp_Farfalla -	0.5	SLV-15	Q_Temp_Farfalla -	0
SLV-16	Q_Temp_Farfalla +	0	SLV-15	Q_Temp_Farfalla +	0.5
SLV-16	Q_Temp_Uni -	0.5	SLV-15	Q_Temp_Uni -	0
SLV-16	Q_Temp_Uni +	0	SLV-15	Q_Temp_Uni +	0.5
SLV-16	Q_trn1	0.6	SLV-15	Q_trn1	0.6
SLV-16	Sisma_SLV_H	1	SLV-15	Sisma_SLV_H	1
SLV-16	Sisma_SLV_V	1	SLV-15	Sisma_SLV_V	1

### 10.2.1.5 RISULTATI DELLE ANALISI

Le verifiche sono state condotte con riferimento alle seguenti sezioni significative.

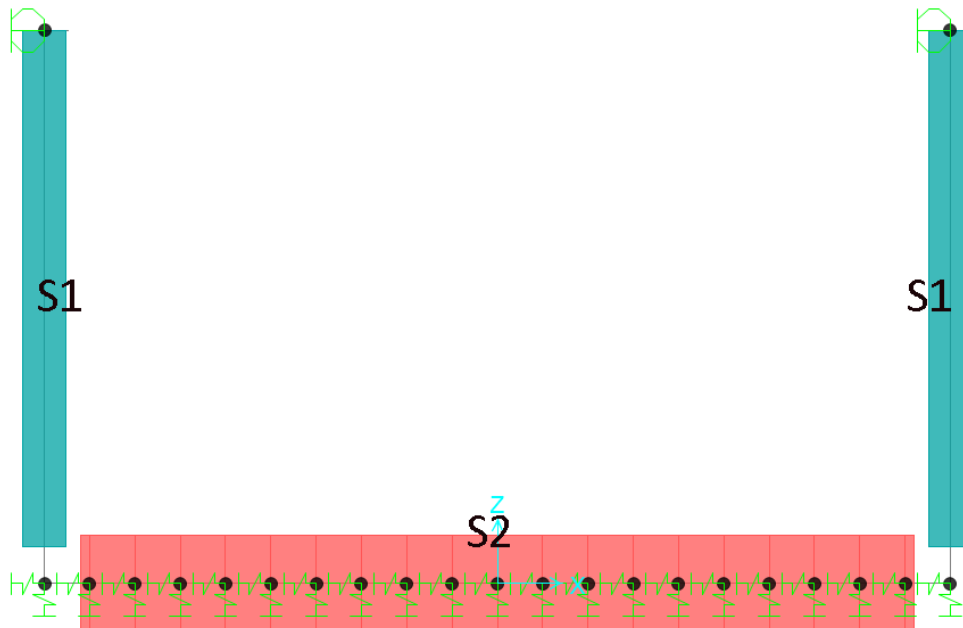


Figura 41 **Sezioni di verifica**

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	101 di 325

Si riportano di seguito una sintesi dei risultati delle analisi espressi in forma tabellare delle sollecitazioni lungo gli elementi.

La convenzione adottata per i segni delle sollecitazioni prevede che

$N < 0$  compressione

$M > 0$  fibre tese sul lato interno allo scatolare

Le unità di misura adottate sono

Momenti kNm

Forze kN

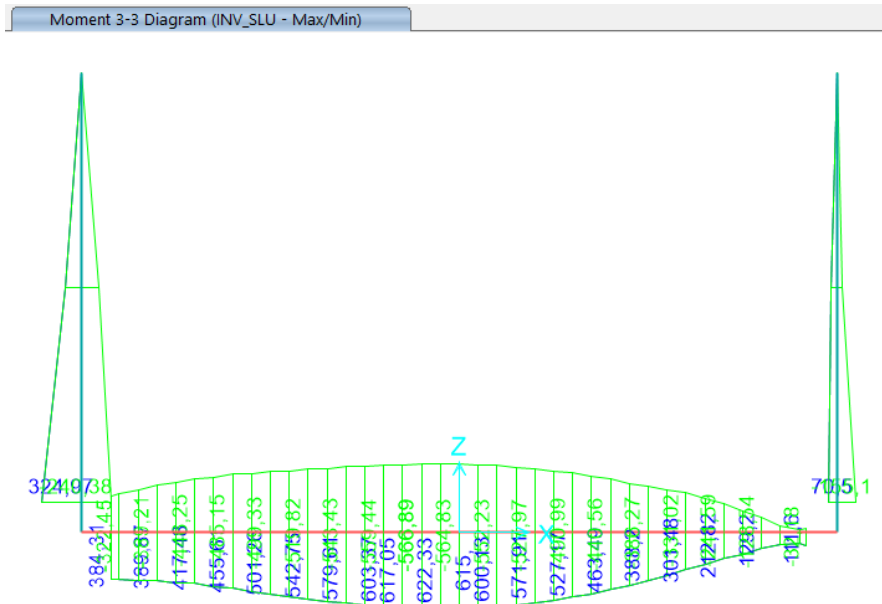
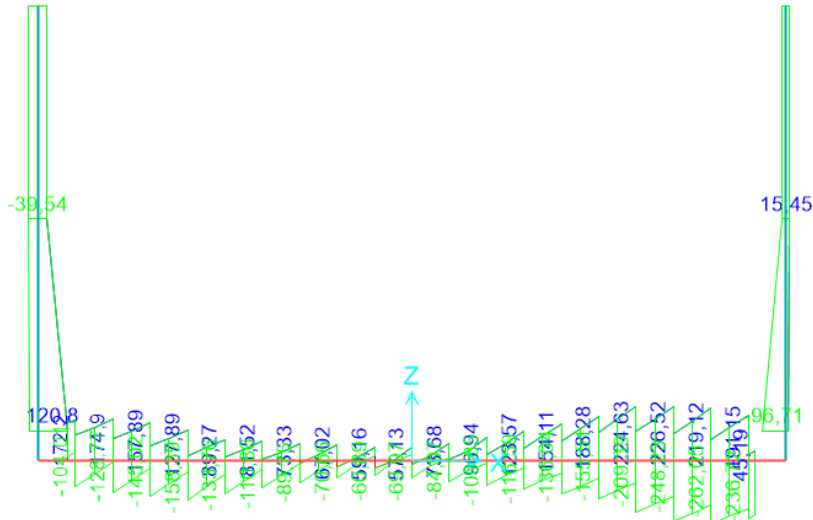


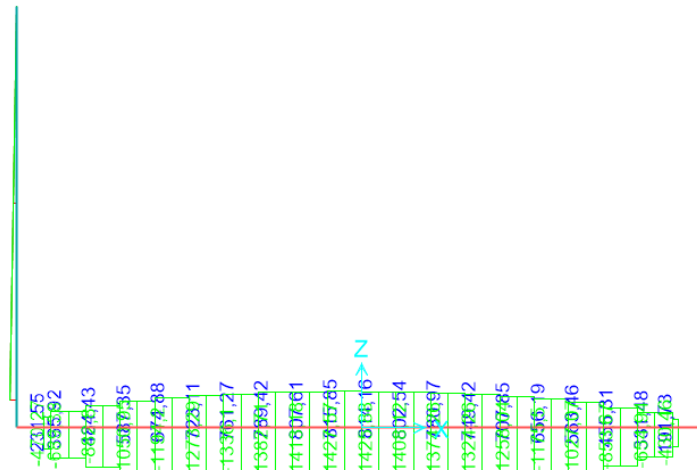
Figura 42 Involuppo SLU\_Static – Momenti Flettenti

Shear Force 2-2 Diagram (INV\_SLU - Max/Min)



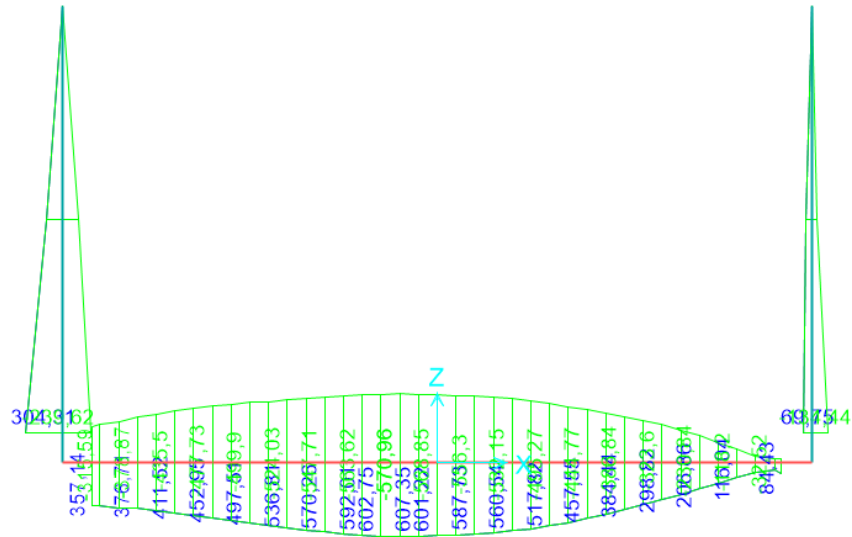
**Figura 43 Inviluppo SLU\_Static – Sforzo di taglio**

Axial Force Diagram (INV\_SLU - Max/Min)



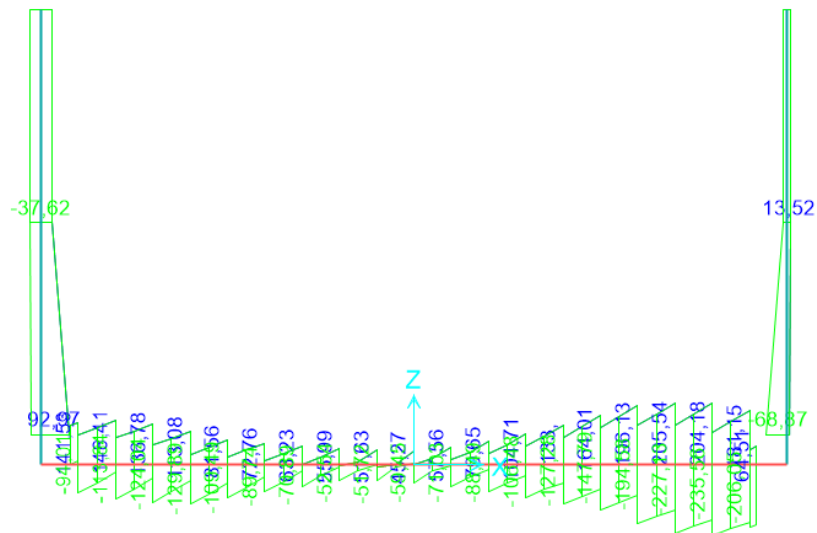
**Figura 44 Inviluppo SLU\_Static – Sforzo Normale**

Moment 3-3 Diagram (INV\_SLE - Max/Min)



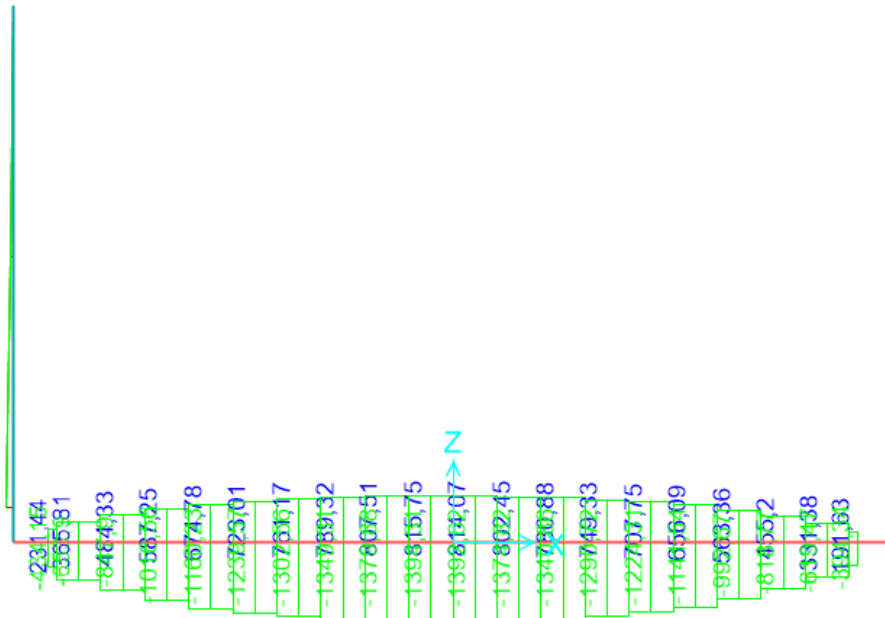
**Figura 45 Inviluppo SLE – Momento Flettente**

Shear Force 2-2 Diagram (INV\_SLE - Max/Min)



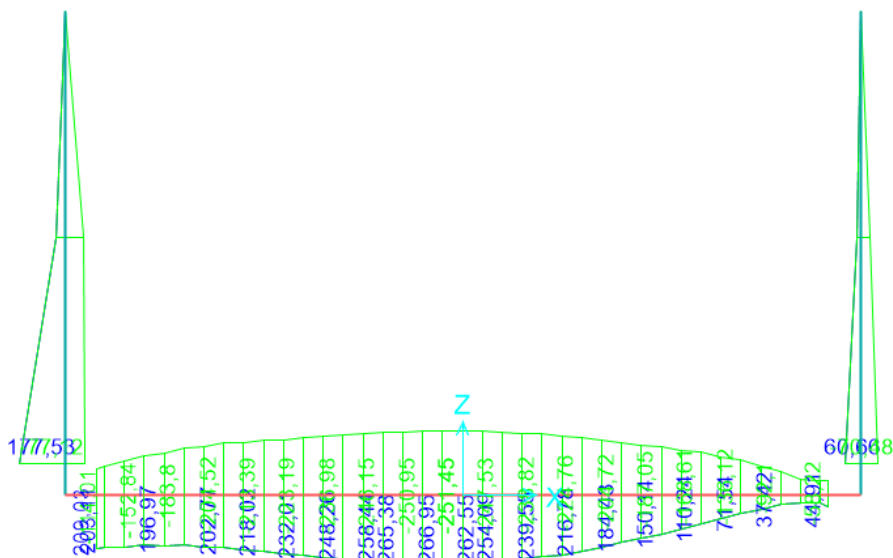
**Figura 46 Inviluppo SLE – Sforzo di Taglio**

Axial Force Diagram (INV\_SLE - Max/Min)



**Figura 47 Inviluppo SLE – Sforzo Normale**

Moment 3-3 Diagram (INV\_SLV - Max/Min)



**Figura 48 Inviluppo SLV\_Sismic – Momenti Flettenti/**

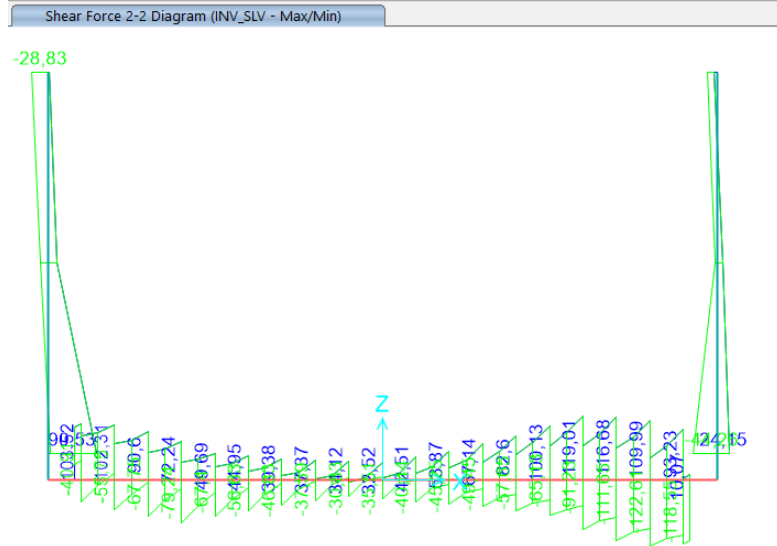


Figura 49 Involuppo SLV\_Sismic – Sforzo di taglio

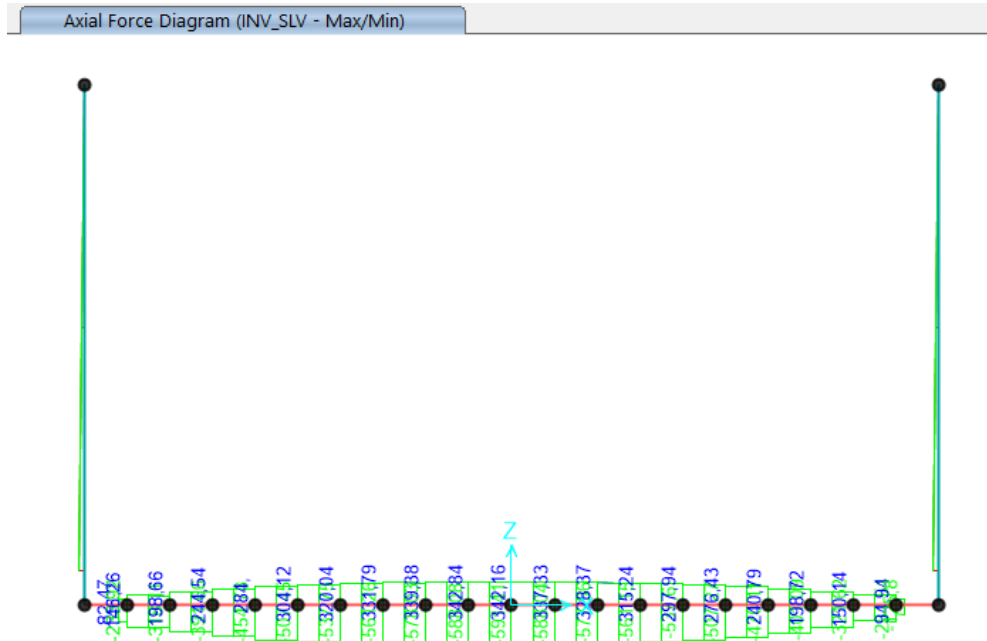


Figura 50 Involuppo SLV\_Sismic – Sforzo Normale

**PIEDRITTI**

**INPUT**

**SOLLECITAZIONI DI VERIFICA**

Combinazione	N <sub>Sd</sub> [kN]	M <sub>Sd</sub> [kNm]	V <sub>Sd</sub> [kN]
SLE Quasi Permanente	0,0	304,3	93,0
SLE Frequente	0,0	304,3	93,0
SLE Rara	0,0	304,3	93,0
SLU	0,0	325,0	120,8
SLV	0,0	177,5	90,5

**CARATTERISTICHE GEOMETRICHE DELLA SEZIONE IN C.A.**

Geometria della sezione	
Base (ortogonale al Taglio)	B [cm] <b>100</b>
Altezza (parallela al Taglio)	H [cm] <b>60</b>
Altezza utile della sezione	d [cm] <b>53</b>
Area di calcestruzzo	A <sub>c</sub> [cm <sup>2</sup> ] <b>6000</b>

Armatura longitudinale tesa	1° STRATO	2° STRATO	3° STRATO
Numero Barre	n <b>6,67</b>	<b>0,00</b>	<b>0</b>
Diametro	φ [mm] <b>26</b>	<b>0</b>	<b>0</b>
Posizione dal lembo esterno	c [cm] <b>6,6</b>	<b>0,0</b>	<b>0,0</b>
Area strato	A <sub>s</sub> [cm <sup>2</sup> ] <b>35,41</b>	<b>0,00</b>	<b>0,00</b>
Rapporto di armatura	ρ [%] <b>0,663%</b>		

Armatura longitudinale compressa	1° STRATO	2° STRATO	3° STRATO
Numero Barre	n <b>6,7</b>	<b>0</b>	<b>0</b>
Diametro	φ [mm] <b>26</b>	<b>0</b>	<b>0</b>
Posizione dal lembo esterno	c' [cm] <b>6,6</b>	<b>0,0</b>	<b>0,0</b>
Area strato	A <sub>s</sub> ' [cm <sup>2</sup> ] <b>35,41</b>	<b>0,00</b>	<b>0,00</b>
Rapporto di armatura	ρ' [%] <b>0,663%</b>		

Armatura trasversale	1° TIPO	2° TIPO	3° TIPO
Diametro	φ [mm] <b>10</b>	<b>0</b>	<b>0</b>
Numero bracci	n <sub>bt</sub> <b>3,33</b>	<b>0</b>	<b>0</b>
Passo	s <sub>w</sub> [cm] <b>30</b>	<b>0</b>	<b>0</b>
Inclinazione	α [deg] <b>90</b>	<b>90</b>	<b>90</b>
Area armatura a metro	A <sub>sw</sub> /s <sub>w</sub> [cm <sup>2</sup> /m] <b>8,72</b>	<b>0,00</b>	<b>0,00</b>

**CARATTERISTICHE REOLOGICHE DEI MATERIALI**

Concrete	
Resistenza cubica a compressione	RCK <b>37</b>
Resistenza cilindrica caratteristica a compressione	f <sub>ck</sub> [Mpa] <b>30,00</b>
Resistenza cilindrica media a compressione	f <sub>cm</sub> [Mpa] <b>38,00</b>
Resistenza media a trazione per flessione	f <sub>ctm</sub> [Mpa] <b>2,90</b>
Resistenza caratteristica a trazione per flessione	f <sub>ctk</sub> [Mpa] <b>2,03</b>
Resistenza di progetto a compressione	f <sub>cd</sub> [Mpa] <b>17,00</b>
Resistenza di progetto delle bielle compresse	f <sub>cd'</sub> [Mpa] <b>8,98</b>

Acciaio	
Resistenza di progetto a snervamento	f <sub>yd</sub> [Mpa] <b>391,30</b>

**OUTPUT**

**VERIFICHE IN ESERCIZIO**

Verifica Tensionale	σ limit
Calcestruzzo SLE Quasi Permanente	σ <sub>c</sub> [Mpa] = <b>5,52</b> <b>12,000</b>
Calcestruzzo SLE Rara	σ <sub>c</sub> [Mpa] = <b>5,52</b> <b>16,500</b>
Acciaio SLE Rara	σ <sub>s</sub> [Mpa] = <b>180,79</b> <b>337,500</b>
Verifica di fessurazione	w limit
Combinazione SLE Quasi permanente	w <sub>d</sub> [mm] = <b>0,176</b> <b>0,200</b>
Combinazione SLE Frequente	w <sub>d</sub> [mm] = <b>0,199</b> <b>0,300</b>

**VERIFICA DI RESISTENZA A TAGLIO**

Sollecitazioni di progetto	
Taglio sollecitante = max Taglio(SLU,SLV)	V <sub>Sd</sub> [kN] <b>120,8</b>
Sforzo Normale concomitante al massimo taglio	N <sub>Sd</sub> [kN] <b>0,0</b>

Verifica di resistenza in assenza di armatura specifica	
Resistenza di progetto senza armatura specifica	V <sub>Rd1</sub> [KN] <b>662,96</b>
Coefficiente di sicurezza	V <sub>Rd1</sub> /V <sub>Sd</sub> <b>5,49</b>

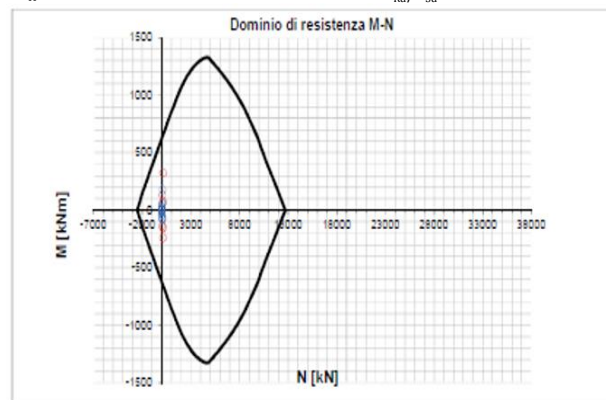
Verifica di resistenza dell'armatura specifica	
CoTan(θ) di progetto	cotan(θ) <b>2,5</b>
Resistenza a taglio delle bielle compresse in cls	V <sub>Rd2</sub> (θ) [KN] <b>1488</b>
Resistenza a taglio dell'armatura	V <sub>Rd3</sub> (θ) [KN] <b>410</b>
Resistenza a taglio di progetto	V <sub>Rd</sub> [KN] <b>410</b>
Coefficiente di sicurezza	V <sub>Rd</sub> /V <sub>Sd</sub> <b>3,39</b>

**VERIFICA DI RESISTENZA A PRESSO-FLESSIONE**

Sollecitazioni di progetto		SLU	SLV
Momento sollecitante	M <sub>Sd</sub> [kNm]	<b>325,0</b>	<b>177,5</b>
Sforzo Normale concomitante	N <sub>Sd</sub> [kN]	<b>0,0</b>	<b>0,0</b>

Verifica di resistenza in termini di momento		SLU	SLV
Momento resistente	M <sub>Rd</sub> [kNm]	<b>684,4</b>	<b>684,4</b>
Coefficiente di sicurezza	M <sub>Rd</sub> /M <sub>Sd</sub>	<b>2,11</b>	<b>3,86</b>

Verifica di resistenza in termini di sforzo normale		SLU	SLV
Sforzo normale resistente	N <sub>Rd</sub> [kN]	-	-
Coefficiente di sicurezza	N <sub>Rd</sub> /N <sub>Sd</sub>	-	-



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	107 di 325

**FONDAZIONE**

**INPUT**

**SOLLECITAZIONI DI VERIFICA**

Combinazione	N <sub>Sd</sub> [kN]	M <sub>Sd</sub> [kNm]	V <sub>Sd</sub> [kN]
SLE Quasi Permanente	339,4	253,6	130,7
SLE Frequente	407,7	318,8	153,0
SLE Rara	815,8	607,4	235,6
SLU	815,9	623,3	262,1
SLV	342,8	267,0	122,3

**CARATTERISTICHE GEOMETRICHE DELLA SEZIONE IN C.A.**

Geometria della sezione	
Base (ortogonale al Taglio)	B [cm] <b>100</b>
Altezza (parallela al Taglio)	H [cm] <b>130</b>
Altezza utile della sezione	d [cm] <b>123</b>
Area di calcestruzzo	A <sub>c</sub> [cm <sup>2</sup> ] <b>13000</b>

Armatura longitudinale tesa	1° STRATO	2° STRATO	3° STRATO
Numero Barre	n <b>6,67</b>	<b>0,00</b>	<b>0</b>
Diametro	φ [mm] <b>30</b>	<b>0</b>	<b>0</b>
Posizione dal lembo esterno	c [cm] <b>6,6</b>	<b>11,6</b>	<b>0,0</b>
Area strato	A <sub>s</sub> ' [cm <sup>2</sup> ] <b>47,15</b>	<b>0,00</b>	<b>0,00</b>
Rapporto di armatura	ρ [%]	<b>0,382%</b>	

Armatura longitudinale compressa	1° STRATO	2° STRATO	3° STRATO
Numero Barre	n <b>6,7</b>	<b>0</b>	<b>0</b>
Diametro	φ [mm] <b>30</b>	<b>0</b>	<b>0</b>
Posizione dal lembo esterno	c' [cm] <b>6,6</b>	<b>11,6</b>	<b>0,0</b>
Area strato	A <sub>s</sub> ' [cm <sup>2</sup> ] <b>47,36</b>	<b>0,00</b>	<b>0,00</b>
Rapporto di armatura	ρ' [%]	<b>0,384%</b>	

Armatura trasversale	1° TIPO	2° TIPO	3° TIPO
Diametro	φ [mm] <b>10</b>	<b>0</b>	<b>0</b>
Numero bracci	n <sub>bt</sub> <b>3,33</b>	<b>0</b>	<b>0</b>
Passo	s <sub>w</sub> [cm] <b>30</b>	<b>0</b>	<b>0</b>
Inclinazione	α [deg] <b>90</b>	<b>90</b>	<b>90</b>
Area armatura a metro	A <sub>sw</sub> /s <sub>w</sub> [cm <sup>2</sup> /m] <b>8,72</b>	<b>0,00</b>	<b>0,00</b>

**CARATTERISTICHE REOLOGICHE DEI MATERIALI**

Concrete	
Resistenza cubica a compressione	RCK <b>37</b>
Resistenza cilindrica caratteristica a compressione	f <sub>ck</sub> [Mpa] <b>30,00</b>
Resistenza cilindrica media a compressione	f <sub>cm</sub> [Mpa] <b>38,00</b>
Resistenza media a trazione per flessione	f <sub>ctm</sub> [Mpa] <b>2,90</b>
Resistenza caratteristica a trazione per flessione	f <sub>ctk</sub> [Mpa] <b>2,03</b>
Resistenza di progetto a compressione	f <sub>cd</sub> [Mpa] <b>17,00</b>
Resistenza di progetto delle bielle compresse	f <sub>cd</sub> ' [Mpa] <b>8,98</b>

Acciaio	
Resistenza di progetto a snervamento	f <sub>yd</sub> [Mpa] <b>391,30</b>

**OUTPUT**

**VERIFICHE IN ESERCIZIO**

Verifica Tensionale	σ limit
Calcestruzzo SLE Quasi Permanente	σ <sub>c</sub> [Mpa] = <b>0,55</b> <b>12,000</b>
Calcestruzzo SLE Rara	σ <sub>c</sub> [Mpa] = <b>1,30</b> <b>16,500</b>
Acciaio SLE Rara	σ <sub>s</sub> [Mpa] = <b>196,44</b> <b>337,500</b>

Verifica di fessurazione	w limit
Combinazione SLE Quasi permanente	w <sub>d</sub> [mm] = <b>0,000</b> <b>0,200</b>
Combinazione SLE Frequente	w <sub>d</sub> [mm] = <b>0,000</b> <b>0,300</b>

**VERIFICA DI RESISTENZA A TAGLIO**

Sollecitazioni di progetto	
Taglio sollecitante = max Taglio(SLU,SLV)	V <sub>Sd</sub> [kN] <b>262,1</b>
Sforzo Normale concomitante al massimo taglio	N <sub>Sd</sub> [kN] <b>0,0</b>

Verifica di resistenza in assenza di armatura specifica	
Resistenza di progetto senza armatura specifica	V <sub>Rd1</sub> [kN] <b>1532,02</b>
Coefficiente di sicurezza	V <sub>Rd1</sub> /V <sub>Sd</sub> <b>5,85</b>

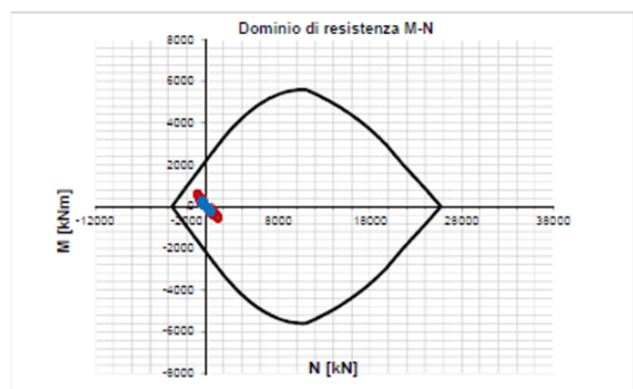
Verifica di resistenza dell'armatura specifica	
CoTan(θ) di progetto	cotani(θ) <b>2,5</b>
Resistenza a taglio delle bielle compresse in cls	V <sub>Rd1</sub> (θ) [kN] <b>3437</b>
Resistenza a taglio dell'armatura	V <sub>Rd2</sub> (θ) [kN] <b>947</b>
Resistenza a taglio di progetto	V <sub>Rd</sub> [kN] <b>947</b>
Coefficiente di sicurezza	V <sub>Rd</sub> /V <sub>Sd</sub> <b>3,61</b>

**VERIFICA DI RESISTENZA A PRESSO-FLESSIONE**


Sollecitazioni di progetto		SLU	SLV
Momento sollecitante	M <sub>Sd</sub> [kNm]	<b>623,3</b>	<b>267,0</b>
Sforzo Normale concomitante	N <sub>Sd</sub> [kN]	<b>815,9</b>	<b>342,8</b>

Verifica di resistenza in termini di momento		SLU	SLV
Momento resistente	M <sub>Rd</sub> [kNm]	<b>1713,3</b>	<b>1990,3</b>
Coefficiente di sicurezza	M <sub>Rd</sub> /M <sub>Sd</sub>	<b>2,75</b>	<b>7,45</b>

Verifica di resistenza in termini di sforzo normale		SLU	SLV
Sforzo normale resistente	N <sub>Rd</sub> [kN]	<b>2647,4</b>	<b>3238,5</b>
Coefficiente di sicurezza	N <sub>Rd</sub> /N <sub>Sd</sub>	<b>3,24</b>	<b>9,45</b>





 GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b> <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

INCIDENZA	
SOLETTA	FONDAZIONE
85 kg/m <sup>3</sup>	130 kg/m <sup>3</sup>

Per il calcolo dell'incidenza della struttura si è utilizzato Excel, grazie al quale tali valori possono essere calcolati automaticamente per ogni elemento. Nell'immagine di seguito si possono vedere quali sono le operazioni di calcolo (e le rispettive formule) collegate direttamente ai fogli di INPUT presenti all'interno di ogni relazione nel capitolo dedicato al risultato delle analisi.

	RIPARTITORI (ACCIAIO)	n	Φ	dist.
		1.00	26	100
$B \times H \times 1m = V$	Volume di calcestruzzo (m3):	0.80		
$\Sigma((\pi \times \Phi^2 / 4) \times 1m \times \gamma_{acciaio}) = P1$	Peso delle armature (kg):	12.50		
$\Sigma((\pi \times \Phi^2 / 4) \times (H+0.3m) \times \gamma_{acciaio}) = P2$	Peso delle staffe (kg):	4.58		
$(P1 + P2) / V =$	INCIDENZA (kg/m3):	21.35		
	INCIDENZA (%10~%30 fattore di sicurezza approssimativo)	25.62		

Figura - 1 Calcolo della Incidenza

B = larghezza del calcestruzzo

H = altezza del calcestruzzo

$\gamma_{acciaio}$  = peso unitario dell'acciaio

Una volta calcolati i pesi delle armature e delle staffe, vengono divisi per il volume di calcestruzzo per trovare il peso dell'armatura al metro cubo (il peso dell'acciaio è stato considerato pari a 78.5 kN/m3) al quale viene aggiunto un incremento percentuale come fattore di sicurezza. Tale valore, per l'oggetto della struttura, è stato considerato pari a %5.

### Fondazioni Dirette Verifica in tensioni efficaci

$$q_{lim} = c \cdot N_c \cdot s_c \cdot d_c \cdot i_c \cdot b_c \cdot g_c + q \cdot N_q \cdot s_q \cdot d_q \cdot i_q \cdot b_q \cdot g_q + 0,5 \cdot \gamma \cdot B \cdot N_{\gamma} \cdot s_{\gamma} \cdot d_{\gamma} \cdot i_{\gamma} \cdot b_{\gamma} \cdot g_{\gamma}$$

D = Profondità del piano di appoggio

PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
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$e_B$  = Eccentricità in direzione B ( $e_B = Mb/N$ )




$e_L$  = Eccentricità in direzione L ( $e_L = MI/N$ ) (per fondazione nastriforme  $e_L = 0$ ;  $L^* = L$ )

$B^*$  = Larghezza fittizia della fondazione ( $B^* = B - 2 \cdot e_B$ )

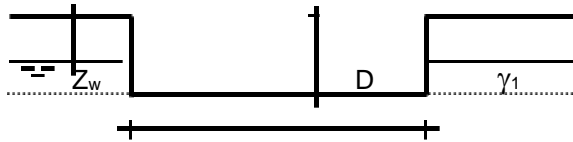
$L^*$  = Lunghezza fittizia della fondazione ( $L^* = L - 2 \cdot e_L$ )

(per fondazione nastriforme le sollecitazioni agenti sono riferite all'unità di lunghezza)

coefficienti parziali

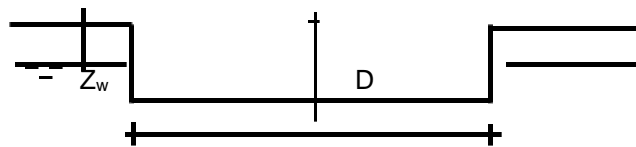
Metodo di calcolo	azioni		proprietà del terreno	
	permanenti	temporanee variabili	$\tan \varphi'$	$c'$
Stato limite ultimo 	1.00	1.30	1.25	1.60
Tensioni ammissibili 	1.00	1.00	1.00	1.00
definiti dall'utente 	1.00	1.00	1.00	1.00

valori suggeriti dall'EC7

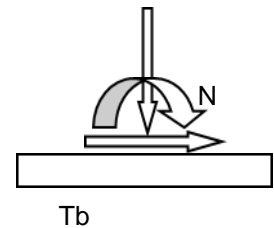


B

$\gamma, c', \varphi'$



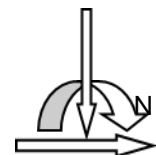
L



$T_b$

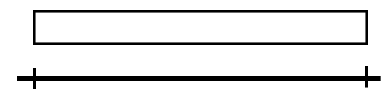


B



$M_l$

$T_l$



L

(Per fondazione nastriforme  $L = 100$  m)

B = 1.00 (m)  
L = 13.00 (m)  
D = 9.50 (m) 15.5

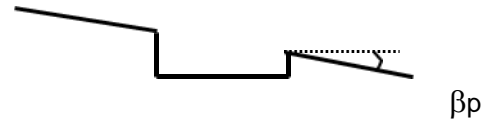
PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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$$\beta_f = 0.00 \text{ (}^\circ\text{)}$$



$$\beta_p = 0.00 \text{ (}^\circ\text{)}$$

**AZIONI**

	valori di input		Valori di calcolo
	permanenti	temporanee	
N [kN]	2132.00	0.00	2132.0
Mb [kNm]	0.00	0.00	0.00
MI [kNm]	0.00	0.00	0.00
Tb [kN]	0.00	0.00	0.00
TI [kN]	0.00	0.00	0.00
H [kN]	0.00	0.00	0.00

*Peso unità di volume del terreno*

$$\begin{aligned} \gamma_1 &= 19.00 \text{ (kN/mc)} \\ \gamma &= 19.00 \text{ (kN/mc)} \end{aligned}$$

*Valori caratteristici di resistenza del terreno*

$$\begin{aligned} c' &= 300.00 \text{ (kN/mq)} \\ \varphi' &= 37.00 \text{ (}^\circ\text{)} \end{aligned}$$

*Valori di progetto*

$$\begin{aligned} c' &= 300.00 \text{ (kN/mq)} \\ \varphi' &= 37.00 \text{ (}^\circ\text{)} \end{aligned}$$

*Profondità della falda*

$$Z_w = 13.00 \text{ (m)}$$

$$e_B = 0.00 \text{ (m)}$$

$$e_L = 0.00 \text{ (m)}$$

$$B^* = 1.00 \text{ (m)}$$

$$L^* = 13.00 \text{ (m)}$$

**q : sovraccarico alla profondità D**

$$q = 180.50 \text{ (kN/mq)}$$

**$\gamma$  : peso di volume del terreno di fondazione**

$$\gamma = 19.00 \text{ (kN/mc)}$$

**Nc, Nq, Ny : coefficienti di capacità portante**

$$N_q = \tan^2(45 + \varphi'/2) * e^{(\pi * \text{tg} \varphi')}$$

$$N_q = 42.92$$

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

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$$N_c = (N_q - 1) / \tan \varphi'$$

$$N_c = 55.63$$

$$N_\gamma = 2 * (N_q + 1) * \tan \varphi'$$

$$N_\gamma = 66.19$$

**$s_c, s_q, s_\gamma$  : fattori di forma**

$$s_c = 1 + B * N_q / (L * N_c)$$

$$s_c = 1.06$$

$$s_q = 1 + B * \tan \varphi' / L^*$$

$$s_q = 1.06$$

$$s_\gamma = 1 - 0,4 * B^* / L^*$$

$$s_\gamma = 0.97$$

**$i_c, i_q, i_\gamma$  : fattori di inclinazione del carico**

$$m_b = (2 + B^* / L^*) / (1 + B^* / L^*) =$$

$$1.93$$

$$\theta = \arctg(T_b/T_l) = 90.00 \text{ (}^\circ\text{)}$$

$$m_l = (2 + L^* / B^*) / (1 + L^* / B^*) =$$

$$1.07$$

$$m = 1.93 \text{ (-)}$$

( $m=2$  nel caso di fondazione  
nastri-forme e  $m=(m_b \sin^2 \theta + m_l \cos^2 \theta)$  in  
tutti gli altri casi)

$$i_q = (1 - H / (N + B^* L^* c' \cotg \varphi'))^m$$

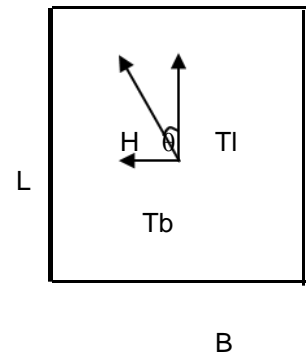
$$i_q = 1.00$$

$$i_c = i_q - (1 - i_q) / (N_q - 1)$$


$$i_c = 1.00$$

$$i_\gamma = (1 - H / (N + B^* L^* c' \cotg \varphi'))^{(m+1)}$$

$$i_\gamma = 1.00$$



**$d_c, d_q, d_\gamma$  : fattori di profondità del piano di appoggio**

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>112 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	112 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
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per  $D/B^* \leq 1$ ;  $d_q = 1 + 2 D \tan \varphi' (1 - \sin \varphi')^2 / B^*$

per  $D/B^* > 1$ ;  $d_q = 1 + (2 \tan \varphi' (1 - \sin \varphi')^2) * \arctan (D / B^*)$

$$d_q = 1.35$$

$$d_c = d_q - (1 - d_q) / (N_c \tan \varphi')$$

$$d_c = 1.36$$

$$d_\gamma = 1$$

$$d_\gamma = 1.00$$

**$b_c, b_q, b_\gamma$  : fattori di inclinazione base della fondazione**

$$b_q = (1 - \beta_f \tan \varphi')^2 \quad \beta_f + \beta_p = 0.00 \quad \beta_f + \beta_p < 45^\circ$$

$$b_q = 1.00$$

$$b_c = b_q - (1 - b_q) / (N_c \tan \varphi')$$

$$b_c = 1.00$$

$$b_\gamma = b_q$$

$$b_\gamma = 1.00$$

**$g_c, g_q, g_\gamma$  : fattori di inclinazione piano di campagna**

$$g_q = (1 - \tan \beta_p)^2 \quad \beta_f + \beta_p = 0.00 \quad \beta_f + \beta_p < 45^\circ$$

$$g_q = 1.00$$

$$g_c = g_q - (1 - g_q) / (N_c \tan \varphi')$$

$$g_c = 1.00$$

$$g_\gamma = g_q$$

$$g_\gamma = 1.00$$

**Carico limite unitario**

PROGETTO DEFINITIVO

GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO

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$$q_{lim} = 4176.65 \quad (\text{kN/m}^2) \quad \text{qrd} \quad 15520 \quad (\text{kN/m}^2)$$

**Pressione massima agente**

$$q = N / B * L *$$

$$q = 164.00 \quad (\text{kN/m}^2)$$

**Coefficiente di sicurezza**

$$F_s = q_{lim} / q = 217.66 \quad \text{OK}$$

**VERIFICA A SCORRIMENTO**

$$H_d = 0.00 \quad (\text{kN})$$

$$S_d = N * \tan(\varphi') + c' * B * L *$$


$$S_d = 5506.58 \quad (\text{kN})$$

**Coefficiente di sicurezza allo scorrimento**

$$F_{scorr} = -- \quad \text{OK}$$

**TABLE: Base Reactions**

OutputCase	CaseType	StepType	GlobalFX	GlobalFZ	GlobalMY
Text	Text	Text	KN	KN	KN-m
INV_SLU_GEO	Combination	Max	0	2131.3	0
INV_SLU_GEO	Combination	Min	0	1424.2	0

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>114 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	114 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
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## ***Uscita Paratie***

### ***Descrizione della Stratigrafia e degli Strati di Terreno***

Tipo : HORIZONTAL

Quota : 0 m

OCR : 1

Tipo : HORIZONTAL

Quota : -9.5 m

OCR : 1

Tipo : HORIZONTAL

Quota : -9.5 m

OCR : 1

Tipo : HORIZONTAL


Quota : -12.5 m

OCR : 1

Tipo : HORIZONTAL

Quota : -19 m

OCR : 1

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>115 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	115 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
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## ***Descrizione Pareti***

X : 7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Muro di destra

X : -7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Muro di sinistra



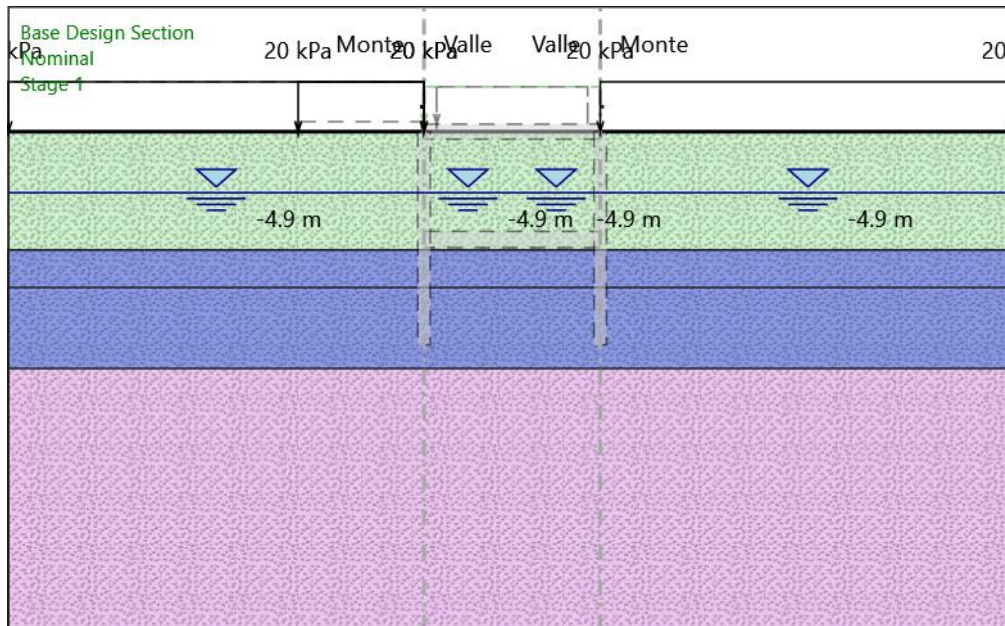
**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

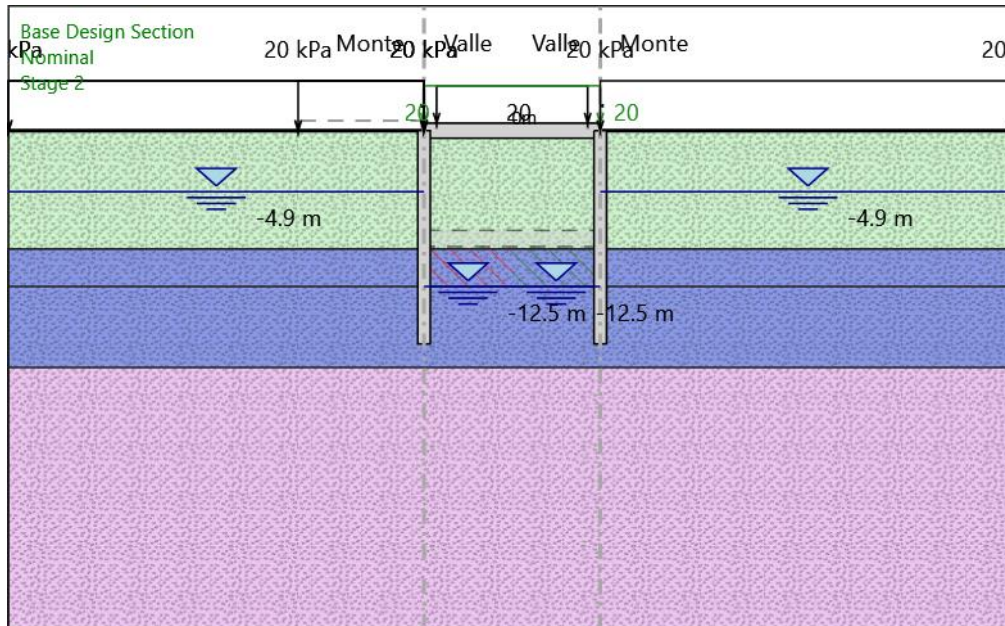
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## Fasi di Calcolo

### Stage 1



## Stage 2



## Stage 2

### Elementi strutturali

Paratia : WallElement

X : 7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall

Soletta : Slab

X del primo muro : -7 m

X del secondo muro : 7 m

Z : 0 m

Lunghezza : 14 m

Angolo : 0 °

Sezione : Soletta Superiore

Paratia : WallElement\_New

X : -7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

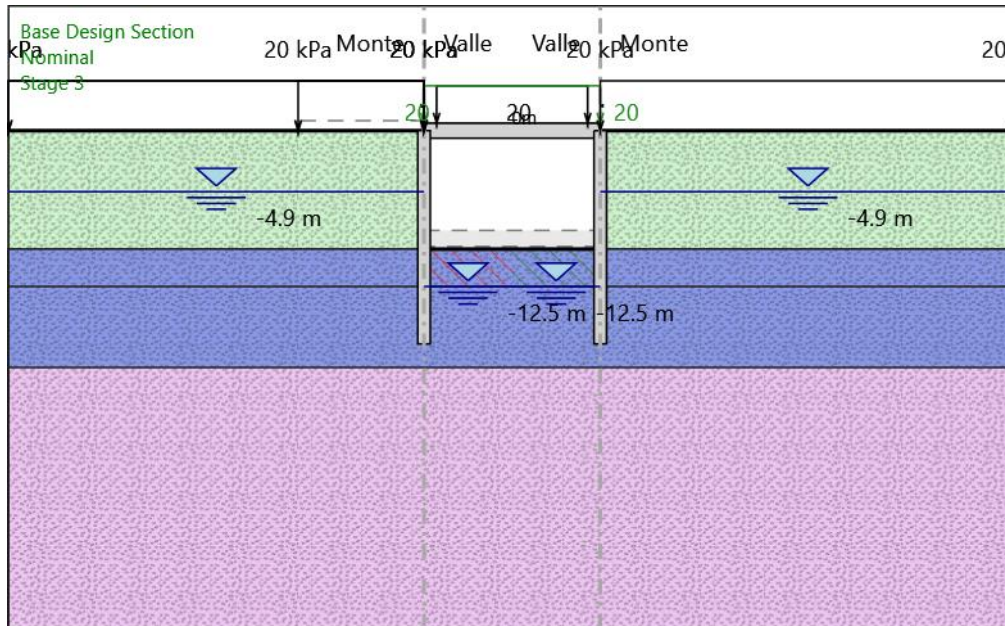
Sezione : Wall

**PROGETTO DEFINITIVO**

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### Stage 3



### Stage 3

Elementi strutturali

Paratia : WallElement

X : 7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall

Soletta : Slab

X del primo muro : -7 m

X del secondo muro : 7 m

Z : 0 m

Lunghezza : 14 m

Angolo : 0 °

Sezione : Soletta Superiore

Paratia : WallElement\_New

X : -7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

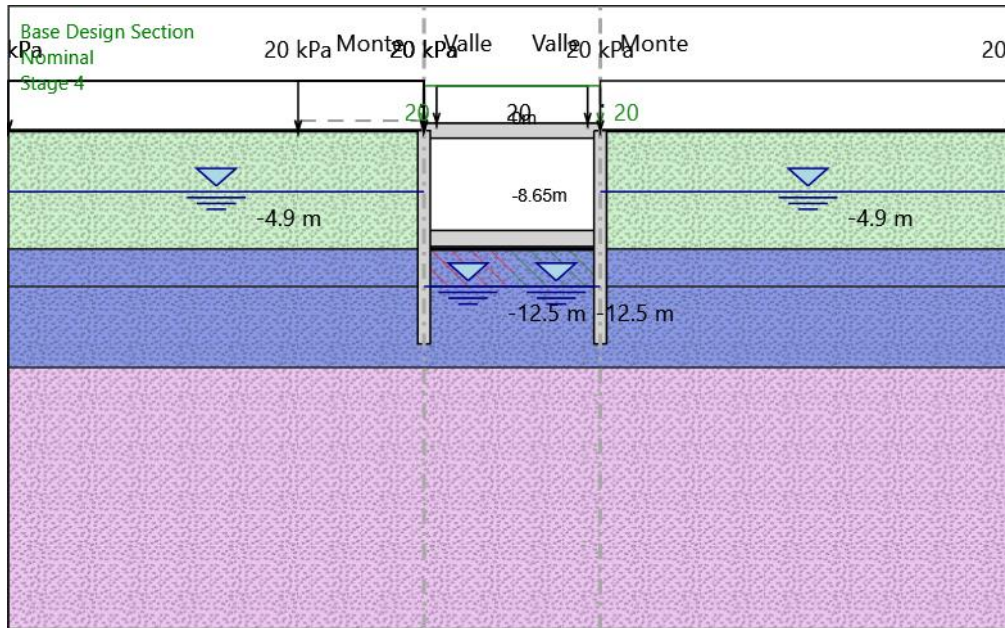
Sezione : Wall

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
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## Stage 4



## Stage 4

Elementi strutturali

Paratia : WallElement

X : 7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall

Soletta : Slab

X del primo muro : -7 m

X del secondo muro : 7 m

Z : 0 m

Lunghezza : 14 m

Angolo : 0 °

Sezione : Soletta Superiore

Soletta : Slab\_New

X del primo muro : -7 m

X del secondo muro : 7 m

Z : -8.65 m

Lunghezza : 14 m

Angolo : 0 °



**COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA  
(PONTREMOLESE)**

**TRATTA PARMA - VICOFERTILE**

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	120 di 325

Sezione : Soletta Inferiore

Paratia : WallElement\_New

X : -7 m

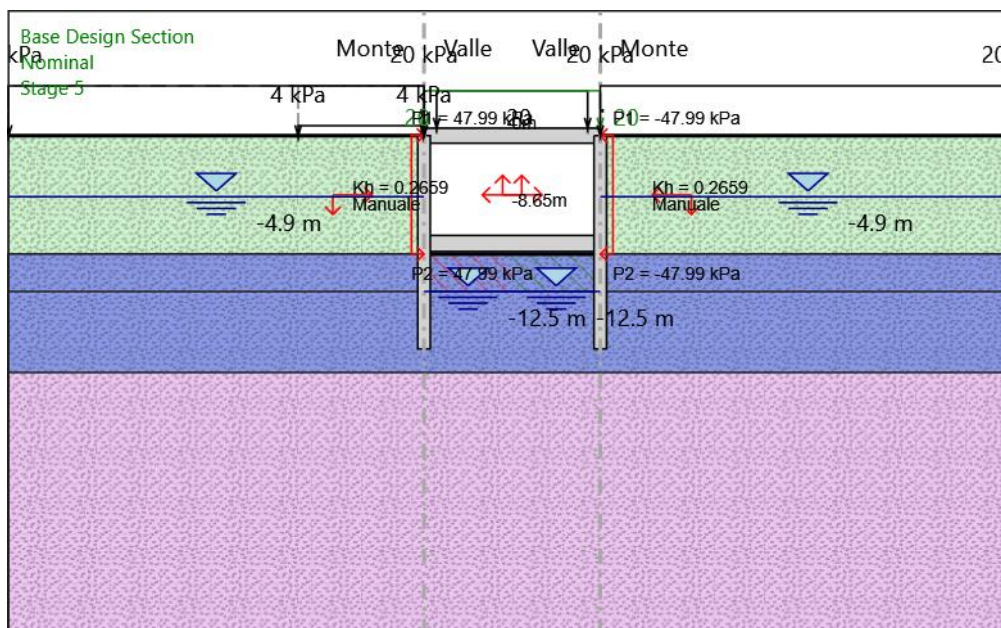
Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall



## Stage 5



## Stage 5

### Elementi strutturali

Paratia : WallElement

X : 7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall

Soletta : Slab

X del primo muro : -7 m

X del secondo muro : 7 m

Z : 0 m

Lunghezza : 14 m

Angolo : 0 °

Sezione : Soletta Superiore

Soletta : Slab\_New

X del primo muro : -7 m

X del secondo muro : 7 m

Z : -8.65 m

Lunghezza : 14 m

Angolo : 0 °



**COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA  
(PONTREMOLESE)**

**TRATTA PARMA - VICOFERTILE**

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

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Sezione : Soletta Inferiore

Paratia : WallElement\_New

X : -7 m

Quota in alto : 0 m

Quota di fondo : -17.1 m

Sezione : Wall

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Grafici dei Risultati

### Design Assumption : Nominal

#### Tabella Spostamento Nominal - LEFT Stage: Stage 1

Design Assumption: Nominal	Tipo Risultato: Spostamento	Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	0	0
Stage 1	-0.2	0
Stage 1	-0.4	0
Stage 1	-0.6	0
Stage 1	-0.8	0
Stage 1	-1	0
Stage 1	-1.2	0
Stage 1	-1.4	0
Stage 1	-1.6	0
Stage 1	-1.8	0
Stage 1	-2	0
Stage 1	-2.2	0
Stage 1	-2.4	0
Stage 1	-2.6	0
Stage 1	-2.8	0
Stage 1	-3	0
Stage 1	-3.2	0
Stage 1	-3.4	0
Stage 1	-3.6	0
Stage 1	-3.8	0
Stage 1	-4	0
Stage 1	-4.2	0
Stage 1	-4.4	0
Stage 1	-4.6	0
Stage 1	-4.8	0
Stage 1	-5	0
Stage 1	-5.2	0
Stage 1	-5.4	0
Stage 1	-5.6	0
Stage 1	-5.8	0
Stage 1	-6	0
Stage 1	-6.2	0
Stage 1	-6.4	0
Stage 1	-6.6	0
Stage 1	-6.8	0
Stage 1	-7	0
Stage 1	-7.2	0
Stage 1	-7.4	0
Stage 1	-7.6	0
Stage 1	-7.8	0
Stage 1	-8	0
Stage 1	-8.2	0
Stage 1	-8.4	0
Stage 1	-8.6	0
Stage 1	-8.65	0
Stage 1	-8.85	0
Stage 1	-9.05	0
Stage 1	-9.25	0
Stage 1	-9.45	0
Stage 1	-9.65	0
Stage 1	-9.85	0



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	124 di 325

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	-10.05	0
Stage 1	-10.25	0
Stage 1	-10.45	0
Stage 1	-10.65	0
Stage 1	-10.85	0
Stage 1	-11.05	0
Stage 1	-11.25	0
Stage 1	-11.45	0
Stage 1	-11.65	0
Stage 1	-11.85	0
Stage 1	-12.05	0
Stage 1	-12.25	0
Stage 1	-12.45	0
Stage 1	-12.65	0
Stage 1	-12.85	0
Stage 1	-13.05	0
Stage 1	-13.25	0
Stage 1	-13.45	0
Stage 1	-13.65	0
Stage 1	-13.85	0
Stage 1	-14.05	0
Stage 1	-14.25	0
Stage 1	-14.45	0
Stage 1	-14.65	0
Stage 1	-14.85	0
Stage 1	-15.05	0
Stage 1	-15.25	0
Stage 1	-15.45	0
Stage 1	-15.65	0
Stage 1	-15.85	0
Stage 1	-16.05	0
Stage 1	-16.25	0
Stage 1	-16.45	0
Stage 1	-16.65	0
Stage 1	-16.85	0
Stage 1	-17.05	0
Stage 1	-17.1	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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**Tabella Spostamento Nominal - RIGHT Stage: Stage 1**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	0	0
Stage 1	-0.2	0
Stage 1	-0.4	0
Stage 1	-0.6	0
Stage 1	-0.8	0
Stage 1	-1	0
Stage 1	-1.2	0
Stage 1	-1.4	0
Stage 1	-1.6	0
Stage 1	-1.8	0
Stage 1	-2	0
Stage 1	-2.2	0
Stage 1	-2.4	0
Stage 1	-2.6	0
Stage 1	-2.8	0
Stage 1	-3	0
Stage 1	-3.2	0
Stage 1	-3.4	0
Stage 1	-3.6	0
Stage 1	-3.8	0
Stage 1	-4	0
Stage 1	-4.2	0
Stage 1	-4.4	0
Stage 1	-4.6	0
Stage 1	-4.8	0
Stage 1	-5	0
Stage 1	-5.2	0
Stage 1	-5.4	0
Stage 1	-5.6	0
Stage 1	-5.8	0
Stage 1	-6	0
Stage 1	-6.2	0
Stage 1	-6.4	0
Stage 1	-6.6	0
Stage 1	-6.8	0
Stage 1	-7	0
Stage 1	-7.2	0
Stage 1	-7.4	0
Stage 1	-7.6	0
Stage 1	-7.8	0
Stage 1	-8	0
Stage 1	-8.2	0
Stage 1	-8.4	0
Stage 1	-8.6	0
Stage 1	-8.65	0
Stage 1	-8.85	0
Stage 1	-9.05	0
Stage 1	-9.25	0
Stage 1	-9.45	0
Stage 1	-9.65	0
Stage 1	-9.85	0
Stage 1	-10.05	0
Stage 1	-10.25	0
Stage 1	-10.45	0
Stage 1	-10.65	0
Stage 1	-10.85	0
Stage 1	-11.05	0
Stage 1	-11.25	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	126 di 325

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	-11.45	0
Stage 1	-11.65	0
Stage 1	-11.85	0
Stage 1	-12.05	0
Stage 1	-12.25	0
Stage 1	-12.45	0
Stage 1	-12.65	0
Stage 1	-12.85	0
Stage 1	-13.05	0
Stage 1	-13.25	0
Stage 1	-13.45	0
Stage 1	-13.65	0
Stage 1	-13.85	0
Stage 1	-14.05	0
Stage 1	-14.25	0
Stage 1	-14.45	0
Stage 1	-14.65	0
Stage 1	-14.85	0
Stage 1	-15.05	0
Stage 1	-15.25	0
Stage 1	-15.45	0
Stage 1	-15.65	0
Stage 1	-15.85	0
Stage 1	-16.05	0
Stage 1	-16.25	0
Stage 1	-16.45	0
Stage 1	-16.65	0
Stage 1	-16.85	0
Stage 1	-17.05	0
Stage 1	-17.1	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Tabella Spostamento Nominal - LEFT Stage: Stage 2

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 2	0	0.2
Stage 2	-0.2	0.09
Stage 2	-0.4	0
Stage 2	-0.6	-0.09
Stage 2	-0.8	-0.17
Stage 2	-1	-0.24
Stage 2	-1.2	-0.3
Stage 2	-1.4	-0.35
Stage 2	-1.6	-0.4
Stage 2	-1.8	-0.44
Stage 2	-2	-0.47
Stage 2	-2.2	-0.49
Stage 2	-2.4	-0.52
Stage 2	-2.6	-0.53
Stage 2	-2.8	-0.54
Stage 2	-3	-0.55
Stage 2	-3.2	-0.55
Stage 2	-3.4	-0.55
Stage 2	-3.6	-0.55
Stage 2	-3.8	-0.54
Stage 2	-4	-0.53
Stage 2	-4.2	-0.51
Stage 2	-4.4	-0.5
Stage 2	-4.6	-0.48
Stage 2	-4.8	-0.46
Stage 2	-5	-0.44
Stage 2	-5.2	-0.41
Stage 2	-5.4	-0.39
Stage 2	-5.6	-0.36
Stage 2	-5.8	-0.34
Stage 2	-6	-0.31
Stage 2	-6.2	-0.28
Stage 2	-6.4	-0.26
Stage 2	-6.6	-0.23
Stage 2	-6.8	-0.2
Stage 2	-7	-0.17
Stage 2	-7.2	-0.15
Stage 2	-7.4	-0.12
Stage 2	-7.6	-0.09
Stage 2	-7.8	-0.07
Stage 2	-8	-0.04
Stage 2	-8.2	-0.02
Stage 2	-8.4	0
Stage 2	-8.6	0.02
Stage 2	-8.65	0.03
Stage 2	-8.85	0.05
Stage 2	-9.05	0.07
Stage 2	-9.25	0.09
Stage 2	-9.45	0.1
Stage 2	-9.65	0.12
Stage 2	-9.85	0.13
Stage 2	-10.05	0.15
Stage 2	-10.25	0.16
Stage 2	-10.45	0.17
Stage 2	-10.65	0.18
Stage 2	-10.85	0.19
Stage 2	-11.05	0.2
Stage 2	-11.25	0.21

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	128 di 325

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 2	-11.45	0.21
Stage 2	-11.65	0.22
Stage 2	-11.85	0.22
Stage 2	-12.05	0.23
Stage 2	-12.25	0.23
Stage 2	-12.45	0.23
Stage 2	-12.65	0.23
Stage 2	-12.85	0.23
Stage 2	-13.05	0.23
Stage 2	-13.25	0.23
Stage 2	-13.45	0.22
Stage 2	-13.65	0.22
Stage 2	-13.85	0.22
Stage 2	-14.05	0.21
Stage 2	-14.25	0.21
Stage 2	-14.45	0.21
Stage 2	-14.65	0.2
Stage 2	-14.85	0.2
Stage 2	-15.05	0.19
Stage 2	-15.25	0.18
Stage 2	-15.45	0.18
Stage 2	-15.65	0.17
Stage 2	-15.85	0.17
Stage 2	-16.05	0.16
Stage 2	-16.25	0.15
Stage 2	-16.45	0.15
Stage 2	-16.65	0.14
Stage 2	-16.85	0.13
Stage 2	-17.05	0.13
Stage 2	-17.1	0.13

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	129 di 325

**Tabella Spostamento Nominal - RIGHT Stage: Stage 2**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 2	0	0.14
Stage 2	-0.2	0.25
Stage 2	-0.4	0.34
Stage 2	-0.6	0.43
Stage 2	-0.8	0.5
Stage 2	-1	0.57
Stage 2	-1.2	0.63
Stage 2	-1.4	0.68
Stage 2	-1.6	0.72
Stage 2	-1.8	0.76
Stage 2	-2	0.79
Stage 2	-2.2	0.82
Stage 2	-2.4	0.83
Stage 2	-2.6	0.85
Stage 2	-2.8	0.86
Stage 2	-3	0.86
Stage 2	-3.2	0.86
Stage 2	-3.4	0.85
Stage 2	-3.6	0.84
Stage 2	-3.8	0.83
Stage 2	-4	0.82
Stage 2	-4.2	0.8
Stage 2	-4.4	0.78
Stage 2	-4.6	0.76
Stage 2	-4.8	0.73
Stage 2	-5	0.71
Stage 2	-5.2	0.68
Stage 2	-5.4	0.65
Stage 2	-5.6	0.62
Stage 2	-5.8	0.59
Stage 2	-6	0.55
Stage 2	-6.2	0.52
Stage 2	-6.4	0.49
Stage 2	-6.6	0.46
Stage 2	-6.8	0.42
Stage 2	-7	0.39
Stage 2	-7.2	0.36
Stage 2	-7.4	0.32
Stage 2	-7.6	0.29
Stage 2	-7.8	0.26
Stage 2	-8	0.23
Stage 2	-8.2	0.2
Stage 2	-8.4	0.17
Stage 2	-8.6	0.14
Stage 2	-8.65	0.13
Stage 2	-8.85	0.11
Stage 2	-9.05	0.08
Stage 2	-9.25	0.06
Stage 2	-9.45	0.03
Stage 2	-9.65	0.01
Stage 2	-9.85	-0.01
Stage 2	-10.05	-0.03
Stage 2	-10.25	-0.05
Stage 2	-10.45	-0.07
Stage 2	-10.65	-0.08
Stage 2	-10.85	-0.1
Stage 2	-11.05	-0.11
Stage 2	-11.25	-0.12

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	130 di 325

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 2	-11.45	-0.13
Stage 2	-11.65	-0.14
Stage 2	-11.85	-0.15
Stage 2	-12.05	-0.15
Stage 2	-12.25	-0.16
Stage 2	-12.45	-0.16
Stage 2	-12.65	-0.17
Stage 2	-12.85	-0.17
Stage 2	-13.05	-0.17
Stage 2	-13.25	-0.17
Stage 2	-13.45	-0.17
Stage 2	-13.65	-0.17
Stage 2	-13.85	-0.17
Stage 2	-14.05	-0.17
Stage 2	-14.25	-0.17
Stage 2	-14.45	-0.16
Stage 2	-14.65	-0.16
Stage 2	-14.85	-0.15
Stage 2	-15.05	-0.15
Stage 2	-15.25	-0.15
Stage 2	-15.45	-0.14
Stage 2	-15.65	-0.14
Stage 2	-15.85	-0.13
Stage 2	-16.05	-0.12
Stage 2	-16.25	-0.12
Stage 2	-16.45	-0.11
Stage 2	-16.65	-0.11
Stage 2	-16.85	-0.1
Stage 2	-17.05	-0.1
Stage 2	-17.1	-0.1

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

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**Tabella Spostamento Nominal - LEFT Stage: Stage 3**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	0	1.77
Stage 3	-0.2	1.82
Stage 3	-0.4	1.88
Stage 3	-0.6	1.96
Stage 3	-0.8	2.05
Stage 3	-1	2.16
Stage 3	-1.2	2.27
Stage 3	-1.4	2.4
Stage 3	-1.6	2.54
Stage 3	-1.8	2.69
Stage 3	-2	2.84
Stage 3	-2.2	3
Stage 3	-2.4	3.16
Stage 3	-2.6	3.33
Stage 3	-2.8	3.51
Stage 3	-3	3.68
Stage 3	-3.2	3.86
Stage 3	-3.4	4.04
Stage 3	-3.6	4.22
Stage 3	-3.8	4.4
Stage 3	-4	4.58
Stage 3	-4.2	4.75
Stage 3	-4.4	4.93
Stage 3	-4.6	5.09
Stage 3	-4.8	5.26
Stage 3	-5	5.42
Stage 3	-5.2	5.57
Stage 3	-5.4	5.72
Stage 3	-5.6	5.86
Stage 3	-5.8	6
Stage 3	-6	6.13
Stage 3	-6.2	6.25
Stage 3	-6.4	6.36
Stage 3	-6.6	6.46
Stage 3	-6.8	6.55
Stage 3	-7	6.64
Stage 3	-7.2	6.71
Stage 3	-7.4	6.78
Stage 3	-7.6	6.83
Stage 3	-7.8	6.88
Stage 3	-8	6.91
Stage 3	-8.2	6.94
Stage 3	-8.4	6.95
Stage 3	-8.6	6.96
Stage 3	-8.65	6.96
Stage 3	-8.85	6.95
Stage 3	-9.05	6.93
Stage 3	-9.25	6.91
Stage 3	-9.45	6.87
Stage 3	-9.65	6.83
Stage 3	-9.85	6.77
Stage 3	-10.05	6.71
Stage 3	-10.25	6.64
Stage 3	-10.45	6.57
Stage 3	-10.65	6.49
Stage 3	-10.85	6.4
Stage 3	-11.05	6.3
Stage 3	-11.25	6.2



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Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	-11.45	6.1
Stage 3	-11.65	5.99
Stage 3	-11.85	5.87
Stage 3	-12.05	5.75
Stage 3	-12.25	5.63
Stage 3	-12.45	5.5
Stage 3	-12.65	5.37
Stage 3	-12.85	5.24
Stage 3	-13.05	5.1
Stage 3	-13.25	4.96
Stage 3	-13.45	4.82
Stage 3	-13.65	4.68
Stage 3	-13.85	4.53
Stage 3	-14.05	4.39
Stage 3	-14.25	4.24
Stage 3	-14.45	4.09
Stage 3	-14.65	3.94
Stage 3	-14.85	3.79
Stage 3	-15.05	3.64
Stage 3	-15.25	3.49
Stage 3	-15.45	3.33
Stage 3	-15.65	3.18
Stage 3	-15.85	3.03
Stage 3	-16.05	2.87
Stage 3	-16.25	2.72
Stage 3	-16.45	2.56
Stage 3	-16.65	2.41
Stage 3	-16.85	2.26
Stage 3	-17.05	2.1
Stage 3	-17.1	2.06

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**Tabella Spostamento Nominal - RIGHT Stage: Stage 3**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	0	1.63
Stage 3	-0.2	1.57
Stage 3	-0.4	1.5
Stage 3	-0.6	1.4
Stage 3	-0.8	1.3
Stage 3	-1	1.18
Stage 3	-1.2	1.04
Stage 3	-1.4	0.89
Stage 3	-1.6	0.74
Stage 3	-1.8	0.57
Stage 3	-2	0.4
Stage 3	-2.2	0.21
Stage 3	-2.4	0.02
Stage 3	-2.6	-0.17
Stage 3	-2.8	-0.37
Stage 3	-3	-0.58
Stage 3	-3.2	-0.79
Stage 3	-3.4	-1
Stage 3	-3.6	-1.21
Stage 3	-3.8	-1.42
Stage 3	-4	-1.63
Stage 3	-4.2	-1.84
Stage 3	-4.4	-2.05
Stage 3	-4.6	-2.26
Stage 3	-4.8	-2.46
Stage 3	-5	-2.66
Stage 3	-5.2	-2.85
Stage 3	-5.4	-3.04
Stage 3	-5.6	-3.23
Stage 3	-5.8	-3.41
Stage 3	-6	-3.58
Stage 3	-6.2	-3.74
Stage 3	-6.4	-3.9
Stage 3	-6.6	-4.04
Stage 3	-6.8	-4.18
Stage 3	-7	-4.32
Stage 3	-7.2	-4.44
Stage 3	-7.4	-4.55
Stage 3	-7.6	-4.66
Stage 3	-7.8	-4.75
Stage 3	-8	-4.83
Stage 3	-8.2	-4.91
Stage 3	-8.4	-4.98
Stage 3	-8.6	-5.03
Stage 3	-8.65	-5.04
Stage 3	-8.85	-5.09
Stage 3	-9.05	-5.12
Stage 3	-9.25	-5.15
Stage 3	-9.45	-5.16
Stage 3	-9.65	-5.17
Stage 3	-9.85	-5.17
Stage 3	-10.05	-5.16
Stage 3	-10.25	-5.14
Stage 3	-10.45	-5.12
Stage 3	-10.65	-5.09
Stage 3	-10.85	-5.05
Stage 3	-11.05	-5.01
Stage 3	-11.25	-4.96

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Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	-11.45	-4.91
Stage 3	-11.65	-4.85
Stage 3	-11.85	-4.78
Stage 3	-12.05	-4.71
Stage 3	-12.25	-4.64
Stage 3	-12.45	-4.56
Stage 3	-12.65	-4.48
Stage 3	-12.85	-4.4
Stage 3	-13.05	-4.31
Stage 3	-13.25	-4.22
Stage 3	-13.45	-4.13
Stage 3	-13.65	-4.03
Stage 3	-13.85	-3.94
Stage 3	-14.05	-3.84
Stage 3	-14.25	-3.74
Stage 3	-14.45	-3.64
Stage 3	-14.65	-3.53
Stage 3	-14.85	-3.43
Stage 3	-15.05	-3.32
Stage 3	-15.25	-3.22
Stage 3	-15.45	-3.11
Stage 3	-15.65	-3.01
Stage 3	-15.85	-2.9
Stage 3	-16.05	-2.79
Stage 3	-16.25	-2.68
Stage 3	-16.45	-2.58
Stage 3	-16.65	-2.47
Stage 3	-16.85	-2.36
Stage 3	-17.05	-2.25
Stage 3	-17.1	-2.23

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

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**Tabella Spostamento Nominal - LEFT Stage: Stage 4**

Design Assumption: Nominal		Tipo Risultato: Spostamento	Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)	
Stage 4	0	1.77	
Stage 4	-0.2	1.82	
Stage 4	-0.4	1.88	
Stage 4	-0.6	1.96	
Stage 4	-0.8	2.05	
Stage 4	-1	2.16	
Stage 4	-1.2	2.27	
Stage 4	-1.4	2.4	
Stage 4	-1.6	2.54	
Stage 4	-1.8	2.69	
Stage 4	-2	2.84	
Stage 4	-2.2	3	
Stage 4	-2.4	3.16	
Stage 4	-2.6	3.33	
Stage 4	-2.8	3.51	
Stage 4	-3	3.68	
Stage 4	-3.2	3.86	
Stage 4	-3.4	4.04	
Stage 4	-3.6	4.22	
Stage 4	-3.8	4.4	
Stage 4	-4	4.58	
Stage 4	-4.2	4.75	
Stage 4	-4.4	4.93	
Stage 4	-4.6	5.09	
Stage 4	-4.8	5.26	
Stage 4	-5	5.42	
Stage 4	-5.2	5.57	
Stage 4	-5.4	5.72	
Stage 4	-5.6	5.86	
Stage 4	-5.8	6	
Stage 4	-6	6.13	
Stage 4	-6.2	6.25	
Stage 4	-6.4	6.36	
Stage 4	-6.6	6.46	
Stage 4	-6.8	6.55	
Stage 4	-7	6.64	
Stage 4	-7.2	6.71	
Stage 4	-7.4	6.78	
Stage 4	-7.6	6.83	
Stage 4	-7.8	6.88	
Stage 4	-8	6.91	
Stage 4	-8.2	6.94	
Stage 4	-8.4	6.95	
Stage 4	-8.6	6.96	
Stage 4	-8.65	6.96	
Stage 4	-8.85	6.95	
Stage 4	-9.05	6.93	
Stage 4	-9.25	6.91	
Stage 4	-9.45	6.87	
Stage 4	-9.65	6.83	
Stage 4	-9.85	6.77	
Stage 4	-10.05	6.71	
Stage 4	-10.25	6.64	
Stage 4	-10.45	6.57	
Stage 4	-10.65	6.49	
Stage 4	-10.85	6.4	
Stage 4	-11.05	6.3	
Stage 4	-11.25	6.2	

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Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 4	-11.45	6.1
Stage 4	-11.65	5.98
Stage 4	-11.85	5.87
Stage 4	-12.05	5.75
Stage 4	-12.25	5.63
Stage 4	-12.45	5.5
Stage 4	-12.65	5.37
Stage 4	-12.85	5.24
Stage 4	-13.05	5.1
Stage 4	-13.25	4.96
Stage 4	-13.45	4.82
Stage 4	-13.65	4.68
Stage 4	-13.85	4.53
Stage 4	-14.05	4.39
Stage 4	-14.25	4.24
Stage 4	-14.45	4.09
Stage 4	-14.65	3.94
Stage 4	-14.85	3.79
Stage 4	-15.05	3.64
Stage 4	-15.25	3.49
Stage 4	-15.45	3.33
Stage 4	-15.65	3.18
Stage 4	-15.85	3.03
Stage 4	-16.05	2.87
Stage 4	-16.25	2.72
Stage 4	-16.45	2.56
Stage 4	-16.65	2.41
Stage 4	-16.85	2.26
Stage 4	-17.05	2.1
Stage 4	-17.1	2.06

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**Tabella Spostamento Nominal - RIGHT Stage: Stage 4**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 4	0	1.63
Stage 4	-0.2	1.57
Stage 4	-0.4	1.5
Stage 4	-0.6	1.4
Stage 4	-0.8	1.3
Stage 4	-1	1.18
Stage 4	-1.2	1.04
Stage 4	-1.4	0.89
Stage 4	-1.6	0.74
Stage 4	-1.8	0.57
Stage 4	-2	0.4
Stage 4	-2.2	0.21
Stage 4	-2.4	0.02
Stage 4	-2.6	-0.17
Stage 4	-2.8	-0.38
Stage 4	-3	-0.58
Stage 4	-3.2	-0.79
Stage 4	-3.4	-1
Stage 4	-3.6	-1.21
Stage 4	-3.8	-1.42
Stage 4	-4	-1.63
Stage 4	-4.2	-1.84
Stage 4	-4.4	-2.05
Stage 4	-4.6	-2.26
Stage 4	-4.8	-2.46
Stage 4	-5	-2.66
Stage 4	-5.2	-2.85
Stage 4	-5.4	-3.04
Stage 4	-5.6	-3.23
Stage 4	-5.8	-3.41
Stage 4	-6	-3.58
Stage 4	-6.2	-3.74
Stage 4	-6.4	-3.9
Stage 4	-6.6	-4.04
Stage 4	-6.8	-4.18
Stage 4	-7	-4.32
Stage 4	-7.2	-4.44
Stage 4	-7.4	-4.55
Stage 4	-7.6	-4.66
Stage 4	-7.8	-4.75
Stage 4	-8	-4.83
Stage 4	-8.2	-4.91
Stage 4	-8.4	-4.98
Stage 4	-8.6	-5.03
Stage 4	-8.65	-5.04
Stage 4	-8.85	-5.09
Stage 4	-9.05	-5.12
Stage 4	-9.25	-5.15
Stage 4	-9.45	-5.16
Stage 4	-9.65	-5.17
Stage 4	-9.85	-5.17
Stage 4	-10.05	-5.16
Stage 4	-10.25	-5.14
Stage 4	-10.45	-5.12
Stage 4	-10.65	-5.09
Stage 4	-10.85	-5.05
Stage 4	-11.05	-5.01
Stage 4	-11.25	-4.96

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Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 4	-11.45	-4.91
Stage 4	-11.65	-4.85
Stage 4	-11.85	-4.78
Stage 4	-12.05	-4.71
Stage 4	-12.25	-4.64
Stage 4	-12.45	-4.56
Stage 4	-12.65	-4.48
Stage 4	-12.85	-4.4
Stage 4	-13.05	-4.31
Stage 4	-13.25	-4.22
Stage 4	-13.45	-4.13
Stage 4	-13.65	-4.03
Stage 4	-13.85	-3.94
Stage 4	-14.05	-3.84
Stage 4	-14.25	-3.74
Stage 4	-14.45	-3.64
Stage 4	-14.65	-3.53
Stage 4	-14.85	-3.43
Stage 4	-15.05	-3.32
Stage 4	-15.25	-3.22
Stage 4	-15.45	-3.11
Stage 4	-15.65	-3.01
Stage 4	-15.85	-2.9
Stage 4	-16.05	-2.79
Stage 4	-16.25	-2.68
Stage 4	-16.45	-2.58
Stage 4	-16.65	-2.47
Stage 4	-16.85	-2.36
Stage 4	-17.05	-2.25
Stage 4	-17.1	-2.23

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**Tabella Spostamento Nominal - LEFT Stage: Stage 5**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	0	0.91
Stage 5	-0.2	1.03
Stage 5	-0.4	1.17
Stage 5	-0.6	1.33
Stage 5	-0.8	1.5
Stage 5	-1	1.68
Stage 5	-1.2	1.87
Stage 5	-1.4	2.06
Stage 5	-1.6	2.27
Stage 5	-1.8	2.47
Stage 5	-2	2.69
Stage 5	-2.2	2.9
Stage 5	-2.4	3.12
Stage 5	-2.6	3.34
Stage 5	-2.8	3.55
Stage 5	-3	3.77
Stage 5	-3.2	3.98
Stage 5	-3.4	4.19
Stage 5	-3.6	4.39
Stage 5	-3.8	4.59
Stage 5	-4	4.78
Stage 5	-4.2	4.97
Stage 5	-4.4	5.15
Stage 5	-4.6	5.32
Stage 5	-4.8	5.48
Stage 5	-5	5.63
Stage 5	-5.2	5.77
Stage 5	-5.4	5.9
Stage 5	-5.6	6.02
Stage 5	-5.8	6.14
Stage 5	-6	6.24
Stage 5	-6.2	6.32
Stage 5	-6.4	6.4
Stage 5	-6.6	6.47
Stage 5	-6.8	6.53
Stage 5	-7	6.57
Stage 5	-7.2	6.61
Stage 5	-7.4	6.63
Stage 5	-7.6	6.65
Stage 5	-7.8	6.65
Stage 5	-8	6.65
Stage 5	-8.2	6.64
Stage 5	-8.4	6.62
Stage 5	-8.6	6.59
Stage 5	-8.65	6.58
Stage 5	-8.85	6.54
Stage 5	-9.05	6.5
Stage 5	-9.25	6.45
Stage 5	-9.45	6.4
Stage 5	-9.65	6.34
Stage 5	-9.85	6.27
Stage 5	-10.05	6.2
Stage 5	-10.25	6.12
Stage 5	-10.45	6.04
Stage 5	-10.65	5.95
Stage 5	-10.85	5.86
Stage 5	-11.05	5.77
Stage 5	-11.25	5.67



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Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	-11.45	5.56
Stage 5	-11.65	5.45
Stage 5	-11.85	5.34
Stage 5	-12.05	5.23
Stage 5	-12.25	5.11
Stage 5	-12.45	4.99
Stage 5	-12.65	4.86
Stage 5	-12.85	4.74
Stage 5	-13.05	4.61
Stage 5	-13.25	4.48
Stage 5	-13.45	4.35
Stage 5	-13.65	4.22
Stage 5	-13.85	4.08
Stage 5	-14.05	3.95
Stage 5	-14.25	3.81
Stage 5	-14.45	3.67
Stage 5	-14.65	3.54
Stage 5	-14.85	3.4
Stage 5	-15.05	3.26
Stage 5	-15.25	3.12
Stage 5	-15.45	2.97
Stage 5	-15.65	2.83
Stage 5	-15.85	2.69
Stage 5	-16.05	2.55
Stage 5	-16.25	2.41
Stage 5	-16.45	2.27
Stage 5	-16.65	2.12
Stage 5	-16.85	1.98
Stage 5	-17.05	1.84
Stage 5	-17.1	1.81

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**Tabella Spostamento Nominal - RIGHT Stage: Stage 5**

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	0	0.7
Stage 5	-0.2	0.57
Stage 5	-0.4	0.43
Stage 5	-0.6	0.27
Stage 5	-0.8	0.09
Stage 5	-1	-0.09
Stage 5	-1.2	-0.29
Stage 5	-1.4	-0.49
Stage 5	-1.6	-0.7
Stage 5	-1.8	-0.92
Stage 5	-2	-1.14
Stage 5	-2.2	-1.36
Stage 5	-2.4	-1.59
Stage 5	-2.6	-1.82
Stage 5	-2.8	-2.05
Stage 5	-3	-2.27
Stage 5	-3.2	-2.5
Stage 5	-3.4	-2.72
Stage 5	-3.6	-2.93
Stage 5	-3.8	-3.14
Stage 5	-4	-3.35
Stage 5	-4.2	-3.55
Stage 5	-4.4	-3.74
Stage 5	-4.6	-3.92
Stage 5	-4.8	-4.1
Stage 5	-5	-4.26
Stage 5	-5.2	-4.42
Stage 5	-5.4	-4.57
Stage 5	-5.6	-4.71
Stage 5	-5.8	-4.83
Stage 5	-6	-4.95
Stage 5	-6.2	-5.06
Stage 5	-6.4	-5.15
Stage 5	-6.6	-5.23
Stage 5	-6.8	-5.31
Stage 5	-7	-5.37
Stage 5	-7.2	-5.42
Stage 5	-7.4	-5.47
Stage 5	-7.6	-5.5
Stage 5	-7.8	-5.52
Stage 5	-8	-5.54
Stage 5	-8.2	-5.55
Stage 5	-8.4	-5.55
Stage 5	-8.6	-5.54
Stage 5	-8.65	-5.54
Stage 5	-8.85	-5.52
Stage 5	-9.05	-5.5
Stage 5	-9.25	-5.47
Stage 5	-9.45	-5.44
Stage 5	-9.65	-5.4
Stage 5	-9.85	-5.36
Stage 5	-10.05	-5.31
Stage 5	-10.25	-5.26
Stage 5	-10.45	-5.2
Stage 5	-10.65	-5.14
Stage 5	-10.85	-5.07
Stage 5	-11.05	-5
Stage 5	-11.25	-4.92

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METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	142 di 325

Design Assumption: Nominal Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	-11.45	-4.84
Stage 5	-11.65	-4.76
Stage 5	-11.85	-4.67
Stage 5	-12.05	-4.59
Stage 5	-12.25	-4.5
Stage 5	-12.45	-4.4
Stage 5	-12.65	-4.31
Stage 5	-12.85	-4.21
Stage 5	-13.05	-4.11
Stage 5	-13.25	-4.01
Stage 5	-13.45	-3.9
Stage 5	-13.65	-3.8
Stage 5	-13.85	-3.69
Stage 5	-14.05	-3.58
Stage 5	-14.25	-3.48
Stage 5	-14.45	-3.37
Stage 5	-14.65	-3.26
Stage 5	-14.85	-3.15
Stage 5	-15.05	-3.03
Stage 5	-15.25	-2.92
Stage 5	-15.45	-2.81
Stage 5	-15.65	-2.7
Stage 5	-15.85	-2.58
Stage 5	-16.05	-2.47
Stage 5	-16.25	-2.36
Stage 5	-16.45	-2.24
Stage 5	-16.65	-2.13
Stage 5	-16.85	-2.02
Stage 5	-17.05	-1.9
Stage 5	-17.1	-1.88

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	143 di 325

## Risultati Paratia

### Tabella Risultati Paratia Nominal - Stage: Stage 1

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	144 di 325

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	145 di 325

### Tabella Risultati Paratia Nominal - Stage: Stage 1

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	146 di 325

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	147 di 325

## Tabella Risultati Paratia Nominal - Stage: Stage 2

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	0	-691.41	152.78
Stage 2	-0.2	-660.86	152.78
Stage 2	-0.4	-630.46	151.98
Stage 2	-0.6	-600.37	150.45
Stage 2	-0.8	-570.61	148.83
Stage 2	-1	-541.27	146.69
Stage 2	-1.2	-512.44	144.15
Stage 2	-1.4	-484.14	141.51
Stage 2	-1.6	-456.43	138.54
Stage 2	-1.8	-429.33	135.48
Stage 2	-2	-402.9	132.18
Stage 2	-2.2	-377.16	128.68
Stage 2	-2.4	-352.13	125.14
Stage 2	-2.6	-327.84	121.46
Stage 2	-2.8	-304.29	117.79
Stage 2	-3	-281.48	114.01
Stage 2	-3.2	-259.45	110.17
Stage 2	-3.4	-238.17	106.38
Stage 2	-3.6	-217.66	102.56
Stage 2	-3.8	-197.9	98.81
Stage 2	-4	-178.89	95.07
Stage 2	-4.2	-160.62	91.34
Stage 2	-4.4	-143.07	87.72
Stage 2	-4.6	-126.25	84.14
Stage 2	-4.8	-110.11	80.69
Stage 2	-5	-94.65	77.3
Stage 2	-5.2	-79.86	73.92
Stage 2	-5.4	-65.75	70.58
Stage 2	-5.6	-52.31	67.21
Stage 2	-5.8	-39.53	63.87
Stage 2	-6	-27.43	60.52
Stage 2	-6.2	-16	57.15
Stage 2	-6.4	-5.23	53.83
Stage 2	-6.6	4.87	50.5
Stage 2	-6.8	14.31	47.2
Stage 2	-7	23.09	43.9
Stage 2	-7.2	31.21	40.59
Stage 2	-7.4	38.67	37.32
Stage 2	-7.6	45.48	34.03
Stage 2	-7.8	51.62	30.73
Stage 2	-8	57.12	27.46
Stage 2	-8.2	61.95	24.17
Stage 2	-8.4	66.13	20.89
Stage 2	-8.6	69.65	17.6
Stage 2	-8.65	70.43	15.52
Stage 2	-8.85	73.12	13.45
Stage 2	-9.05	75.14	10.14
Stage 2	-9.25	76.5	6.79
Stage 2	-9.45	77.18	3.41
Stage 2	-9.65	77.19	0.02
Stage 2	-9.85	76.87	-1.57
Stage 2	-10.05	76.29	-2.94
Stage 2	-10.25	75.46	-4.15
Stage 2	-10.45	74.41	-5.23
Stage 2	-10.65	73.17	-6.18
Stage 2	-10.85	71.77	-7.03
Stage 2	-11.05	70.21	-7.81
Stage 2	-11.25	68.5	-8.54



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	148 di 325

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	66.65	-9.26
Stage 2	-11.65	64.65	-9.96
Stage 2	-11.85	62.52	-10.69
Stage 2	-12.05	60.22	-11.45
Stage 2	-12.25	57.77	-12.28
Stage 2	-12.45	55.13	-13.2
Stage 2	-12.65	52.28	-14.21
Stage 2	-12.85	49.27	-15.08
Stage 2	-13.05	46.12	-15.73
Stage 2	-13.25	42.89	-16.18
Stage 2	-13.45	39.59	-16.46
Stage 2	-13.65	36.28	-16.57
Stage 2	-13.85	32.98	-16.52
Stage 2	-14.05	29.71	-16.32
Stage 2	-14.25	26.52	-15.99
Stage 2	-14.45	23.41	-15.54
Stage 2	-14.65	20.41	-14.98
Stage 2	-14.85	17.55	-14.31
Stage 2	-15.05	14.84	-13.53
Stage 2	-15.25	12.31	-12.67
Stage 2	-15.45	9.97	-11.72
Stage 2	-15.65	7.83	-10.67
Stage 2	-15.85	5.92	-9.56
Stage 2	-16.05	4.25	-8.37
Stage 2	-16.25	2.83	-7.09
Stage 2	-16.45	1.68	-5.74
Stage 2	-16.65	0.82	-4.31
Stage 2	-16.85	0.26	-2.81
Stage 2	-17.05	0.01	-1.24
Stage 2	-17.1	0	-0.21

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	149 di 325

**Tabella Risultati Paratia Nominal - Stage: Stage 2**

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	0	700.85	-153.17
Stage 2	-0.2	670.21	-153.17
Stage 2	-0.4	639.8	-152.08
Stage 2	-0.6	609.68	-150.58
Stage 2	-0.8	579.94	-148.7
Stage 2	-1	550.64	-146.48
Stage 2	-1.2	521.85	-143.98
Stage 2	-1.4	493.61	-141.21
Stage 2	-1.6	465.97	-138.21
Stage 2	-1.8	438.96	-135.02
Stage 2	-2	412.63	-131.66
Stage 2	-2.2	387	-128.18
Stage 2	-2.4	362.08	-124.58
Stage 2	-2.6	337.9	-120.9
Stage 2	-2.8	314.47	-117.16
Stage 2	-3	291.79	-113.39
Stage 2	-3.2	269.87	-109.6
Stage 2	-3.4	248.71	-105.81
Stage 2	-3.6	228.3	-102.05
Stage 2	-3.8	208.63	-98.32
Stage 2	-4	189.7	-94.65
Stage 2	-4.2	171.49	-91.04
Stage 2	-4.4	153.99	-87.51
Stage 2	-4.6	137.18	-84.07
Stage 2	-4.8	121.04	-80.72
Stage 2	-5	105.54	-77.49
Stage 2	-5.2	90.67	-74.32
Stage 2	-5.4	76.44	-71.16
Stage 2	-5.6	62.84	-68.03
Stage 2	-5.8	49.85	-64.91
Stage 2	-6	37.49	-61.83
Stage 2	-6.2	25.73	-58.77
Stage 2	-6.4	14.58	-55.75
Stage 2	-6.6	4.03	-52.77
Stage 2	-6.8	-5.93	-49.82
Stage 2	-7	-15.32	-46.91
Stage 2	-7.2	-24.12	-44.04
Stage 2	-7.4	-32.36	-41.2
Stage 2	-7.6	-40.04	-38.39
Stage 2	-7.8	-47.17	-35.62
Stage 2	-8	-53.74	-32.88
Stage 2	-8.2	-59.77	-30.16
Stage 2	-8.4	-65.27	-27.47
Stage 2	-8.6	-70.23	-24.8
Stage 2	-8.65	-71.38	-23.13
Stage 2	-8.85	-75.68	-21.47
Stage 2	-9.05	-79.44	-18.82
Stage 2	-9.25	-82.68	-16.18
Stage 2	-9.45	-85.39	-13.53
Stage 2	-9.65	-87.56	-10.88
Stage 2	-9.85	-89.07	-7.53
Stage 2	-10.05	-89.97	-4.51
Stage 2	-10.25	-90.33	-1.8
Stage 2	-10.45	-90.2	0.64
Stage 2	-10.65	-89.63	2.84
Stage 2	-10.85	-88.67	4.83
Stage 2	-11.05	-87.34	6.64
Stage 2	-11.25	-85.68	8.28

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	-83.72	9.81
Stage 2	-11.65	-81.47	11.23
Stage 2	-11.85	-78.96	12.59
Stage 2	-12.05	-76.18	13.9
Stage 2	-12.25	-73.14	15.2
Stage 2	-12.45	-69.84	16.5
Stage 2	-12.65	-66.27	17.84
Stage 2	-12.85	-62.47	18.97
Stage 2	-13.05	-58.51	19.82
Stage 2	-13.25	-54.43	20.42
Stage 2	-13.45	-50.27	20.79
Stage 2	-13.65	-46.08	20.94
Stage 2	-13.85	-41.9	20.9
Stage 2	-14.05	-37.77	20.67
Stage 2	-14.25	-33.71	20.27
Stage 2	-14.45	-29.77	19.71
Stage 2	-14.65	-25.97	19.01
Stage 2	-14.85	-22.33	18.17
Stage 2	-15.05	-18.9	17.2
Stage 2	-15.25	-15.67	16.11
Stage 2	-15.45	-12.69	14.9
Stage 2	-15.65	-9.98	13.59
Stage 2	-15.85	-7.54	12.17
Stage 2	-16.05	-5.41	10.65
Stage 2	-16.25	-3.61	9.03
Stage 2	-16.45	-2.14	7.31
Stage 2	-16.65	-1.05	5.49
Stage 2	-16.85	-0.33	3.58
Stage 2	-17.05	-0.01	1.58
Stage 2	-17.1	0	0.27

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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### Tabella Risultati Paratia Nominal - Stage: Stage 3

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	0	-1161.57	386.23
Stage 3	-0.2	-1084.33	386.23
Stage 3	-0.4	-1007.91	382.08
Stage 3	-0.6	-932.48	377.14
Stage 3	-0.8	-858.06	372.12
Stage 3	-1	-784.74	366.57
Stage 3	-1.2	-712.63	360.58
Stage 3	-1.4	-641.74	354.43
Stage 3	-1.6	-572.16	347.89
Stage 3	-1.8	-503.93	341.18
Stage 3	-2	-437.1	334.12
Stage 3	-2.2	-371.75	326.75
Stage 3	-2.4	-307.91	319.21
Stage 3	-2.6	-245.64	311.38
Stage 3	-2.8	-184.95	303.4
Stage 3	-3	-125.92	295.15
Stage 3	-3.2	-68.6	286.64
Stage 3	-3.4	-13	277.99
Stage 3	-3.6	40.82	269.1
Stage 3	-3.8	92.83	260.06
Stage 3	-4	142.99	250.79
Stage 3	-4.2	191.25	241.29
Stage 3	-4.4	237.58	231.65
Stage 3	-4.6	281.93	221.78
Stage 3	-4.8	324.29	211.77
Stage 3	-5	364.59	201.53
Stage 3	-5.2	402.8	191.01
Stage 3	-5.4	438.84	180.22
Stage 3	-5.6	472.66	169.1
Stage 3	-5.8	504.2	157.69
Stage 3	-6	533.39	145.94
Stage 3	-6.2	560.16	133.85
Stage 3	-6.4	584.45	121.45
Stage 3	-6.6	606.18	108.69
Stage 3	-6.8	625.31	95.62
Stage 3	-7	641.74	82.18
Stage 3	-7.2	655.42	68.36
Stage 3	-7.4	666.26	54.2
Stage 3	-7.6	674.19	39.65
Stage 3	-7.8	679.13	24.7
Stage 3	-8	681.01	9.39
Stage 3	-8.2	679.74	-6.33
Stage 3	-8.4	675.25	-22.44
Stage 3	-8.6	667.45	-38.98
Stage 3	-8.65	664.97	-49.57
Stage 3	-8.85	652.93	-60.23
Stage 3	-9.05	637.4	-77.66
Stage 3	-9.25	618.29	-95.53
Stage 3	-9.45	595.52	-113.84
Stage 3	-9.65	569.01	-132.56
Stage 3	-9.85	540.69	-141.63
Stage 3	-10.05	511.63	-145.26
Stage 3	-10.25	482.93	-143.5
Stage 3	-10.45	455.07	-139.3
Stage 3	-10.65	428.07	-135.02
Stage 3	-10.85	401.93	-130.7
Stage 3	-11.05	376.66	-126.36
Stage 3	-11.25	352.25	-122.04

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	152 di 325

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.45	328.7	-117.77
Stage 3	-11.65	305.99	-113.55
Stage 3	-11.85	284.1	-109.42
Stage 3	-12.05	263.03	-105.37
Stage 3	-12.25	242.74	-101.43
Stage 3	-12.45	223.22	-97.62
Stage 3	-12.65	204.43	-93.93
Stage 3	-12.85	186.4	-90.16
Stage 3	-13.05	169.15	-86.27
Stage 3	-13.25	152.69	-82.32
Stage 3	-13.45	137.02	-78.31
Stage 3	-13.65	122.17	-74.25
Stage 3	-13.85	108.15	-70.14
Stage 3	-14.05	94.95	-65.98
Stage 3	-14.25	82.59	-61.79
Stage 3	-14.45	71.08	-57.57
Stage 3	-14.65	60.42	-53.31
Stage 3	-14.85	50.61	-49.03
Stage 3	-15.05	41.67	-44.72
Stage 3	-15.25	33.59	-40.4
Stage 3	-15.45	26.38	-36.06
Stage 3	-15.65	20.04	-31.69
Stage 3	-15.85	14.57	-27.32
Stage 3	-16.05	9.99	-22.93
Stage 3	-16.25	6.28	-18.52
Stage 3	-16.45	3.46	-14.1
Stage 3	-16.65	1.53	-9.66
Stage 3	-16.85	0.43	-5.51
Stage 3	-17.05	0.02	-2.06
Stage 3	-17.1	0	-0.33

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	153 di 325

### Tabella Risultati Paratia Nominal - Stage: Stage 3

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	0	1254.97	-386.34
Stage 3	-0.2	1177.7	-386.34
Stage 3	-0.4	1101.11	-382.95
Stage 3	-0.6	1025.29	-379.09
Stage 3	-0.8	950.34	-374.76
Stage 3	-1	876.34	-369.99
Stage 3	-1.2	803.38	-364.8
Stage 3	-1.4	731.54	-359.2
Stage 3	-1.6	660.9	-353.22
Stage 3	-1.8	591.52	-346.88
Stage 3	-2	523.48	-340.22
Stage 3	-2.2	456.82	-333.27
Stage 3	-2.4	391.61	-326.05
Stage 3	-2.6	327.9	-318.56
Stage 3	-2.8	265.74	-310.82
Stage 3	-3	205.17	-302.83
Stage 3	-3.2	146.25	-294.61
Stage 3	-3.4	89.02	-286.16
Stage 3	-3.6	33.52	-277.49
Stage 3	-3.8	-20.2	-268.6
Stage 3	-4	-72.1	-259.5
Stage 3	-4.2	-122.14	-250.2
Stage 3	-4.4	-170.28	-240.7
Stage 3	-4.6	-216.48	-230.99
Stage 3	-4.8	-260.7	-221.09
Stage 3	-5	-302.9	-210.99
Stage 3	-5.2	-343.02	-200.63
Stage 3	-5.4	-381.01	-189.97
Stage 3	-5.6	-416.81	-178.99
Stage 3	-5.8	-450.35	-167.7
Stage 3	-6	-481.57	-156.09
Stage 3	-6.2	-510.41	-144.17
Stage 3	-6.4	-536.79	-131.92
Stage 3	-6.6	-560.66	-119.34
Stage 3	-6.8	-581.95	-106.44
Stage 3	-7	-600.58	-93.19
Stage 3	-7.2	-616.5	-79.6
Stage 3	-7.4	-629.64	-65.66
Stage 3	-7.6	-639.91	-51.36
Stage 3	-7.8	-647.25	-36.71
Stage 3	-8	-651.58	-21.68
Stage 3	-8.2	-652.84	-6.27
Stage 3	-8.4	-650.94	9.52
Stage 3	-8.6	-645.8	25.7
Stage 3	-8.65	-643.99	36.06
Stage 3	-8.85	-634.69	46.49
Stage 3	-9.05	-621.98	63.58
Stage 3	-9.25	-605.76	81.09
Stage 3	-9.45	-585.96	99.02
Stage 3	-9.65	-562.48	117.38
Stage 3	-9.85	-537.42	125.3
Stage 3	-10.05	-511.86	127.81
Stage 3	-10.25	-486.66	126.01
Stage 3	-10.45	-461.88	123.9
Stage 3	-10.65	-437.57	121.53
Stage 3	-10.85	-413.77	118.99
Stage 3	-11.05	-390.51	116.31
Stage 3	-11.25	-367.8	113.55

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	154 di 325

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.45	-345.65	110.74
Stage 3	-11.65	-324.07	107.89
Stage 3	-11.85	-303.06	105.05
Stage 3	-12.05	-282.62	102.23
Stage 3	-12.25	-262.73	99.46
Stage 3	-12.45	-243.37	96.76
Stage 3	-12.65	-224.55	94.14
Stage 3	-12.85	-206.26	91.41
Stage 3	-13.05	-188.57	88.49
Stage 3	-13.25	-171.49	85.4
Stage 3	-13.45	-155.05	82.16
Stage 3	-13.65	-139.3	78.76
Stage 3	-13.85	-124.26	75.22
Stage 3	-14.05	-109.95	71.53
Stage 3	-14.25	-96.41	67.71
Stage 3	-14.45	-83.66	63.76
Stage 3	-14.65	-71.72	59.69
Stage 3	-14.85	-60.62	55.49
Stage 3	-15.05	-50.39	51.18
Stage 3	-15.25	-41.04	46.75
Stage 3	-15.45	-32.59	42.22
Stage 3	-15.65	-25.08	37.57
Stage 3	-15.85	-18.52	32.82
Stage 3	-16.05	-12.92	27.96
Stage 3	-16.25	-8.32	22.99
Stage 3	-16.45	-4.74	17.92
Stage 3	-16.65	-2.19	12.74
Stage 3	-16.85	-0.65	7.71
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.1	0	0.51

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	155 di 325

### Tabella Risultati Paratia Nominal - Stage: Stage 4

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	0	-1161.63	386.26
Stage 4	-0.2	-1084.38	386.26
Stage 4	-0.4	-1007.96	382.12
Stage 4	-0.6	-932.52	377.18
Stage 4	-0.8	-858.09	372.16
Stage 4	-1	-784.76	366.61
Stage 4	-1.2	-712.64	360.62
Stage 4	-1.4	-641.75	354.47
Stage 4	-1.6	-572.16	347.93
Stage 4	-1.8	-503.92	341.22
Stage 4	-2	-437.09	334.16
Stage 4	-2.2	-371.73	326.79
Stage 4	-2.4	-307.88	319.25
Stage 4	-2.6	-245.59	311.42
Stage 4	-2.8	-184.91	303.44
Stage 4	-3	-125.87	295.19
Stage 4	-3.2	-68.53	286.68
Stage 4	-3.4	-12.93	278.03
Stage 4	-3.6	40.9	269.14
Stage 4	-3.8	92.92	260.1
Stage 4	-4	143.09	250.83
Stage 4	-4.2	191.35	241.33
Stage 4	-4.4	237.69	231.69
Stage 4	-4.6	282.05	221.82
Stage 4	-4.8	324.42	211.81
Stage 4	-5	364.73	201.57
Stage 4	-5.2	402.94	191.05
Stage 4	-5.4	438.99	180.27
Stage 4	-5.6	472.82	169.14
Stage 4	-5.8	504.37	157.74
Stage 4	-6	533.57	145.99
Stage 4	-6.2	560.34	133.89
Stage 4	-6.4	584.64	121.49
Stage 4	-6.6	606.39	108.73
Stage 4	-6.8	625.52	95.66
Stage 4	-7	641.96	82.22
Stage 4	-7.2	655.65	68.4
Stage 4	-7.4	666.49	54.24
Stage 4	-7.6	674.43	39.7
Stage 4	-7.8	679.38	24.75
Stage 4	-8	681.27	9.44
Stage 4	-8.2	680.01	-6.29
Stage 4	-8.4	675.53	-22.4
Stage 4	-8.6	667.75	-38.94
Stage 4	-8.65	665.27	-49.53
Stage 4	-8.65	664.66	-49.53
Stage 4	-8.85	652.63	-60.16
Stage 4	-9.05	637.11	-77.59
Stage 4	-9.25	618.02	-95.46
Stage 4	-9.45	595.26	-113.77
Stage 4	-9.65	568.76	-132.5
Stage 4	-9.85	540.45	-141.56
Stage 4	-10.05	511.41	-145.2
Stage 4	-10.25	482.73	-143.43
Stage 4	-10.45	454.88	-139.24
Stage 4	-10.65	427.89	-134.96
Stage 4	-10.85	401.76	-130.64
Stage 4	-11.05	376.5	-126.3



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	156 di 325

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-11.25	352.1	-121.98
Stage 4	-11.45	328.56	-117.72
Stage 4	-11.65	305.86	-113.5
Stage 4	-11.85	283.98	-109.37
Stage 4	-12.05	262.92	-105.32
Stage 4	-12.25	242.64	-101.38
Stage 4	-12.45	223.13	-97.58
Stage 4	-12.65	204.35	-93.89
Stage 4	-12.85	186.33	-90.12
Stage 4	-13.05	169.08	-86.23
Stage 4	-13.25	152.63	-82.28
Stage 4	-13.45	136.97	-78.28
Stage 4	-13.65	122.13	-74.22
Stage 4	-13.85	108.11	-70.11
Stage 4	-14.05	94.92	-65.95
Stage 4	-14.25	82.56	-61.76
Stage 4	-14.45	71.05	-57.55
Stage 4	-14.65	60.4	-53.29
Stage 4	-14.85	50.59	-49.02
Stage 4	-15.05	41.65	-44.71
Stage 4	-15.25	33.57	-40.38
Stage 4	-15.45	26.37	-36.04
Stage 4	-15.65	20.03	-31.68
Stage 4	-15.85	14.57	-27.31
Stage 4	-16.05	9.98	-22.92
Stage 4	-16.25	6.28	-18.51
Stage 4	-16.45	3.46	-14.1
Stage 4	-16.65	1.53	-9.66
Stage 4	-16.85	0.43	-5.51
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.1	0	-0.33

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	157 di 325

**Tabella Risultati Paratia Nominal - Stage: Stage 4**

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	0	1255.02	-386.38
Stage 4	-0.2	1177.75	-386.38
Stage 4	-0.4	1101.15	-382.99
Stage 4	-0.6	1025.33	-379.12
Stage 4	-0.8	950.37	-374.79
Stage 4	-1	876.36	-370.02
Stage 4	-1.2	803.4	-364.83
Stage 4	-1.4	731.55	-359.24
Stage 4	-1.6	660.89	-353.26
Stage 4	-1.8	591.51	-346.92
Stage 4	-2	523.46	-340.26
Stage 4	-2.2	456.8	-333.31
Stage 4	-2.4	391.58	-326.09
Stage 4	-2.6	327.86	-318.6
Stage 4	-2.8	265.69	-310.86
Stage 4	-3	205.11	-302.87
Stage 4	-3.2	146.18	-294.65
Stage 4	-3.4	88.95	-286.2
Stage 4	-3.6	33.44	-277.53
Stage 4	-3.8	-20.29	-268.64
Stage 4	-4	-72.2	-259.54
Stage 4	-4.2	-122.24	-250.24
Stage 4	-4.4	-170.39	-240.74
Stage 4	-4.6	-216.6	-231.03
Stage 4	-4.8	-260.83	-221.13
Stage 4	-5	-303.03	-211.03
Stage 4	-5.2	-343.17	-200.67
Stage 4	-5.4	-381.17	-190.01
Stage 4	-5.6	-416.97	-179.03
Stage 4	-5.8	-450.52	-167.74
Stage 4	-6	-481.75	-156.14
Stage 4	-6.2	-510.59	-144.21
Stage 4	-6.4	-536.98	-131.96
Stage 4	-6.6	-560.86	-119.39
Stage 4	-6.8	-582.16	-106.48
Stage 4	-7	-600.8	-93.23
Stage 4	-7.2	-616.73	-79.64
Stage 4	-7.4	-629.87	-65.7
Stage 4	-7.6	-640.16	-51.41
Stage 4	-7.8	-647.51	-36.75
Stage 4	-8	-651.85	-21.72
Stage 4	-8.2	-653.11	-6.32
Stage 4	-8.4	-651.22	9.47
Stage 4	-8.6	-646.09	25.65
Stage 4	-8.65	-644.29	36.02
Stage 4	-8.65	-643.68	36.02
Stage 4	-8.85	-634.39	46.42
Stage 4	-9.05	-621.69	63.51
Stage 4	-9.25	-605.49	81.02
Stage 4	-9.45	-585.7	98.95
Stage 4	-9.65	-562.23	117.31
Stage 4	-9.85	-537.19	125.24
Stage 4	-10.05	-511.64	127.74
Stage 4	-10.25	-486.45	125.95
Stage 4	-10.45	-461.68	123.83
Stage 4	-10.65	-437.39	121.47
Stage 4	-10.85	-413.6	118.93
Stage 4	-11.05	-390.35	116.26

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	158 di 325

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-11.25	-367.65	113.5
Stage 4	-11.45	-345.51	110.68
Stage 4	-11.65	-323.95	107.84
Stage 4	-11.85	-302.95	105
Stage 4	-12.05	-282.51	102.18
Stage 4	-12.25	-262.63	99.41
Stage 4	-12.45	-243.28	96.72
Stage 4	-12.65	-224.46	94.1
Stage 4	-12.85	-206.19	91.37
Stage 4	-13.05	-188.5	88.45
Stage 4	-13.25	-171.43	85.37
Stage 4	-13.45	-155	82.13
Stage 4	-13.65	-139.26	78.73
Stage 4	-13.85	-124.22	75.19
Stage 4	-14.05	-109.92	71.5
Stage 4	-14.25	-96.38	67.68
Stage 4	-14.45	-83.63	63.74
Stage 4	-14.65	-71.7	59.67
Stage 4	-14.85	-60.6	55.48
Stage 4	-15.05	-50.37	51.16
Stage 4	-15.25	-41.02	46.74
Stage 4	-15.45	-32.58	42.21
Stage 4	-15.65	-25.07	37.56
Stage 4	-15.85	-18.51	32.81
Stage 4	-16.05	-12.92	27.95
Stage 4	-16.25	-8.32	22.99
Stage 4	-16.45	-4.74	17.92
Stage 4	-16.65	-2.19	12.74
Stage 4	-16.85	-0.65	7.71
Stage 4	-17.05	-0.03	3.11
Stage 4	-17.1	0	0.51

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	159 di 325

**Tabella Risultati Paratia Nominal - Stage: Stage 5**

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	0	-1176.37	564.03
Stage 5	-0.2	-1063.57	564.03
Stage 5	-0.4	-953.63	549.71
Stage 5	-0.6	-846.66	534.84
Stage 5	-0.8	-742.7	519.77
Stage 5	-1	-641.84	504.3
Stage 5	-1.2	-544.14	488.5
Stage 5	-1.4	-449.65	472.48
Stage 5	-1.6	-358.42	456.15
Stage 5	-1.8	-270.49	439.62
Stage 5	-2	-185.93	422.83
Stage 5	-2.2	-104.77	405.78
Stage 5	-2.4	-27.06	388.54
Stage 5	-2.6	47.15	371.08
Stage 5	-2.8	117.84	353.44
Stage 5	-3	184.96	335.59
Stage 5	-3.2	248.46	317.53
Stage 5	-3.4	308.33	299.31
Stage 5	-3.6	364.51	280.89
Stage 5	-3.8	416.97	262.31
Stage 5	-4	465.67	243.52
Stage 5	-4.2	510.58	224.53
Stage 5	-4.4	551.65	205.36
Stage 5	-4.6	588.85	185.99
Stage 5	-4.8	622.13	166.44
Stage 5	-5	651.47	146.68
Stage 5	-5.2	676.8	126.65
Stage 5	-5.4	698.07	106.32
Stage 5	-5.6	715.2	85.66
Stage 5	-5.8	728.13	64.67
Stage 5	-6	736.8	43.34
Stage 5	-6.2	741.13	21.66
Stage 5	-6.4	741.06	-0.36
Stage 5	-6.6	736.51	-22.75
Stage 5	-6.8	727.41	-45.5
Stage 5	-7	713.68	-68.63
Stage 5	-7.2	695.25	-92.16
Stage 5	-7.4	672.04	-116.06
Stage 5	-7.6	643.96	-140.37
Stage 5	-7.8	610.94	-165.1
Stage 5	-8	572.9	-190.24
Stage 5	-8.2	529.74	-215.8
Stage 5	-8.4	481.38	-241.79
Stage 5	-8.6	427.73	-268.22
Stage 5	-8.65	413.48	-285.01
Stage 5	-8.65	413.06	-285.01
Stage 5	-8.85	421.45	41.98
Stage 5	-9.05	424.38	14.61
Stage 5	-9.25	421.73	-13.21
Stage 5	-9.45	413.44	-41.48
Stage 5	-9.65	400.22	-66.07
Stage 5	-9.85	384.62	-78.03
Stage 5	-10.05	367.32	-86.46
Stage 5	-10.25	349.05	-91.35
Stage 5	-10.45	330.52	-92.7
Stage 5	-10.65	312.42	-90.48
Stage 5	-10.85	294.83	-87.95
Stage 5	-11.05	277.74	-85.43

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	160 di 325

Design Assumption: Nominal Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	261.15	-82.95
Stage 5	-11.45	245.05	-80.52
Stage 5	-11.65	229.42	-78.15
Stage 5	-11.85	214.25	-75.84
Stage 5	-12.05	199.53	-73.61
Stage 5	-12.25	185.23	-71.48
Stage 5	-12.45	171.34	-69.44
Stage 5	-12.65	157.84	-67.5
Stage 5	-12.85	144.76	-65.44
Stage 5	-13.05	132.11	-63.23
Stage 5	-13.25	119.93	-60.92
Stage 5	-13.45	108.22	-58.51
Stage 5	-13.65	97.03	-55.99
Stage 5	-13.85	86.35	-53.38
Stage 5	-14.05	76.21	-50.68
Stage 5	-14.25	66.64	-47.88
Stage 5	-14.45	57.64	-45.01
Stage 5	-14.65	49.23	-42.04
Stage 5	-14.85	41.43	-38.99
Stage 5	-15.05	34.26	-35.86
Stage 5	-15.25	27.73	-32.65
Stage 5	-15.45	21.85	-29.37
Stage 5	-15.65	16.65	-26.01
Stage 5	-15.85	12.14	-22.57
Stage 5	-16.05	8.33	-19.06
Stage 5	-16.25	5.23	-15.47
Stage 5	-16.45	2.87	-11.81
Stage 5	-16.65	1.26	-8.07
Stage 5	-16.85	0.35	-4.55
Stage 5	-17.05	0.01	-1.67
Stage 5	-17.1	0	-0.26

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Tabella Risultati Paratia Nominal - Stage: Stage 5

Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	0	1213.48	-564.16
Stage 5	-0.2	1100.65	-564.16
Stage 5	-0.4	990.56	-550.46
Stage 5	-0.6	883.29	-536.32
Stage 5	-0.8	778.94	-521.76
Stage 5	-1	677.58	-506.81
Stage 5	-1.2	579.28	-491.47
Stage 5	-1.4	484.13	-475.78
Stage 5	-1.6	392.18	-459.73
Stage 5	-1.8	303.51	-443.35
Stage 5	-2	218.18	-426.69
Stage 5	-2.2	136.22	-409.77
Stage 5	-2.4	57.7	-392.61
Stage 5	-2.6	-17.34	-375.19
Stage 5	-2.8	-88.85	-357.55
Stage 5	-3	-156.78	-339.68
Stage 5	-3.2	-221.1	-321.58
Stage 5	-3.4	-281.76	-303.27
Stage 5	-3.6	-338.71	-284.75
Stage 5	-3.8	-391.91	-266.01
Stage 5	-4	-441.32	-247.06
Stage 5	-4.2	-486.9	-227.91
Stage 5	-4.4	-528.61	-208.54
Stage 5	-4.6	-566.4	-188.96
Stage 5	-4.8	-600.24	-169.17
Stage 5	-5	-630.07	-149.16
Stage 5	-5.2	-655.85	-128.88
Stage 5	-5.4	-677.5	-108.26
Stage 5	-5.6	-694.96	-87.31
Stage 5	-5.8	-708.16	-66.01
Stage 5	-6	-717.03	-44.36
Stage 5	-6.2	-721.51	-22.36
Stage 5	-6.4	-721.51	0
Stage 5	-6.6	-716.96	22.73
Stage 5	-6.8	-707.8	45.83
Stage 5	-7	-693.93	69.31
Stage 5	-7.2	-675.3	93.18
Stage 5	-7.4	-651.81	117.44
Stage 5	-7.6	-623.39	142.11
Stage 5	-7.8	-589.95	167.18
Stage 5	-8	-551.42	192.66
Stage 5	-8.2	-507.71	218.57
Stage 5	-8.4	-458.72	244.91
Stage 5	-8.6	-404.39	271.68
Stage 5	-8.65	-389.95	288.7
Stage 5	-8.65	-389.72	288.7
Stage 5	-8.85	-397.34	-38.07
Stage 5	-9.05	-399.4	-10.3
Stage 5	-9.25	-395.81	17.92
Stage 5	-9.45	-386.49	46.6
Stage 5	-9.65	-372.17	71.63
Stage 5	-9.85	-355.98	80.91
Stage 5	-10.05	-338.67	86.59
Stage 5	-10.25	-320.93	88.68
Stage 5	-10.45	-303.5	87.18
Stage 5	-10.65	-286.56	84.66
Stage 5	-10.85	-270.16	82.04
Stage 5	-11.05	-254.29	79.33

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	-238.96	76.64
Stage 5	-11.45	-224.15	74.03
Stage 5	-11.65	-209.85	71.53
Stage 5	-11.85	-196.02	69.14
Stage 5	-12.05	-182.64	66.89
Stage 5	-12.25	-169.69	64.79
Stage 5	-12.45	-157.12	62.85
Stage 5	-12.65	-144.9	61.08
Stage 5	-12.85	-133.05	59.27
Stage 5	-13.05	-121.58	57.36
Stage 5	-13.25	-110.51	55.34
Stage 5	-13.45	-99.86	53.23
Stage 5	-13.65	-89.66	51.02
Stage 5	-13.85	-79.91	48.72
Stage 5	-14.05	-70.65	46.33
Stage 5	-14.25	-61.88	43.85
Stage 5	-14.45	-53.62	41.29
Stage 5	-14.65	-45.89	38.64
Stage 5	-14.85	-38.71	35.91
Stage 5	-15.05	-32.09	33.09
Stage 5	-15.25	-26.05	30.2
Stage 5	-15.45	-20.6	27.23
Stage 5	-15.65	-15.77	24.18
Stage 5	-15.85	-11.56	21.05
Stage 5	-16.05	-7.99	17.86
Stage 5	-16.25	-5.07	14.58
Stage 5	-16.45	-2.83	11.22
Stage 5	-16.65	-1.27	7.79
Stage 5	-16.85	-0.36	4.54
Stage 5	-17.05	-0.01	1.74
Stage 5	-17.05	-0.01	1.74
Stage 5	-17.1	0	0.28

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Risultati Elementi strutturali

Design Assumption:	Tipo Risultato:	Slab				
Nominal	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	454.3263	455.6737	691.4135	-700.8451	-153.3073	45
Stage 3	448.329	461.671	1161.574	-1254.967	-386.7803	45
Stage 4	448.329	461.671	1161.631	-1255.024	-386.8177	45
Stage 5	340.3495	345.6505	1176.373	-1213.48	-569.7808	29

Design Assumption:	Tipo Risultato:	Slab_New				
Nominal	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	0	0	0	0	0	0
Stage 4	175	175	0.611846	-0.611846	-0.024687493	25
Stage 5	175.0139	174.9861	0.4235848	-0.2292692	-343.8513	25



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Risultati Terreno

### Tabella Risultati Terreno Left Wall - Nominal - Stage 1

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT									
Stage	Z (m)	Sigma V	Sigma HStato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 1	0	40	0	V-C 0.3183.843	12	0	0	0	0
Stage 1	-0.2	27.92	21.553	V-C 0.3183.843	12	0	0	0	21.553
Stage 1	-0.4	35.558	23.107	V-C 0.3183.843	12	0	0	0	23.107
Stage 1	-0.6	36.799	24.661	V-C 0.3183.843	12	0	0	0	24.661
Stage 1	-0.8	42.506	26.216	V-C 0.3183.843	12	0	0	0	26.216
Stage 1	-1	47.475	27.774	V-C 0.3183.843	12	0	0	0	27.774
Stage 1	-1.2	49.75	29.333	V-C 0.3183.843	12	0	0	0	29.333
Stage 1	-1.4	54.483	30.894	V-C 0.3183.843	12	0	0	0	30.894
Stage 1	-1.6	57.135	32.459	V-C 0.3183.843	12	0	0	0	32.459
Stage 1	-1.8	61.711	34.026	V-C 0.3183.843	12	0	0	0	34.026
Stage 1	-2	66.123	35.597	V-C 0.3183.843	12	0	0	0	35.597
Stage 1	-2.2	69.055	37.172	V-C 0.3183.843	12	0	0	0	37.172
Stage 1	-2.4	73.4	38.751	V-C 0.3183.843	12	0	0	0	38.751
Stage 1	-2.6	76.469	40.334	V-C 0.3183.843	12	0	0	0	40.334
Stage 1	-2.8	80.758	41.921	V-C 0.3183.843	12	0	0	0	41.921
Stage 1	-3	84.976	43.513	V-C 0.3183.843	12	0	0	0	43.513
Stage 1	-3.2	88.478	45.11	V-C 0.3183.843	12	0	0	0	45.11
Stage 1	-3.4	92.646	46.712	V-C 0.3183.843	12	0	0	0	46.712
Stage 1	-3.6	95.895	48.32	V-C 0.3183.843	12	0	0	0	48.32
Stage 1	-3.8	100.038	49.932	V-C 0.3183.843	12	0	0	0	49.932
Stage 1	-4	103.896	51.55	V-C 0.3183.843	12	0	0	0	51.55
Stage 1	-4.2	107.231	53.173	V-C 0.3183.843	12	0	0	0	53.173
Stage 1	-4.4	111.33	54.802	V-C 0.3183.843	12	0	0	0	54.802
Stage 1	-4.6	114.708	56.436	V-C 0.3183.843	12	0	0	0	56.436
Stage 1	-4.8	118.789	58.076	V-C 0.3183.843	12	0	0	0	58.076
Stage 1	-5	121.845	59.226	V-C 0.3183.843	12	1	0	0	60.226
Stage 1	-5.2	123.269	59.884	V-C 0.3183.843	12	3	0	0	62.884
Stage 1	-5.4	125.312	60.549	V-C 0.3183.843	12	5	0	0	65.549
Stage 1	-5.6	126.764	61.218	V-C 0.3183.843	12	7	0	0	68.218
Stage 1	-5.8	128.796	61.893	V-C 0.3183.843	12	9	0	0	70.893
Stage 1	-6	130.811	62.574	V-C 0.3183.843	12	11	0	0	73.574
Stage 1	-6.2	132.294	63.259	V-C 0.3183.843	12	13	0	0	76.259
Stage 1	-6.4	134.3	63.949	V-C 0.3183.843	12	15	0	0	78.949
Stage 1	-6.6	135.804	64.645	V-C 0.3183.843	12	17	0	0	81.645
Stage 1	-6.8	137.801	65.345	V-C 0.3183.843	12	19	0	0	84.345
Stage 1	-7	139.786	66.05	V-C 0.3183.843	12	21	0	0	87.05
Stage 1	-7.2	141.312	66.76	V-C 0.3183.843	12	23	0	0	89.76
Stage 1	-7.4	143.29	67.474	V-C 0.3183.843	12	25	0	0	92.474
Stage 1	-7.6	145.258	68.193	V-C 0.3183.843	12	27	0	0	95.193
Stage 1	-7.8	146.804	68.916	V-C 0.3183.843	12	29	0	0	97.916
Stage 1	-8	148.766	69.643	V-C 0.3183.843	12	31	0	0	100.643
Stage 1	-8.2	150.326	70.375	V-C 0.3183.843	12	33	0	0	103.375
Stage 1	-8.4	152.283	71.11	V-C 0.3183.843	12	35	0	0	106.11
Stage 1	-8.6	154.232	71.849	V-C 0.3183.843	12	37	0	0	108.849
Stage 1	-8.65	154.682	72.034	V-C 0.3183.843	12	37.5	0	0	109.534
Stage 1	-8.85	156.258	72.778	V-C 0.3183.843	12	39.5	0	0	112.278
Stage 1	-9.05	158.202	73.525	V-C 0.3183.843	12	41.5	0	0	115.025
Stage 1	-9.25	160.139	74.276	V-C 0.3183.843	12	43.5	0	0	117.776
Stage 1	-9.45	161.728	75.03	V-C 0.3183.843	12	45.5	0	0	120.53
Stage 1	-9.65	163.662	62.474	V-C 0.2057.551	0	47.5	0	0	109.974
Stage 1	-9.85	165.26	63.059	V-C 0.2057.551	0	49.5	0	0	112.559
Stage 1	-10.05	167.091	63.646	V-C 0.2057.551	0	51.5	0	0	115.146
Stage 1	-10.25	168.82	64.236	V-C 0.2057.551	0	53.5	0	0	117.736
Stage 1	-10.45	170.241	64.829	V-C 0.2057.551	0	55.5	0	0	120.329
Stage 1	-10.65	171.979	65.425	V-C 0.2057.551	0	57.5	0	0	122.925

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 1	-10.85	173.418	66.024	V-C	0.2057.551	0	59.5	0	0	125.524
Stage 1	-11.05	175.163	66.625	V-C	0.2057.551	0	61.5	0	0	128.125
Stage 1	-11.25	176.908	67.228	V-C	0.2057.551	0	63.5	0	0	130.728
Stage 1	-11.45	178.37	67.834	V-C	0.2057.551	0	65.5	0	0	133.334
Stage 1	-11.65	180.122	68.443	V-C	0.2057.551	0	67.5	0	0	135.943
Stage 1	-11.85	181.599	69.054	V-C	0.2057.551	0	69.5	0	0	138.554
Stage 1	-12.05	183.356	69.666	V-C	0.2057.551	0	71.5	0	0	141.166
Stage 1	-12.25	185.113	70.281	V-C	0.2057.551	0	73.5	0	0	143.781
Stage 1	-12.45	186.609	70.899	V-C	0.2057.551	0	75.5	0	0	146.398
Stage 1	-12.65	188.371	71.518	V-C	0.2057.551	0	77.5	0	0	149.018
Stage 1	-12.85	189.879	72.139	V-C	0.2057.551	0	79.5	0	0	151.639
Stage 1	-13.05	191.646	72.762	V-C	0.2057.551	0	81.5	0	0	154.262
Stage 1	-13.25	193.412	73.386	V-C	0.2057.551	0	83.5	0	0	156.886
Stage 1	-13.45	194.936	74.013	V-C	0.2057.551	0	85.5	0	0	159.513
Stage 1	-13.65	196.707	74.641	V-C	0.2057.551	0	87.5	0	0	162.141
Stage 1	-13.85	198.241	75.271	V-C	0.2057.551	0	89.5	0	0	164.771
Stage 1	-14.05	200.016	75.902	V-C	0.2057.551	0	91.5	0	0	167.402
Stage 1	-14.25	201.79	76.536	V-C	0.2057.551	0	93.5	0	0	170.035
Stage 1	-14.45	203.338	77.17	V-C	0.2057.551	0	95.5	0	0	172.67
Stage 1	-14.65	205.115	77.806	V-C	0.2057.551	0	97.5	0	0	175.306
Stage 1	-14.85	206.672	78.444	V-C	0.2057.551	0	99.5	0	0	177.944
Stage 1	-15.05	208.453	79.083	V-C	0.2057.551	0	101.5	0	0	180.583
Stage 1	-15.25	210.233	79.723	V-C	0.2057.551	0	103.5	0	0	183.223
Stage 1	-15.45	211.802	80.365	V-C	0.2057.551	0	105.5	0	0	185.864
Stage 1	-15.65	213.585	81.008	V-C	0.2057.551	0	107.5	0	0	188.508
Stage 1	-15.85	215.368	81.652	V-C	0.2057.551	0	109.5	0	0	191.152
Stage 1	-16.05	216.947	82.297	V-C	0.2057.551	0	111.5	0	0	193.797
Stage 1	-16.25	218.732	82.944	V-C	0.2057.551	0	113.5	0	0	196.444
Stage 1	-16.45	220.319	83.592	V-C	0.2057.551	0	115.5	0	0	199.092
Stage 1	-16.65	222.107	84.241	V-C	0.2057.551	0	117.5	0	0	201.74
Stage 1	-16.85	223.894	84.891	V-C	0.2057.551	0	119.5	0	0	204.391
Stage 1	-17.05	225.49	85.542	V-C	0.2057.551	0	121.5	0	0	207.042
Stage 1	-17.1	225.889	85.705	V-C	0.2057.551	0	122	0	0	207.705

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	166 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato RIGHT									
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 1	0	0	0	V-C 0.3183.843	12	0	0	0	0
Stage 1	-0.2	3.8	21.553	V-C 0.3183.843	12	0	0	0	21.553
Stage 1	-0.4	7.6	23.107	V-C 0.3183.843	12	0	0	0	23.107
Stage 1	-0.6	11.4	24.661	V-C 0.3183.843	12	0	0	0	24.661
Stage 1	-0.8	15.2	26.216	V-C 0.3183.843	12	0	0	0	26.216
Stage 1	-1	19	27.774	V-C 0.3183.843	12	0	0	0	27.774
Stage 1	-1.2	22.8	29.333	V-C 0.3183.843	12	0	0	0	29.333
Stage 1	-1.4	26.6	30.894	V-C 0.3183.843	12	0	0	0	30.894
Stage 1	-1.6	30.4	32.459	V-C 0.3183.843	12	0	0	0	32.459
Stage 1	-1.8	34.2	34.026	V-C 0.3183.843	12	0	0	0	34.026
Stage 1	-2	38	35.597	V-C 0.3183.843	12	0	0	0	35.597
Stage 1	-2.2	41.8	37.172	V-C 0.3183.843	12	0	0	0	37.172
Stage 1	-2.4	45.6	38.751	V-C 0.3183.843	12	0	0	0	38.751
Stage 1	-2.6	49.4	40.334	V-C 0.3183.843	12	0	0	0	40.334
Stage 1	-2.8	53.2	41.921	V-C 0.3183.843	12	0	0	0	41.921
Stage 1	-3	57	43.513	V-C 0.3183.843	12	0	0	0	43.513
Stage 1	-3.2	60.8	45.11	V-C 0.3183.843	12	0	0	0	45.11
Stage 1	-3.4	64.6	46.712	V-C 0.3183.843	12	0	0	0	46.712
Stage 1	-3.6	68.4	48.32	V-C 0.3183.843	12	0	0	0	48.32
Stage 1	-3.8	72.2	49.932	V-C 0.3183.843	12	0	0	0	49.932
Stage 1	-4	76	51.55	V-C 0.3183.843	12	0	0	0	51.55
Stage 1	-4.2	79.8	53.173	V-C 0.3183.843	12	0	0	0	53.173
Stage 1	-4.4	83.6	54.802	V-C 0.3183.843	12	0	0	0	54.802
Stage 1	-4.6	87.4	56.436	V-C 0.3183.843	12	0	0	0	56.436
Stage 1	-4.8	91.2	58.076	V-C 0.3183.843	12	0	0	0	58.076
Stage 1	-5	94	59.226	V-C 0.3183.843	12	1	0	0	60.226
Stage 1	-5.2	95.8	59.884	V-C 0.3183.843	12	3	0	0	62.884
Stage 1	-5.4	97.6	60.549	V-C 0.3183.843	12	5	0	0	65.549
Stage 1	-5.6	99.4	61.218	V-C 0.3183.843	12	7	0	0	68.218
Stage 1	-5.8	101.2	61.893	V-C 0.3183.843	12	9	0	0	70.893
Stage 1	-6	103	62.574	V-C 0.3183.843	12	11	0	0	73.574
Stage 1	-6.2	104.8	63.259	V-C 0.3183.843	12	13	0	0	76.259
Stage 1	-6.4	106.6	63.949	V-C 0.3183.843	12	15	0	0	78.949
Stage 1	-6.6	108.4	64.645	V-C 0.3183.843	12	17	0	0	81.645
Stage 1	-6.8	110.2	65.345	V-C 0.3183.843	12	19	0	0	84.345
Stage 1	-7	112	66.05	V-C 0.3183.843	12	21	0	0	87.05
Stage 1	-7.2	113.8	66.76	V-C 0.3183.843	12	23	0	0	89.76
Stage 1	-7.4	115.6	67.474	V-C 0.3183.843	12	25	0	0	92.474
Stage 1	-7.6	117.4	68.193	V-C 0.3183.843	12	27	0	0	95.193
Stage 1	-7.8	119.2	68.916	V-C 0.3183.843	12	29	0	0	97.916
Stage 1	-8	121	69.643	V-C 0.3183.843	12	31	0	0	100.643
Stage 1	-8.2	122.8	70.375	V-C 0.3183.843	12	33	0	0	103.374
Stage 1	-8.4	124.6	71.11	V-C 0.3183.843	12	35	0	0	106.11
Stage 1	-8.6	126.4	71.849	V-C 0.3183.843	12	37	0	0	108.849
Stage 1	-8.65	126.85	72.034	V-C 0.3183.843	12	37.5	0	0	109.534
Stage 1	-8.85	128.65	72.778	V-C 0.3183.843	12	39.5	0	0	112.278
Stage 1	-9.05	130.45	73.525	V-C 0.3183.843	12	41.5	0	0	115.025
Stage 1	-9.25	132.25	74.276	V-C 0.3183.843	12	43.5	0	0	117.776
Stage 1	-9.45	134.05	75.03	V-C 0.3183.843	12	45.5	0	0	120.53
Stage 1	-9.65	135.85	62.474	V-C 0.2057.551	0	47.5	0	0	109.974
Stage 1	-9.85	137.65	63.059	V-C 0.2057.551	0	49.5	0	0	112.559
Stage 1	-10.05	139.45	63.646	V-C 0.2057.551	0	51.5	0	0	115.146
Stage 1	-10.25	141.25	64.236	V-C 0.2057.551	0	53.5	0	0	117.736
Stage 1	-10.45	143.05	64.829	V-C 0.2057.551	0	55.5	0	0	120.329
Stage 1	-10.65	144.85	65.425	V-C 0.2057.551	0	57.5	0	0	122.925
Stage 1	-10.85	146.65	66.024	V-C 0.2057.551	0	59.5	0	0	125.524
Stage 1	-11.05	148.45	66.625	V-C 0.2057.551	0	61.5	0	0	128.125
Stage 1	-11.25	150.25	67.228	V-C 0.2057.551	0	63.5	0	0	130.728
Stage 1	-11.45	152.05	67.834	V-C 0.2057.551	0	65.5	0	0	133.334
Stage 1	-11.65	153.85	68.443	V-C 0.2057.551	0	67.5	0	0	135.943
Stage 1	-11.85	155.65	69.054	V-C 0.2057.551	0	69.5	0	0	138.554

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	167 di 325

Design Assumption: Nominal Risultati Terreno										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
			Muro: LEFT			Lato RIGHT				
Stage 1	-12.05	157.45	69.666	V-C	0.205	7.551	0	71.5	0	0 141.166
Stage 1	-12.25	159.25	70.281	V-C	0.205	7.551	0	73.5	0	0 143.781
Stage 1	-12.45	161.05	70.899	V-C	0.205	7.551	0	75.5	0	0 146.398
Stage 1	-12.65	162.85	71.518	V-C	0.205	7.551	0	77.5	0	0 149.018
Stage 1	-12.85	164.65	72.139	V-C	0.205	7.551	0	79.5	0	0 151.639
Stage 1	-13.05	166.45	72.762	V-C	0.205	7.551	0	81.5	0	0 154.262
Stage 1	-13.25	168.25	73.386	V-C	0.205	7.551	0	83.5	0	0 156.886
Stage 1	-13.45	170.05	74.013	V-C	0.205	7.551	0	85.5	0	0 159.513
Stage 1	-13.65	171.85	74.641	V-C	0.205	7.551	0	87.5	0	0 162.141
Stage 1	-13.85	173.65	75.271	V-C	0.205	7.551	0	89.5	0	0 164.771
Stage 1	-14.05	175.45	75.902	V-C	0.205	7.551	0	91.5	0	0 167.402
Stage 1	-14.25	177.25	76.536	V-C	0.205	7.551	0	93.5	0	0 170.035
Stage 1	-14.45	179.05	77.17	V-C	0.205	7.551	0	95.5	0	0 172.67
Stage 1	-14.65	180.85	77.806	V-C	0.205	7.551	0	97.5	0	0 175.306
Stage 1	-14.85	182.65	78.444	V-C	0.205	7.551	0	99.5	0	0 177.944
Stage 1	-15.05	184.45	79.083	V-C	0.205	7.551	0	101.5	0	0 180.583
Stage 1	-15.25	186.25	79.723	V-C	0.205	7.551	0	103.5	0	0 183.223
Stage 1	-15.45	188.05	80.365	V-C	0.205	7.551	0	105.5	0	0 185.864
Stage 1	-15.65	189.85	81.008	V-C	0.205	7.551	0	107.5	0	0 188.508
Stage 1	-15.85	191.65	81.652	V-C	0.205	7.551	0	109.5	0	0 191.152
Stage 1	-16.05	193.45	82.297	V-C	0.205	7.551	0	111.5	0	0 193.797
Stage 1	-16.25	195.25	82.944	V-C	0.205	7.551	0	113.5	0	0 196.444
Stage 1	-16.45	197.05	83.592	V-C	0.205	7.551	0	115.5	0	0 199.092
Stage 1	-16.65	198.85	84.241	V-C	0.205	7.551	0	117.5	0	0 201.74
Stage 1	-16.85	200.65	84.891	V-C	0.205	7.551	0	119.5	0	0 204.391
Stage 1	-17.05	202.45	85.542	V-C	0.205	7.551	0	121.5	0	0 207.042
Stage 1	-17.1	202.9	85.705	V-C	0.205	7.551	0	122	0	0 207.705

**Tabella Risultati Terreno Right wall - Nominal - Stage 1**

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 1	0	0	0	V-C	0.318	3.843	12	0	0	0
Stage 1	-0.2	3.8	11.808	V-C	0.318	3.843	12	0	0	11.808
Stage 1	-0.4	7.6	13.615	V-C	0.318	3.843	12	0	0	13.615
Stage 1	-0.6	11.4	15.423	V-C	0.318	3.843	12	0	0	15.423
Stage 1	-0.8	15.2	17.231	V-C	0.318	3.843	12	0	0	17.231
Stage 1	-1	19	19.038	V-C	0.318	3.843	12	0	0	19.038
Stage 1	-1.2	22.8	20.846	V-C	0.318	3.843	12	0	0	20.846
Stage 1	-1.4	26.6	22.654	V-C	0.318	3.843	12	0	0	22.654
Stage 1	-1.6	30.4	24.462	V-C	0.318	3.843	12	0	0	24.462
Stage 1	-1.8	34.2	26.27	V-C	0.318	3.843	12	0	0	26.27
Stage 1	-2	38	28.078	V-C	0.318	3.843	12	0	0	28.078
Stage 1	-2.2	41.8	29.886	V-C	0.318	3.843	12	0	0	29.886
Stage 1	-2.4	45.6	31.695	V-C	0.318	3.843	12	0	0	31.695
Stage 1	-2.6	49.4	33.503	V-C	0.318	3.843	12	0	0	33.503
Stage 1	-2.8	53.2	35.312	V-C	0.318	3.843	12	0	0	35.312
Stage 1	-3	57	37.121	V-C	0.318	3.843	12	0	0	37.121
Stage 1	-3.2	60.8	38.93	V-C	0.318	3.843	12	0	0	38.93
Stage 1	-3.4	64.6	40.739	V-C	0.318	3.843	12	0	0	40.739
Stage 1	-3.6	68.4	42.548	V-C	0.318	3.843	12	0	0	42.548
Stage 1	-3.8	72.2	44.358	V-C	0.318	3.843	12	0	0	44.358
Stage 1	-4	76	46.168	V-C	0.318	3.843	12	0	0	46.168
Stage 1	-4.2	79.8	47.978	V-C	0.318	3.843	12	0	0	47.978
Stage 1	-4.4	83.6	49.788	V-C	0.318	3.843	12	0	0	49.788
Stage 1	-4.6	87.4	51.598	V-C	0.318	3.843	12	0	0	51.598
Stage 1	-4.8	91.2	53.409	V-C	0.318	3.843	12	0	0	53.409
Stage 1	-5	94	54.724	V-C	0.318	3.843	12	1	0	55.724
Stage 1	-5.2	95.8	55.543	V-C	0.318	3.843	12	3	0	58.543
Stage 1	-5.4	97.6	56.362	V-C	0.318	3.843	12	5	0	61.362
Stage 1	-5.6	99.4	57.182	V-C	0.318	3.843	12	7	0	64.182
Stage 1	-5.8	101.2	58.002	V-C	0.318	3.843	12	9	0	67.002
Stage 1	-6	103	58.823	V-C	0.318	3.843	12	11	0	69.823
Stage 1	-6.2	104.8	59.643	V-C	0.318	3.843	12	13	0	72.643
Stage 1	-6.4	106.6	60.464	V-C	0.318	3.843	12	15	0	75.464
Stage 1	-6.6	108.4	61.285	V-C	0.318	3.843	12	17	0	78.285
Stage 1	-6.8	110.2	62.107	V-C	0.318	3.843	12	19	0	81.107
Stage 1	-7	112	62.929	V-C	0.318	3.843	12	21	0	83.929
Stage 1	-7.2	113.8	63.751	V-C	0.318	3.843	12	23	0	86.751
Stage 1	-7.4	115.6	64.574	V-C	0.318	3.843	12	25	0	89.574
Stage 1	-7.6	117.4	65.397	V-C	0.318	3.843	12	27	0	92.397
Stage 1	-7.8	119.2	66.22	V-C	0.318	3.843	12	29	0	95.22
Stage 1	-8	121	67.044	V-C	0.318	3.843	12	31	0	98.044
Stage 1	-8.2	122.8	67.868	V-C	0.318	3.843	12	33	0	100.868
Stage 1	-8.4	124.6	68.693	V-C	0.318	3.843	12	35	0	103.693
Stage 1	-8.6	126.4	69.518	V-C	0.318	3.843	12	37	0	106.518
Stage 1	-8.65	126.85	69.724	V-C	0.318	3.843	12	37.5	0	107.224
Stage 1	-8.85	128.65	70.55	V-C	0.318	3.843	12	39.5	0	110.05
Stage 1	-9.05	130.45	71.375	V-C	0.318	3.843	12	41.5	0	112.875
Stage 1	-9.25	132.25	72.202	V-C	0.318	3.843	12	43.5	0	115.702
Stage 1	-9.45	134.05	73.028	V-C	0.318	3.843	12	45.5	0	118.528
Stage 1	-9.65	135.85	60.542	V-C	0.205	7.551	0	47.5	0	108.042
Stage 1	-9.85	137.65	61.193	V-C	0.205	7.551	0	49.5	0	110.693
Stage 1	-10.05	139.45	61.845	V-C	0.205	7.551	0	51.5	0	113.345
Stage 1	-10.25	141.25	62.497	V-C	0.205	7.551	0	53.5	0	115.997
Stage 1	-10.45	143.05	63.149	V-C	0.205	7.551	0	55.5	0	118.649
Stage 1	-10.65	144.85	63.802	V-C	0.205	7.551	0	57.5	0	121.302
Stage 1	-10.85	146.65	64.456	V-C	0.205	7.551	0	59.5	0	123.956
Stage 1	-11.05	148.45	65.109	V-C	0.205	7.551	0	61.5	0	126.609
Stage 1	-11.25	150.25	65.764	V-C	0.205	7.551	0	63.5	0	129.264

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	169 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 1	-11.45	152.05	66.418	V-C	0.205	7.551	0	65.5	0	131.918
Stage 1	-11.65	153.85	67.073	V-C	0.205	7.551	0	67.5	0	134.573
Stage 1	-11.85	155.65	67.729	V-C	0.205	7.551	0	69.5	0	137.229
Stage 1	-12.05	157.45	68.385	V-C	0.205	7.551	0	71.5	0	139.885
Stage 1	-12.25	159.25	69.042	V-C	0.205	7.551	0	73.5	0	142.542
Stage 1	-12.45	161.05	69.699	V-C	0.205	7.551	0	75.5	0	145.199
Stage 1	-12.65	162.85	70.356	V-C	0.205	7.551	0	77.5	0	147.856
Stage 1	-12.85	164.65	71.014	V-C	0.205	7.551	0	79.5	0	150.514
Stage 1	-13.05	166.45	71.673	V-C	0.205	7.551	0	81.5	0	153.173
Stage 1	-13.25	168.25	72.332	V-C	0.205	7.551	0	83.5	0	155.832
Stage 1	-13.45	170.05	72.991	V-C	0.205	7.551	0	85.5	0	158.491
Stage 1	-13.65	171.85	73.651	V-C	0.205	7.551	0	87.5	0	161.151
Stage 1	-13.85	173.65	74.311	V-C	0.205	7.551	0	89.5	0	163.811
Stage 1	-14.05	175.45	74.972	V-C	0.205	7.551	0	91.5	0	166.472
Stage 1	-14.25	177.25	75.633	V-C	0.205	7.551	0	93.5	0	169.133
Stage 1	-14.45	179.05	76.295	V-C	0.205	7.551	0	95.5	0	171.795
Stage 1	-14.65	180.85	76.958	V-C	0.205	7.551	0	97.5	0	174.457
Stage 1	-14.85	182.65	77.62	V-C	0.205	7.551	0	99.5	0	177.12
Stage 1	-15.05	184.45	78.284	V-C	0.205	7.551	0	101.5	0	179.784
Stage 1	-15.25	186.25	78.947	V-C	0.205	7.551	0	103.5	0	182.447
Stage 1	-15.45	188.05	79.612	V-C	0.205	7.551	0	105.5	0	185.112
Stage 1	-15.65	189.85	80.276	V-C	0.205	7.551	0	107.5	0	187.776
Stage 1	-15.85	191.65	80.942	V-C	0.205	7.551	0	109.5	0	190.442
Stage 1	-16.05	193.45	81.607	V-C	0.205	7.551	0	111.5	0	193.107
Stage 1	-16.25	195.25	82.273	V-C	0.205	7.551	0	113.5	0	195.773
Stage 1	-16.45	197.05	82.94	V-C	0.205	7.551	0	115.5	0	198.44
Stage 1	-16.65	198.85	83.607	V-C	0.205	7.551	0	117.5	0	201.107
Stage 1	-16.85	200.65	84.275	V-C	0.205	7.551	0	119.5	0	203.775
Stage 1	-17.05	202.45	84.943	V-C	0.205	7.551	0	121.5	0	206.443
Stage 1	-17.1	202.9	85.11	V-C	0.205	7.551	0	122	0	207.11

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	170 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 1	0	20	0	V-C	0.3183.843	12	0	0	0	0
Stage 1	-0.2	16.253	11.808	V-C	0.3183.843	12	0	0	0	11.808
Stage 1	-0.4	22.868	13.615	V-C	0.3183.843	12	0	0	0	13.615
Stage 1	-0.6	23.735	15.423	V-C	0.3183.843	12	0	0	0	15.423
Stage 1	-0.8	29.248	17.231	V-C	0.3183.843	12	0	0	0	17.231
Stage 1	-1	34.1	19.038	V-C	0.3183.843	12	0	0	0	19.038
Stage 1	-1.2	36.295	20.846	V-C	0.3183.843	12	0	0	0	20.846
Stage 1	-1.4	40.971	22.654	V-C	0.3183.843	12	0	0	0	22.654
Stage 1	-1.6	43.579	24.462	V-C	0.3183.843	12	0	0	0	24.462
Stage 1	-1.8	48.122	26.27	V-C	0.3183.843	12	0	0	0	26.27
Stage 1	-2	52.507	28.078	V-C	0.3183.843	12	0	0	0	28.078
Stage 1	-2.2	55.417	29.886	V-C	0.3183.843	12	0	0	0	29.886
Stage 1	-2.4	59.743	31.695	V-C	0.3183.843	12	0	0	0	31.695
Stage 1	-2.6	62.797	33.503	V-C	0.3183.843	12	0	0	0	33.503
Stage 1	-2.8	67.072	35.312	V-C	0.3183.843	12	0	0	0	35.312
Stage 1	-3	71.278	37.121	V-C	0.3183.843	12	0	0	0	37.121
Stage 1	-3.2	74.463	38.93	V-C	0.3183.843	12	0	0	0	38.93
Stage 1	-3.4	78.639	40.739	V-C	0.3183.843	12	0	0	0	40.739
Stage 1	-3.6	81.896	42.548	V-C	0.3183.843	12	0	0	0	42.548
Stage 1	-3.8	86.046	44.358	V-C	0.3183.843	12	0	0	0	44.358
Stage 1	-4	90.157	46.168	V-C	0.3183.843	12	0	0	0	46.168
Stage 1	-4.2	93.487	47.978	V-C	0.3183.843	12	0	0	0	47.978
Stage 1	-4.4	97.58	49.788	V-C	0.3183.843	12	0	0	0	49.788
Stage 1	-4.6	100.953	51.598	V-C	0.3183.843	12	0	0	0	51.598
Stage 1	-4.8	105.03	53.409	V-C	0.3183.843	12	0	0	0	53.409
Stage 1	-5	108.082	54.724	V-C	0.3183.843	12	1	0	0	55.724
Stage 1	-5.2	109.502	55.543	V-C	0.3183.843	12	3	0	0	58.543
Stage 1	-5.4	111.541	56.362	V-C	0.3183.843	12	5	0	0	61.362
Stage 1	-5.6	112.99	57.182	V-C	0.3183.843	12	7	0	0	64.182
Stage 1	-5.8	115.019	58.002	V-C	0.3183.843	12	9	0	0	67.002
Stage 1	-6	117.031	58.823	V-C	0.3183.843	12	11	0	0	69.823
Stage 1	-6.2	118.511	59.643	V-C	0.3183.843	12	13	0	0	72.643
Stage 1	-6.4	120.515	60.464	V-C	0.3183.843	12	15	0	0	75.464
Stage 1	-6.6	122.016	61.285	V-C	0.3183.843	12	17	0	0	78.285
Stage 1	-6.8	124.011	62.107	V-C	0.3183.843	12	19	0	0	81.107
Stage 1	-7	125.994	62.929	V-C	0.3183.843	12	21	0	0	83.929
Stage 1	-7.2	127.519	63.751	V-C	0.3183.843	12	23	0	0	86.751
Stage 1	-7.4	129.495	64.574	V-C	0.3183.843	12	25	0	0	89.574
Stage 1	-7.6	131.46	65.397	V-C	0.3183.843	12	27	0	0	92.397
Stage 1	-7.8	133.005	66.22	V-C	0.3183.843	12	29	0	0	95.22
Stage 1	-8	134.966	67.044	V-C	0.3183.843	12	31	0	0	98.044
Stage 1	-8.2	136.524	67.868	V-C	0.3183.843	12	33	0	0	100.868
Stage 1	-8.4	138.48	68.693	V-C	0.3183.843	12	35	0	0	103.693
Stage 1	-8.6	140.427	69.518	V-C	0.3183.843	12	37	0	0	106.518
Stage 1	-8.65	140.82	69.724	V-C	0.3183.843	12	37.5	0	0	107.224
Stage 1	-8.85	142.395	70.55	V-C	0.3183.843	12	39.5	0	0	110.05
Stage 1	-9.05	144.339	71.375	V-C	0.3183.843	12	41.5	0	0	112.875
Stage 1	-9.25	146.276	72.202	V-C	0.3183.843	12	43.5	0	0	115.702
Stage 1	-9.45	147.865	73.028	V-C	0.3183.843	12	45.5	0	0	118.528
Stage 1	-9.65	149.799	60.542	V-C	0.2057.551	0	47.5	0	0	108.042
Stage 1	-9.85	151.397	61.193	V-C	0.2057.551	0	49.5	0	0	110.693
Stage 1	-10.05	153.327	61.845	V-C	0.2057.551	0	51.5	0	0	113.345
Stage 1	-10.25	155.251	62.497	V-C	0.2057.551	0	53.5	0	0	115.997
Stage 1	-10.45	156.86	63.149	V-C	0.2057.551	0	55.5	0	0	118.649
Stage 1	-10.65	158.782	63.802	V-C	0.2057.551	0	57.5	0	0	121.302
Stage 1	-10.85	160.399	64.456	V-C	0.2057.551	0	59.5	0	0	123.956
Stage 1	-11.05	162.317	65.109	V-C	0.2057.551	0	61.5	0	0	126.609
Stage 1	-11.25	164.23	65.764	V-C	0.2057.551	0	63.5	0	0	129.264
Stage 1	-11.45	165.856	66.418	V-C	0.2057.551	0	65.5	0	0	131.918
Stage 1	-11.65	167.767	67.073	V-C	0.2057.551	0	67.5	0	0	134.573
Stage 1	-11.85	169.4	67.729	V-C	0.2057.551	0	69.5	0	0	137.229

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	171 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 1	-12.05	171.308	68.385	V-C	0.205	7.551	0	71.5	0	0 139.885
Stage 1	-12.25	173.213	69.042	V-C	0.205	7.551	0	73.5	0	0 142.542
Stage 1	-12.45	174.853	69.699	V-C	0.205	7.551	0	75.5	0	0 145.199
Stage 1	-12.65	176.755	70.356	V-C	0.205	7.551	0	77.5	0	0 147.856
Stage 1	-12.85	178.401	71.014	V-C	0.205	7.551	0	79.5	0	0 150.514
Stage 1	-13.05	180.301	71.673	V-C	0.205	7.551	0	81.5	0	0 153.173
Stage 1	-13.25	182.198	72.332	V-C	0.205	7.551	0	83.5	0	0 155.832
Stage 1	-13.45	183.85	72.991	V-C	0.205	7.551	0	85.5	0	0 158.491
Stage 1	-13.65	185.745	73.651	V-C	0.205	7.551	0	87.5	0	0 161.151
Stage 1	-13.85	187.402	74.311	V-C	0.205	7.551	0	89.5	0	0 163.811
Stage 1	-14.05	189.295	74.972	V-C	0.205	7.551	0	91.5	0	0 166.472
Stage 1	-14.25	191.185	75.633	V-C	0.205	7.551	0	93.5	0	0 169.133
Stage 1	-14.45	192.847	76.295	V-C	0.205	7.551	0	95.5	0	0 171.795
Stage 1	-14.65	194.736	76.958	V-C	0.205	7.551	0	97.5	0	0 174.457
Stage 1	-14.85	196.402	77.62	V-C	0.205	7.551	0	99.5	0	0 177.12
Stage 1	-15.05	198.29	78.284	V-C	0.205	7.551	0	101.5	0	0 179.784
Stage 1	-15.25	200.174	78.947	V-C	0.205	7.551	0	103.5	0	0 182.447
Stage 1	-15.45	201.845	79.612	V-C	0.205	7.551	0	105.5	0	0 185.112
Stage 1	-15.65	203.728	80.276	V-C	0.205	7.551	0	107.5	0	0 187.776
Stage 1	-15.85	205.609	80.942	V-C	0.205	7.551	0	109.5	0	0 190.442
Stage 1	-16.05	207.285	81.607	V-C	0.205	7.551	0	111.5	0	0 193.107
Stage 1	-16.25	209.164	82.273	V-C	0.205	7.551	0	113.5	0	0 195.773
Stage 1	-16.45	210.843	82.94	V-C	0.205	7.551	0	115.5	0	0 198.44
Stage 1	-16.65	212.722	83.607	V-C	0.205	7.551	0	117.5	0	0 201.107
Stage 1	-16.85	214.598	84.275	V-C	0.205	7.551	0	119.5	0	0 203.775
Stage 1	-17.05	216.281	84.943	V-C	0.205	7.551	0	121.5	0	0 206.443
Stage 1	-17.1	216.702	85.11	V-C	0.205	7.551	0	122	0	0 207.11



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	172 di 325

**Tabella Risultati Terreno Left Wall - Nominal - Stage 2**

Design Assumption: Nominal Risultati Terreno											
Stage	Z (m)	Sigma V	Muro: LEFT	Lato LEFT	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 2	0	60	6.758	UL-RL0.3183.843	12	0	0	0	0	6.758	
Stage 2	-0.2	40.372	26.257	UL-RL0.3183.843	12	0	0	0	0	26.257	
Stage 2	-0.4	50.826	30.717	V-C 0.3183.843	12	0	0	0	0	30.717	
Stage 2	-0.6	49.134	31.681	V-C 0.3183.843	12	0	0	0	0	31.681	
Stage 2	-0.8	56.554	34.861	V-C 0.3183.843	12	0	0	0	0	34.861	
Stage 2	-1	62.575	37.629	V-C 0.3183.843	12	0	0	0	0	37.629	
Stage 2	-1.2	63.245	39.001	V-C 0.3183.843	12	0	0	0	0	39.001	
Stage 2	-1.4	68.854	41.53	V-C 0.3183.843	12	0	0	0	0	41.53	
Stage 2	-1.6	70.314	42.964	V-C 0.3183.843	12	0	0	0	0	42.964	
Stage 2	-1.8	75.632	45.292	V-C 0.3183.843	12	0	0	0	0	45.292	
Stage 2	-2	80.63	47.482	V-C 0.3183.843	12	0	0	0	0	47.482	
Stage 2	-2.2	82.672	48.884	V-C 0.3183.843	12	0	0	0	0	48.884	
Stage 2	-2.4	87.542	50.936	V-C 0.3183.843	12	0	0	0	0	50.936	
Stage 2	-2.6	89.866	52.31	V-C 0.3183.843	12	0	0	0	0	52.31	
Stage 2	-2.8	94.63	54.244	V-C 0.3183.843	12	0	0	0	0	54.244	
Stage 2	-3	99.254	56.104	V-C 0.3183.843	12	0	0	0	0	56.104	
Stage 2	-3.2	102.141	57.42	V-C 0.3183.843	12	0	0	0	0	57.42	
Stage 2	-3.4	106.685	59.194	V-C 0.3183.843	12	0	0	0	0	59.194	
Stage 2	-3.6	109.392	60.482	V-C 0.3183.843	12	0	0	0	0	60.482	
Stage 2	-3.8	113.884	62.185	V-C 0.3183.843	12	0	0	0	0	62.185	
Stage 2	-4	118.052	63.845	V-C 0.3183.843	12	0	0	0	0	63.845	
Stage 2	-4.2	120.918	65.097	V-C 0.3183.843	12	0	0	0	0	65.097	
Stage 2	-4.4	125.31	66.709	V-C 0.3183.843	12	0	0	0	0	66.709	
Stage 2	-4.6	128.262	67.948	V-C 0.3183.843	12	0	0	0	0	67.948	
Stage 2	-4.8	132.619	69.522	V-C 0.3183.843	12	0	0	0	0	69.522	
Stage 2	-5	136.379	70.802	V-C 0.3183.843	12	0.548	0.452	0	0	71.349	
Stage 2	-5.2	138.327	71.488	V-C 0.3183.843	12	1.643	0.452	0	0	73.13	
Stage 2	-5.4	141.516	72.475	V-C 0.3183.843	12	2.738	0.452	0	0	75.213	
Stage 2	-5.6	143.521	73.164	V-C 0.3183.843	12	3.833	0.452	0	0	76.997	
Stage 2	-5.8	146.687	74.139	V-C 0.3183.843	12	4.929	0.452	0	0	79.067	
Stage 2	-6	149.818	75.104	V-C 0.3183.843	12	6.024	0.452	0	0	81.128	
Stage 2	-6.2	151.886	75.807	V-C 0.3183.843	12	7.119	0.452	0	0	82.926	
Stage 2	-6.4	155	76.772	V-C 0.3183.843	12	8.214	0.452	0	0	84.986	
Stage 2	-6.6	157.11	77.492	V-C 0.3183.843	12	9.31	0.452	0	0	86.802	
Stage 2	-6.8	160.207	78.463	V-C 0.3183.843	12	10.405	0.452	0	0	88.868	
Stage 2	-7	163.279	79.435	V-C 0.3183.843	12	11.5	0.452	0	0	90.935	
Stage 2	-7.2	165.436	80.187	V-C 0.3183.843	12	12.595	0.452	0	0	92.782	
Stage 2	-7.4	168.495	81.172	V-C 0.3183.843	12	13.69	0.452	0	0	94.863	
Stage 2	-7.6	171.532	82.163	V-C 0.3183.843	12	14.786	0.452	0	0	96.949	
Stage 2	-7.8	173.729	82.956	V-C 0.3183.843	12	15.881	0.452	0	0	98.837	
Stage 2	-8	176.756	83.966	V-C 0.3183.843	12	16.976	0.452	0	0	100.943	
Stage 2	-8.2	178.979	84.79	V-C 0.3183.843	12	18.071	0.452	0	0	102.862	
Stage 2	-8.4	181.996	85.811	UL-RL0.3183.843	12	19.167	0.452	0	0	104.977	
Stage 2	-8.6	184.997	86.724	UL-RL0.3183.843	12	20.262	0.452	0	0	106.986	
Stage 2	-8.65	185.616	86.909	UL-RL0.3183.843	12	20.536	0.452	0	0	107.444	
Stage 2	-8.85	187.872	87.663	UL-RL0.3183.843	12	21.631	0.452	0	0	109.294	
Stage 2	-9.05	190.865	88.621	UL-RL0.3183.843	12	22.726	0.452	0	0	111.347	
Stage 2	-9.25	193.844	89.597	UL-RL0.3183.843	12	23.821	0.452	0	0	113.418	
Stage 2	-9.45	196.127	90.422	UL-RL0.3183.843	12	24.917	0.452	0	0	115.339	
Stage 2	-9.65	199.098	66.438	UL-RL0.2057.551	0	26.012	0.452	0	0	92.45	
Stage 2	-9.85	201.4	66.056	UL-RL0.2057.551	0	27.107	0.452	0	0	93.163	
Stage 2	-10.05	204.265	65.905	UL-RL0.2057.551	0	28.202	0.452	0	0	94.107	
Stage 2	-10.25	207.024	65.85	UL-RL0.2057.551	0	29.298	0.452	0	0	95.147	
Stage 2	-10.45	209.159	65.767	UL-RL0.2057.551	0	30.393	0.452	0	0	96.16	
Stage 2	-10.65	211.923	65.905	UL-RL0.2057.551	0	31.488	0.452	0	0	97.393	
Stage 2	-10.85	214.084	66.016	UL-RL0.2057.551	0	32.583	0.452	0	0	98.599	
Stage 2	-11.05	216.852	66.339	UL-RL0.2057.551	0	33.679	0.452	0	0	100.018	
Stage 2	-11.25	219.615	66.752	UL-RL0.2057.551	0	34.774	0.452	0	0	101.526	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	173 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 2	-11.45	221.808	67.138	UL-RL0.2057.551	0	35.869	0.452	0	103.007	
Stage 2	-11.65	224.575	67.723	UL-RL0.2057.551	0	36.964	0.452	0	104.688	
Stage 2	-11.85	226.789	68.281	UL-RL0.2057.551	0	38.06	0.452	0	106.341	
Stage 2	-12.05	229.559	69.03	UL-RL0.2057.551	0	39.155	0.452	0	108.184	
Stage 2	-12.25	232.326	69.854	UL-RL0.2057.551	0	40.25	0.452	0	110.104	
Stage 2	-12.45	234.566	70.648	UL-RL0.2057.551	0	41.345	0.452	0	111.993	
Stage 2	-12.65	237.336	71.617	UL-RL0.2057.551	0	42.44	0.452	0	114.058	
Stage 2	-12.85	239.594	72.552	UL-RL0.2057.551	0	43.536	0.452	0	116.088	
Stage 2	-13.05	242.366	73.651	UL-RL0.2057.551	0	44.631	0.452	0	118.282	
Stage 2	-13.25	245.134	74.809	UL-RL0.2057.551	0	45.726	0.452	0	120.536	
Stage 2	-13.45	247.415	75.925	UL-RL0.2057.551	0	46.821	0.452	0	122.747	
Stage 2	-13.65	250.185	77.19	UL-RL0.2057.551	0	47.917	0.452	0	125.106	
Stage 2	-13.85	252.481	78.406	UL-RL0.2057.551	0	49.012	0.452	0	127.418	
Stage 2	-14.05	255.254	79.76	UL-RL0.2057.551	0	50.107	0.452	0	129.867	
Stage 2	-14.25	258.022	81.151	UL-RL0.2057.551	0	51.202	0.452	0	132.353	
Stage 2	-14.45	260.338	82.486	UL-RL0.2057.551	0	52.298	0.452	0	134.784	
Stage 2	-14.65	263.109	83.943	UL-RL0.2057.551	0	53.393	0.452	0	137.335	
Stage 2	-14.85	265.437	85.338	UL-RL0.2057.551	0	54.488	0.452	0	139.826	
Stage 2	-15.05	268.209	86.844	UL-RL0.2057.551	0	55.583	0.452	0	142.427	
Stage 2	-15.25	270.979	88.369	UL-RL0.2057.551	0	56.679	0.452	0	145.048	
Stage 2	-15.45	273.323	89.826	UL-RL0.2057.551	0	57.774	0.452	0	147.6	
Stage 2	-15.65	276.094	91.382	UL-RL0.2057.551	0	58.869	0.452	0	150.251	
Stage 2	-15.85	278.862	92.947	UL-RL0.2057.551	0	59.964	0.452	0	152.911	
Stage 2	-16.05	281.222	94.44	UL-RL0.2057.551	0	61.059	0.452	0	155.499	
Stage 2	-16.25	283.992	96.02	UL-RL0.2057.551	0	62.155	0.452	0	158.175	
Stage 2	-16.45	286.362	97.525	UL-RL0.2057.551	0	63.25	0.452	0	160.776	
Stage 2	-16.65	289.133	99.113	UL-RL0.2057.551	0	64.345	0.452	0	163.459	
Stage 2	-16.85	291.901	100.703	UL-RL0.2057.551	0	65.44	0.452	0	166.143	
Stage 2	-17.05	294.285	102.216	UL-RL0.2057.551	0	66.536	0.452	0	168.752	
Stage 2	-17.1	294.882	102.595	UL-RL0.2057.551	0	66.81	0.452	0	169.405	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	174 di 325

Design Assumption: Nominal Risultati Terreno										
Stage	Z (m)	Sigma V	Muro: LEFT	Lato	RIGHT					
			Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 2	0	0	1.484	V-C	0.3183.843	12	0	0	0	1.484
Stage 2	-0.2	3.8	22.244	V-C	0.3183.843	12	0	0	0	22.244
Stage 2	-0.4	7.6	23.061	UL-RL0.3183.843		12	0	0	0	23.061
Stage 2	-0.6	11.4	23.577	UL-RL0.3183.843		12	0	0	0	23.577
Stage 2	-0.8	15.2	24.202	UL-RL0.3183.843		12	0	0	0	24.202
Stage 2	-1	19	24.931	UL-RL0.3183.843		12	0	0	0	24.931
Stage 2	-1.2	22.8	25.758	UL-RL0.3183.843		12	0	0	0	25.758
Stage 2	-1.4	26.6	26.68	UL-RL0.3183.843		12	0	0	0	26.68
Stage 2	-1.6	30.4	27.69	UL-RL0.3183.843		12	0	0	0	27.69
Stage 2	-1.8	34.2	28.786	UL-RL0.3183.843		12	0	0	0	28.786
Stage 2	-2	38	29.962	UL-RL0.3183.843		12	0	0	0	29.962
Stage 2	-2.2	41.8	31.214	UL-RL0.3183.843		12	0	0	0	31.214
Stage 2	-2.4	45.6	32.537	UL-RL0.3183.843		12	0	0	0	32.537
Stage 2	-2.6	49.4	33.927	UL-RL0.3183.843		12	0	0	0	33.927
Stage 2	-2.8	53.2	35.381	UL-RL0.3183.843		12	0	0	0	35.381
Stage 2	-3	57	36.894	UL-RL0.3183.843		12	0	0	0	36.894
Stage 2	-3.2	60.8	38.462	UL-RL0.3183.843		12	0	0	0	38.462
Stage 2	-3.4	64.6	40.081	UL-RL0.3183.843		12	0	0	0	40.081
Stage 2	-3.6	68.4	41.749	UL-RL0.3183.843		12	0	0	0	41.749
Stage 2	-3.8	72.2	43.46	UL-RL0.3183.843		12	0	0	0	43.46
Stage 2	-4	76	45.213	UL-RL0.3183.843		12	0	0	0	45.213
Stage 2	-4.2	79.8	47.003	UL-RL0.3183.843		12	0	0	0	47.003
Stage 2	-4.4	83.6	48.827	UL-RL0.3183.843		12	0	0	0	48.827
Stage 2	-4.6	87.4	50.682	UL-RL0.3183.843		12	0	0	0	50.682
Stage 2	-4.8	91.2	52.565	UL-RL0.3183.843		12	0	0	0	52.565
Stage 2	-5	95	54.474	UL-RL0.3183.843		12	0	0	0	54.474
Stage 2	-5.2	98.8	56.405	UL-RL0.3183.843		12	0	0	0	56.405
Stage 2	-5.4	102.6	58.355	UL-RL0.3183.843		12	0	0	0	58.355
Stage 2	-5.6	106.4	60.323	UL-RL0.3183.843		12	0	0	0	60.323
Stage 2	-5.8	110.2	62.306	UL-RL0.3183.843		12	0	0	0	62.306
Stage 2	-6	114	64.301	UL-RL0.3183.843		12	0	0	0	64.301
Stage 2	-6.2	117.8	66.306	UL-RL0.3183.843		12	0	0	0	66.306
Stage 2	-6.4	121.6	68.319	UL-RL0.3183.843		12	0	0	0	68.319
Stage 2	-6.6	125.4	70.338	UL-RL0.3183.843		12	0	0	0	70.338
Stage 2	-6.8	129.2	72.36	UL-RL0.3183.843		12	0	0	0	72.36
Stage 2	-7	133	74.386	UL-RL0.3183.843		12	0	0	0	74.386
Stage 2	-7.2	136.8	76.411	UL-RL0.3183.843		12	0	0	0	76.411
Stage 2	-7.4	140.6	78.436	UL-RL0.3183.843		12	0	0	0	78.436
Stage 2	-7.6	144.4	80.458	UL-RL0.3183.843		12	0	0	0	80.458
Stage 2	-7.8	148.2	82.477	UL-RL0.3183.843		12	0	0	0	82.477
Stage 2	-8	152	84.49	UL-RL0.3183.843		12	0	0	0	84.49
Stage 2	-8.2	155.8	86.497	UL-RL0.3183.843		12	0	0	0	86.497
Stage 2	-8.4	159.6	88.487	V-C	0.3183.843	12	0	0	0	88.487
Stage 2	-8.6	163.4	90.381	V-C	0.3183.843	12	0	0	0	90.381
Stage 2	-8.65	164.35	90.854	V-C	0.3183.843	12	0	0	0	90.854
Stage 2	-8.85	168.15	92.744	V-C	0.3183.843	12	0	0	0	92.744
Stage 2	-9.05	171.95	94.628	V-C	0.3183.843	12	0	0	0	94.628
Stage 2	-9.25	175.75	96.508	V-C	0.3183.843	12	0	0	0	96.508
Stage 2	-9.45	179.55	98.382	V-C	0.3183.843	12	0	0	0	98.382
Stage 2	-9.65	183.35	84.53	V-C	0.2057.551	0	0	0	0	84.53
Stage 2	-9.85	187.15	86.298	V-C	0.2057.551	0	0	0	0	86.298
Stage 2	-10.05	190.95	88.038	V-C	0.2057.551	0	0	0	0	88.038
Stage 2	-10.25	194.75	89.752	V-C	0.2057.551	0	0	0	0	89.752
Stage 2	-10.45	198.55	91.44	V-C	0.2057.551	0	0	0	0	91.44
Stage 2	-10.65	202.35	93.101	V-C	0.2057.551	0	0	0	0	93.101
Stage 2	-10.85	206.15	94.736	V-C	0.2057.551	0	0	0	0	94.736
Stage 2	-11.05	209.95	96.346	V-C	0.2057.551	0	0	0	0	96.346
Stage 2	-11.25	213.75	97.931	V-C	0.2057.551	0	0	0	0	97.931
Stage 2	-11.45	217.55	99.492	V-C	0.2057.551	0	0	0	0	99.492
Stage 2	-11.65	221.35	101.029	V-C	0.2057.551	0	0	0	0	101.029
Stage 2	-11.85	225.15	102.543	V-C	0.2057.551	0	0	0	0	102.543

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	175 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 2	-12.05	228.95	104.035	V-C	0.205	7.551	0	0	0	104.035
Stage 2	-12.25	232.75	105.506	V-C	0.205	7.551	0	0	0	105.506
Stage 2	-12.45	236.55	106.956	V-C	0.205	7.551	0	0	0	106.956
Stage 2	-12.65	238.171	107.52	V-C	0.205	7.551	0	2.179	0.452	109.699
Stage 2	-12.85	239.067	107.776	V-C	0.205	7.551	0	5.083	0.452	112.86
Stage 2	-13.05	239.962	108.015	V-C	0.205	7.551	0	7.988	0.452	116.004
Stage 2	-13.25	240.857	108.238	V-C	0.205	7.551	0	10.893	0.452	119.131
Stage 2	-13.45	241.752	108.446	V-C	0.205	7.551	0	13.798	0.452	122.244
Stage 2	-13.65	242.648	108.64	V-C	0.205	7.551	0	16.702	0.452	125.342
Stage 2	-13.85	243.543	108.822	V-C	0.205	7.551	0	19.607	0.452	128.429
Stage 2	-14.05	244.438	108.992	V-C	0.205	7.551	0	22.512	0.452	131.504
Stage 2	-14.25	245.333	109.153	V-C	0.205	7.551	0	25.417	0.452	134.569
Stage 2	-14.45	246.228	109.304	V-C	0.205	7.551	0	28.321	0.452	137.626
Stage 2	-14.65	247.124	109.448	V-C	0.205	7.551	0	31.226	0.452	140.675
Stage 2	-14.85	248.019	109.586	V-C	0.205	7.551	0	34.131	0.452	143.717
Stage 2	-15.05	248.914	109.718	V-C	0.205	7.551	0	37.036	0.452	146.754
Stage 2	-15.25	249.81	109.846	V-C	0.205	7.551	0	39.94	0.452	149.786
Stage 2	-15.45	250.705	109.97	V-C	0.205	7.551	0	42.845	0.452	152.815
Stage 2	-15.65	251.6	110.091	V-C	0.205	7.551	0	45.75	0.452	155.841
Stage 2	-15.85	252.495	110.211	V-C	0.205	7.551	0	48.655	0.452	158.865
Stage 2	-16.05	253.39	110.329	V-C	0.205	7.551	0	51.559	0.452	161.889
Stage 2	-16.25	254.286	110.448	V-C	0.205	7.551	0	54.464	0.452	164.912
Stage 2	-16.45	255.181	110.566	V-C	0.205	7.551	0	57.369	0.452	167.935
Stage 2	-16.65	256.076	110.684	V-C	0.205	7.551	0	60.274	0.452	170.958
Stage 2	-16.85	256.971	110.804	V-C	0.205	7.551	0	63.179	0.452	173.982
Stage 2	-17.05	257.867	110.924	V-C	0.205	7.551	0	66.083	0.452	177.007
Stage 2	-17.1	258.091	110.954	V-C	0.205	7.551	0	66.81	0.452	177.764

## Tabella Risultati Terreno Right wall - Nominal - Stage 2

Design Assumption: Nominal Risultati Terreno										
Stage	Z (m)	Sigma V	Muro: RIGHT			Lato LEFT				
			Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 2	0	0	0	ACTIVE	0.3183.843	12	0	0	0	0
Stage 2	-0.2	3.8	8.842	UL-RL	0.3183.843	12	0	0	0	8.842
Stage 2	-0.4	7.6	9.513	UL-RL	0.3183.843	12	0	0	0	9.513
Stage 2	-0.6	11.4	10.298	UL-RL	0.3183.843	12	0	0	0	10.298
Stage 2	-0.8	15.2	11.192	UL-RL	0.3183.843	12	0	0	0	11.192
Stage 2	-1	19	12.19	UL-RL	0.3183.843	12	0	0	0	12.19
Stage 2	-1.2	22.8	13.287	UL-RL	0.3183.843	12	0	0	0	13.287
Stage 2	-1.4	26.6	14.477	UL-RL	0.3183.843	12	0	0	0	14.477
Stage 2	-1.6	30.4	15.755	UL-RL	0.3183.843	12	0	0	0	15.755
Stage 2	-1.8	34.2	17.117	UL-RL	0.3183.843	12	0	0	0	17.117
Stage 2	-2	38	18.557	UL-RL	0.3183.843	12	0	0	0	18.557
Stage 2	-2.2	41.8	20.072	UL-RL	0.3183.843	12	0	0	0	20.072
Stage 2	-2.4	45.6	21.656	UL-RL	0.3183.843	12	0	0	0	21.656
Stage 2	-2.6	49.4	23.304	UL-RL	0.3183.843	12	0	0	0	23.304
Stage 2	-2.8	53.2	25.014	UL-RL	0.3183.843	12	0	0	0	25.014
Stage 2	-3	57	26.78	UL-RL	0.3183.843	12	0	0	0	26.78
Stage 2	-3.2	60.8	28.598	UL-RL	0.3183.843	12	0	0	0	28.598
Stage 2	-3.4	64.6	30.464	UL-RL	0.3183.843	12	0	0	0	30.464
Stage 2	-3.6	68.4	32.376	UL-RL	0.3183.843	12	0	0	0	32.376
Stage 2	-3.8	72.2	34.328	UL-RL	0.3183.843	12	0	0	0	34.328
Stage 2	-4	76	36.318	UL-RL	0.3183.843	12	0	0	0	36.318
Stage 2	-4.2	79.8	38.342	UL-RL	0.3183.843	12	0	0	0	38.342
Stage 2	-4.4	83.6	40.397	UL-RL	0.3183.843	12	0	0	0	40.397
Stage 2	-4.6	87.4	42.48	UL-RL	0.3183.843	12	0	0	0	42.48
Stage 2	-4.8	91.2	44.588	UL-RL	0.3183.843	12	0	0	0	44.588
Stage 2	-5	95	46.717	UL-RL	0.3183.843	12	0	0	0	46.717
Stage 2	-5.2	98.8	48.866	UL-RL	0.3183.843	12	0	0	0	48.866
Stage 2	-5.4	102.6	51.031	UL-RL	0.3183.843	12	0	0	0	51.031
Stage 2	-5.6	106.4	53.21	UL-RL	0.3183.843	12	0	0	0	53.21
Stage 2	-5.8	110.2	55.401	UL-RL	0.3183.843	12	0	0	0	55.401
Stage 2	-6	114	57.601	UL-RL	0.3183.843	12	0	0	0	57.601
Stage 2	-6.2	117.8	59.808	UL-RL	0.3183.843	12	0	0	0	59.808
Stage 2	-6.4	121.6	62.02	UL-RL	0.3183.843	12	0	0	0	62.02
Stage 2	-6.6	125.4	64.235	UL-RL	0.3183.843	12	0	0	0	64.235
Stage 2	-6.8	129.2	66.451	UL-RL	0.3183.843	12	0	0	0	66.451
Stage 2	-7	133	68.666	UL-RL	0.3183.843	12	0	0	0	68.666
Stage 2	-7.2	136.8	70.879	UL-RL	0.3183.843	12	0	0	0	70.879
Stage 2	-7.4	140.6	73.088	UL-RL	0.3183.843	12	0	0	0	73.088
Stage 2	-7.6	144.4	75.292	UL-RL	0.3183.843	12	0	0	0	75.292
Stage 2	-7.8	148.2	77.489	UL-RL	0.3183.843	12	0	0	0	77.489
Stage 2	-8	152	79.677	UL-RL	0.3183.843	12	0	0	0	79.677
Stage 2	-8.2	155.8	81.857	UL-RL	0.3183.843	12	0	0	0	81.857
Stage 2	-8.4	159.6	84.026	UL-RL	0.3183.843	12	0	0	0	84.026
Stage 2	-8.6	163.4	86.184	UL-RL	0.3183.843	12	0	0	0	86.184
Stage 2	-8.65	164.35	86.722	UL-RL	0.3183.843	12	0	0	0	86.722
Stage 2	-8.85	168.15	88.864	UL-RL	0.3183.843	12	0	0	0	88.864
Stage 2	-9.05	171.95	90.994	UL-RL	0.3183.843	12	0	0	0	90.994
Stage 2	-9.25	175.75	93.11	UL-RL	0.3183.843	12	0	0	0	93.11
Stage 2	-9.45	179.55	95.211	UL-RL	0.3183.843	12	0	0	0	95.211
Stage 2	-9.65	183.35	79.036	UL-RL	0.2057.551	0	0	0	0	79.036
Stage 2	-9.85	187.15	81.186	V-C	0.2057.551	0	0	0	0	81.186
Stage 2	-10.05	190.95	83.148	V-C	0.2057.551	0	0	0	0	83.148
Stage 2	-10.25	194.75	85.075	V-C	0.2057.551	0	0	0	0	85.075
Stage 2	-10.45	198.55	86.968	V-C	0.2057.551	0	0	0	0	86.968
Stage 2	-10.65	202.35	88.825	V-C	0.2057.551	0	0	0	0	88.825
Stage 2	-10.85	206.15	90.648	V-C	0.2057.551	0	0	0	0	90.648
Stage 2	-11.05	209.95	92.438	V-C	0.2057.551	0	0	0	0	92.438
Stage 2	-11.25	213.75	94.193	V-C	0.2057.551	0	0	0	0	94.193

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	177 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 2	-11.45	217.55	95.916	V-C	0.205	7.551	0	0	0	95.916
Stage 2	-11.65	221.35	97.606	V-C	0.205	7.551	0	0	0	97.606
Stage 2	-11.85	225.15	99.265	V-C	0.205	7.551	0	0	0	99.265
Stage 2	-12.05	228.95	100.894	V-C	0.205	7.551	0	0	0	100.894
Stage 2	-12.25	232.75	102.494	V-C	0.205	7.551	0	0	0	102.494
Stage 2	-12.45	236.55	104.066	V-C	0.205	7.551	0	0	0	104.066
Stage 2	-12.65	238.171	104.743	V-C	0.205	7.551	0	2.179	0.452	106.922
Stage 2	-12.85	239.067	105.107	V-C	0.205	7.551	0	5.083	0.452	110.19
Stage 2	-13.05	239.962	105.446	V-C	0.205	7.551	0	7.988	0.452	113.434
Stage 2	-13.25	240.857	105.764	V-C	0.205	7.551	0	10.893	0.452	116.656
Stage 2	-13.45	241.752	106.06	V-C	0.205	7.551	0	13.798	0.452	119.858
Stage 2	-13.65	242.648	106.338	V-C	0.205	7.551	0	16.702	0.452	123.04
Stage 2	-13.85	243.543	106.598	V-C	0.205	7.551	0	19.607	0.452	126.204
Stage 2	-14.05	244.438	106.842	V-C	0.205	7.551	0	22.512	0.452	129.353
Stage 2	-14.25	245.333	107.072	V-C	0.205	7.551	0	25.417	0.452	132.488
Stage 2	-14.45	246.228	107.289	V-C	0.205	7.551	0	28.321	0.452	135.61
Stage 2	-14.65	247.124	107.495	V-C	0.205	7.551	0	31.226	0.452	138.721
Stage 2	-14.85	248.019	107.691	V-C	0.205	7.551	0	34.131	0.452	141.822
Stage 2	-15.05	248.914	107.879	V-C	0.205	7.551	0	37.036	0.452	144.915
Stage 2	-15.25	249.81	108.06	V-C	0.205	7.551	0	39.94	0.452	148.001
Stage 2	-15.45	250.705	108.236	V-C	0.205	7.551	0	42.845	0.452	151.081
Stage 2	-15.65	251.6	108.407	V-C	0.205	7.551	0	45.75	0.452	154.157
Stage 2	-15.85	252.495	108.575	V-C	0.205	7.551	0	48.655	0.452	157.23
Stage 2	-16.05	253.39	108.74	V-C	0.205	7.551	0	51.559	0.452	160.3
Stage 2	-16.25	254.286	108.904	V-C	0.205	7.551	0	54.464	0.452	163.368
Stage 2	-16.45	255.181	109.066	V-C	0.205	7.551	0	57.369	0.452	166.436
Stage 2	-16.65	256.076	109.229	V-C	0.205	7.551	0	60.274	0.452	169.503
Stage 2	-16.85	256.971	109.391	V-C	0.205	7.551	0	63.179	0.452	172.57
Stage 2	-17.05	257.867	109.554	V-C	0.205	7.551	0	66.083	0.452	175.637
Stage 2	-17.1	258.091	109.594	V-C	0.205	7.551	0	66.81	0.452	176.404

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	178 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT											
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 2	0	20	1.422	V-C	0.318	3.843	12	0	0	0	1.422
Stage 2	-0.2	16.253	14.275	V-C	0.318	3.843	12	0	0	0	14.275
Stage 2	-0.4	22.868	17.029	V-C	0.318	3.843	12	0	0	0	17.029
Stage 2	-0.6	23.735	19.688	V-C	0.318	3.843	12	0	0	0	19.688
Stage 2	-0.8	29.248	22.256	V-C	0.318	3.843	12	0	0	0	22.256
Stage 2	-1	34.1	24.737	V-C	0.318	3.843	12	0	0	0	24.737
Stage 2	-1.2	36.295	27.137	V-C	0.318	3.843	12	0	0	0	27.137
Stage 2	-1.4	40.971	29.459	V-C	0.318	3.843	12	0	0	0	29.459
Stage 2	-1.6	43.579	31.708	V-C	0.318	3.843	12	0	0	0	31.708
Stage 2	-1.8	48.122	33.887	V-C	0.318	3.843	12	0	0	0	33.887
Stage 2	-2	52.507	36.001	V-C	0.318	3.843	12	0	0	0	36.001
Stage 2	-2.2	55.417	38.054	V-C	0.318	3.843	12	0	0	0	38.054
Stage 2	-2.4	59.743	40.049	V-C	0.318	3.843	12	0	0	0	40.049
Stage 2	-2.6	62.797	41.991	V-C	0.318	3.843	12	0	0	0	41.991
Stage 2	-2.8	67.072	43.882	V-C	0.318	3.843	12	0	0	0	43.882
Stage 2	-3	71.278	45.727	V-C	0.318	3.843	12	0	0	0	45.727
Stage 2	-3.2	74.463	47.528	V-C	0.318	3.843	12	0	0	0	47.528
Stage 2	-3.4	78.639	49.289	V-C	0.318	3.843	12	0	0	0	49.289
Stage 2	-3.6	81.896	51.014	V-C	0.318	3.843	12	0	0	0	51.014
Stage 2	-3.8	86.046	52.704	V-C	0.318	3.843	12	0	0	0	52.704
Stage 2	-4	90.157	54.364	V-C	0.318	3.843	12	0	0	0	54.364
Stage 2	-4.2	93.487	55.996	V-C	0.318	3.843	12	0	0	0	55.996
Stage 2	-4.4	97.58	57.602	V-C	0.318	3.843	12	0	0	0	57.602
Stage 2	-4.6	100.953	59.186	V-C	0.318	3.843	12	0	0	0	59.186
Stage 2	-4.8	105.03	60.75	V-C	0.318	3.843	12	0	0	0	60.75
Stage 2	-5	108.534	62.024	V-C	0.318	3.843	12	0.548	0.452	0	62.571
Stage 2	-5.2	110.859	63.011	V-C	0.318	3.843	12	1.643	0.452	0	64.654
Stage 2	-5.4	113.803	63.985	V-C	0.318	3.843	12	2.738	0.452	0	66.723
Stage 2	-5.6	116.157	64.947	V-C	0.318	3.843	12	3.833	0.452	0	68.781
Stage 2	-5.8	119.09	65.901	V-C	0.318	3.843	12	4.929	0.452	0	70.83
Stage 2	-6	122.007	66.847	V-C	0.318	3.843	12	6.024	0.452	0	72.871
Stage 2	-6.2	124.392	67.789	V-C	0.318	3.843	12	7.119	0.452	0	74.908
Stage 2	-6.4	127.3	68.726	V-C	0.318	3.843	12	8.214	0.452	0	76.941
Stage 2	-6.6	129.706	69.662	V-C	0.318	3.843	12	9.31	0.452	0	78.972
Stage 2	-6.8	132.606	70.598	V-C	0.318	3.843	12	10.405	0.452	0	81.002
Stage 2	-7	135.494	71.534	V-C	0.318	3.843	12	11.5	0.452	0	83.034
Stage 2	-7.2	137.923	72.474	V-C	0.318	3.843	12	12.595	0.452	0	85.069
Stage 2	-7.4	140.804	73.417	V-C	0.318	3.843	12	13.69	0.452	0	87.108
Stage 2	-7.6	143.675	74.366	V-C	0.318	3.843	12	14.786	0.452	0	89.151
Stage 2	-7.8	146.124	75.32	V-C	0.318	3.843	12	15.881	0.452	0	91.201
Stage 2	-8	148.99	76.283	V-C	0.318	3.843	12	16.976	0.452	0	93.259
Stage 2	-8.2	151.453	77.253	V-C	0.318	3.843	12	18.071	0.452	0	95.324
Stage 2	-8.4	154.313	78.233	V-C	0.318	3.843	12	19.167	0.452	0	97.4
Stage 2	-8.6	157.165	79.223	V-C	0.318	3.843	12	20.262	0.452	0	99.485
Stage 2	-8.65	157.784	79.472	V-C	0.318	3.843	12	20.536	0.452	0	100.008
Stage 2	-8.85	160.264	80.475	V-C	0.318	3.843	12	21.631	0.452	0	102.106
Stage 2	-9.05	163.113	81.491	V-C	0.318	3.843	12	22.726	0.452	0	104.217
Stage 2	-9.25	165.955	82.518	V-C	0.318	3.843	12	23.821	0.452	0	106.34
Stage 2	-9.45	168.449	83.558	V-C	0.318	3.843	12	24.917	0.452	0	108.475
Stage 2	-9.65	171.287	69.611	V-C	0.205	7.551	0	26.012	0.452	0	95.623
Stage 2	-9.85	173.79	69.166	UL-RL	0.205	7.551	0	27.107	0.452	0	96.273
Stage 2	-10.05	176.625	68.523	UL-RL	0.205	7.551	0	28.202	0.452	0	96.725
Stage 2	-10.25	179.453	67.993	UL-RL	0.205	7.551	0	29.298	0.452	0	97.29
Stage 2	-10.45	181.968	67.577	UL-RL	0.205	7.551	0	30.393	0.452	0	97.97
Stage 2	-10.65	184.794	67.274	UL-RL	0.205	7.551	0	31.488	0.452	0	98.762
Stage 2	-10.85	187.315	67.084	UL-RL	0.205	7.551	0	32.583	0.452	0	99.668
Stage 2	-11.05	190.138	67.006	UL-RL	0.205	7.551	0	33.679	0.452	0	100.685
Stage 2	-11.25	192.956	67.038	UL-RL	0.205	7.551	0	34.774	0.452	0	101.812
Stage 2	-11.45	195.487	67.178	UL-RL	0.205	7.551	0	35.869	0.452	0	103.047
Stage 2	-11.65	198.303	67.423	UL-RL	0.205	7.551	0	36.964	0.452	0	104.387
Stage 2	-11.85	200.84	67.771	UL-RL	0.205	7.551	0	38.06	0.452	0	105.83

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	179 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT									
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 2	-12.05	203.654	68.218	UL-RL 0.205 7.551	0	39.155	0.452	0	107.373
Stage 2	-12.25	206.463	68.761	UL-RL 0.205 7.551	0	40.25	0.452	0	109.011
Stage 2	-12.45	209.008	69.397	UL-RL 0.205 7.551	0	41.345	0.452	0	110.742
Stage 2	-12.65	211.815	70.12	UL-RL 0.205 7.551	0	42.44	0.452	0	112.561
Stage 2	-12.85	214.365	70.927	UL-RL 0.205 7.551	0	43.536	0.452	0	114.463
Stage 2	-13.05	217.17	71.813	UL-RL 0.205 7.551	0	44.631	0.452	0	116.444
Stage 2	-13.25	219.972	72.773	UL-RL 0.205 7.551	0	45.726	0.452	0	118.499
Stage 2	-13.45	222.529	73.801	UL-RL 0.205 7.551	0	46.821	0.452	0	120.623
Stage 2	-13.65	225.328	74.893	UL-RL 0.205 7.551	0	47.917	0.452	0	122.81
Stage 2	-13.85	227.89	76.043	UL-RL 0.205 7.551	0	49.012	0.452	0	125.055
Stage 2	-14.05	230.688	77.247	UL-RL 0.205 7.551	0	50.107	0.452	0	127.354
Stage 2	-14.25	233.483	78.498	UL-RL 0.205 7.551	0	51.202	0.452	0	129.7
Stage 2	-14.45	236.05	79.792	UL-RL 0.205 7.551	0	52.298	0.452	0	132.09
Stage 2	-14.65	238.843	81.124	UL-RL 0.205 7.551	0	53.393	0.452	0	134.517
Stage 2	-14.85	241.414	82.489	UL-RL 0.205 7.551	0	54.488	0.452	0	136.977
Stage 2	-15.05	244.206	83.882	UL-RL 0.205 7.551	0	55.583	0.452	0	139.466
Stage 2	-15.25	246.996	85.3	UL-RL 0.205 7.551	0	56.679	0.452	0	141.978
Stage 2	-15.45	249.571	86.738	UL-RL 0.205 7.551	0	57.774	0.452	0	144.512
Stage 2	-15.65	252.359	88.192	UL-RL 0.205 7.551	0	58.869	0.452	0	147.061
Stage 2	-15.85	255.145	89.66	UL-RL 0.205 7.551	0	59.964	0.452	0	149.624
Stage 2	-16.05	257.725	91.137	UL-RL 0.205 7.551	0	61.059	0.452	0	152.197
Stage 2	-16.25	260.51	92.622	UL-RL 0.205 7.551	0	62.155	0.452	0	154.777
Stage 2	-16.45	263.093	94.112	UL-RL 0.205 7.551	0	63.25	0.452	0	157.362
Stage 2	-16.65	265.876	95.605	UL-RL 0.205 7.551	0	64.345	0.452	0	159.951
Stage 2	-16.85	268.657	97.1	UL-RL 0.205 7.551	0	65.44	0.452	0	162.541
Stage 2	-17.05	271.245	98.596	UL-RL 0.205 7.551	0	66.536	0.452	0	165.132
Stage 2	-17.1	271.892	98.97	UL-RL 0.205 7.551	0	66.81	0.452	0	165.78



### Tabella Risultati Terreno Left Wall - Nominal - Stage 3

Design Assumption: Nominal Risultati Terreno											
Stage	Z (m)	Sigma V	Muro: LEFT	Stato	Lato LEFT	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 3	0	60	5.546	ACTIVE	0.3183.843	12	0	0	0	0	5.546
Stage 3	-0.2	40.372	20.729	UL-RL	0.3183.843	12	0	0	0	0	20.729
Stage 3	-0.4	50.826	24.677	UL-RL	0.3183.843	12	0	0	0	0	24.677
Stage 3	-0.6	49.134	25.111	UL-RL	0.3183.843	12	0	0	0	0	25.111
Stage 3	-0.8	56.554	27.745	UL-RL	0.3183.843	12	0	0	0	0	27.745
Stage 3	-1	62.575	29.955	UL-RL	0.3183.843	12	0	0	0	0	29.955
Stage 3	-1.2	63.245	30.756	UL-RL	0.3183.843	12	0	0	0	0	30.756
Stage 3	-1.4	68.854	32.705	UL-RL	0.3183.843	12	0	0	0	0	32.705
Stage 3	-1.6	70.314	33.551	UL-RL	0.3183.843	12	0	0	0	0	33.551
Stage 3	-1.8	75.632	35.286	UL-RL	0.3183.843	12	0	0	0	0	35.286
Stage 3	-2	80.63	36.879	UL-RL	0.3183.843	12	0	0	0	0	36.879
Stage 3	-2.2	82.672	37.682	UL-RL	0.3183.843	12	0	0	0	0	37.682
Stage 3	-2.4	87.542	39.136	UL-RL	0.3183.843	12	0	0	0	0	39.136
Stage 3	-2.6	89.866	39.913	UL-RL	0.3183.843	12	0	0	0	0	39.913
Stage 3	-2.8	94.63	41.255	UL-RL	0.3183.843	12	0	0	0	0	41.255
Stage 3	-3	99.254	42.528	UL-RL	0.3183.843	12	0	0	0	0	42.528
Stage 3	-3.2	102.141	43.265	UL-RL	0.3183.843	12	0	0	0	0	43.265
Stage 3	-3.4	106.685	44.469	UL-RL	0.3183.843	12	0	0	0	0	44.469
Stage 3	-3.6	109.392	45.198	UL-RL	0.3183.843	12	0	0	0	0	45.198
Stage 3	-3.8	113.884	46.354	UL-RL	0.3183.843	12	0	0	0	0	46.354
Stage 3	-4	118.052	47.481	UL-RL	0.3183.843	12	0	0	0	0	47.481
Stage 3	-4.2	120.918	48.215	UL-RL	0.3183.843	12	0	0	0	0	48.215
Stage 3	-4.4	125.31	49.326	UL-RL	0.3183.843	12	0	0	0	0	49.326
Stage 3	-4.6	128.262	50.082	UL-RL	0.3183.843	12	0	0	0	0	50.082
Stage 3	-4.8	132.619	51.192	UL-RL	0.3183.843	12	0	0	0	0	51.192
Stage 3	-5	136.379	52.029	UL-RL	0.3183.843	12	0.548	0.452	0	0	52.577
Stage 3	-5.2	138.327	52.294	UL-RL	0.3183.843	12	1.643	0.452	0	0	53.937
Stage 3	-5.4	141.516	52.883	UL-RL	0.3183.843	12	2.738	0.452	0	0	55.621
Stage 3	-5.6	143.521	53.198	UL-RL	0.3183.843	12	3.833	0.452	0	0	57.031
Stage 3	-5.8	146.687	53.824	UL-RL	0.3183.843	12	4.929	0.452	0	0	58.752
Stage 3	-6	149.818	54.466	UL-RL	0.3183.843	12	6.024	0.452	0	0	60.49
Stage 3	-6.2	151.886	54.873	UL-RL	0.3183.843	12	7.119	0.452	0	0	61.992
Stage 3	-6.4	155	55.569	UL-RL	0.3183.843	12	8.214	0.452	0	0	63.783
Stage 3	-6.6	157.11	56.048	UL-RL	0.3183.843	12	9.31	0.452	0	0	65.357
Stage 3	-6.8	160.207	56.806	UL-RL	0.3183.843	12	10.405	0.452	0	0	67.211
Stage 3	-7	163.279	57.594	UL-RL	0.3183.843	12	11.5	0.452	0	0	69.094
Stage 3	-7.2	165.436	58.193	UL-RL	0.3183.843	12	12.595	0.452	0	0	70.788
Stage 3	-7.4	168.495	59.054	UL-RL	0.3183.843	12	13.69	0.452	0	0	72.745
Stage 3	-7.6	171.532	59.951	UL-RL	0.3183.843	12	14.786	0.452	0	0	74.736
Stage 3	-7.8	173.729	60.679	UL-RL	0.3183.843	12	15.881	0.452	0	0	76.56
Stage 3	-8	176.756	61.656	UL-RL	0.3183.843	12	16.976	0.452	0	0	78.632
Stage 3	-8.2	178.979	62.475	UL-RL	0.3183.843	12	18.071	0.452	0	0	80.546
Stage 3	-8.4	181.996	63.52	UL-RL	0.3183.843	12	19.167	0.452	0	0	82.686
Stage 3	-8.6	184.997	64.487	UL-RL	0.3183.843	12	20.262	0.452	0	0	84.749
Stage 3	-8.65	185.616	64.689	UL-RL	0.3183.843	12	20.536	0.452	0	0	85.225
Stage 3	-8.85	187.872	65.533	UL-RL	0.3183.843	12	21.631	0.452	0	0	87.164
Stage 3	-9.05	190.865	66.608	UL-RL	0.3183.843	12	22.726	0.452	0	0	89.334
Stage 3	-9.25	193.844	67.727	UL-RL	0.3183.843	12	23.821	0.452	0	0	91.549
Stage 3	-9.45	196.127	68.722	UL-RL	0.3183.843	12	24.917	0.452	0	0	93.638
Stage 3	-9.65	199.098	40.815	ACTIVE	0.2057.551	0	26.012	0.452	0	0	66.827
Stage 3	-9.85	201.4	41.287	ACTIVE	0.2057.551	0	27.107	0.452	0	0	68.394
Stage 3	-10.05	204.265	41.874	ACTIVE	0.2057.551	0	28.202	0.452	0	0	70.077
Stage 3	-10.25	207.024	42.44	ACTIVE	0.2057.551	0	29.298	0.452	0	0	71.738
Stage 3	-10.45	209.159	42.878	ACTIVE	0.2057.551	0	30.393	0.452	0	0	73.27
Stage 3	-10.65	211.923	43.444	ACTIVE	0.2057.551	0	31.488	0.452	0	0	74.932
Stage 3	-10.85	214.084	43.887	ACTIVE	0.2057.551	0	32.583	0.452	0	0	76.47
Stage 3	-11.05	216.852	44.455	ACTIVE	0.2057.551	0	33.679	0.452	0	0	78.133
Stage 3	-11.25	219.615	45.021	ACTIVE	0.2057.551	0	34.774	0.452	0	0	79.795

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	181 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 3	-11.45	221.808	45.471	ACTIVE	0.205	7.551	0	35.869	0.452	0 81.34
Stage 3	-11.65	224.575	46.038	ACTIVE	0.205	7.551	0	36.964	0.452	0 83.002
Stage 3	-11.85	226.789	46.492	ACTIVE	0.205	7.551	0	38.06	0.452	0 84.551
Stage 3	-12.05	229.559	47.06	ACTIVE	0.205	7.551	0	39.155	0.452	0 86.214
Stage 3	-12.25	232.326	47.627	ACTIVE	0.205	7.551	0	40.25	0.452	0 87.877
Stage 3	-12.45	234.566	48.086	ACTIVE	0.205	7.551	0	41.345	0.452	0 89.431
Stage 3	-12.65	237.336	48.654	ACTIVE	0.205	7.551	0	42.44	0.452	0 91.094
Stage 3	-12.85	239.594	49.117	ACTIVE	0.205	7.551	0	43.536	0.452	0 92.652
Stage 3	-13.05	242.366	49.685	ACTIVE	0.205	7.551	0	44.631	0.452	0 94.316
Stage 3	-13.25	245.134	50.252	ACTIVE	0.205	7.551	0	45.726	0.452	0 95.979
Stage 3	-13.45	247.415	50.72	ACTIVE	0.205	7.551	0	46.821	0.452	0 97.541
Stage 3	-13.65	250.185	51.288	ACTIVE	0.205	7.551	0	47.917	0.452	0 99.205
Stage 3	-13.85	252.481	51.759	ACTIVE	0.205	7.551	0	49.012	0.452	0 100.77
Stage 3	-14.05	255.254	52.327	ACTIVE	0.205	7.551	0	50.107	0.452	0 102.434
Stage 3	-14.25	258.022	52.895	ACTIVE	0.205	7.551	0	51.202	0.452	0 104.097
Stage 3	-14.45	260.338	53.369	ACTIVE	0.205	7.551	0	52.298	0.452	0 105.667
Stage 3	-14.65	263.109	53.937	ACTIVE	0.205	7.551	0	53.393	0.452	0 107.33
Stage 3	-14.85	265.437	54.415	ACTIVE	0.205	7.551	0	54.488	0.452	0 108.903
Stage 3	-15.05	268.209	54.983	ACTIVE	0.205	7.551	0	55.583	0.452	0 110.566
Stage 3	-15.25	270.979	55.551	ACTIVE	0.205	7.551	0	56.679	0.452	0 112.229
Stage 3	-15.45	273.323	56.031	ACTIVE	0.205	7.551	0	57.774	0.452	0 113.805
Stage 3	-15.65	276.094	56.599	ACTIVE	0.205	7.551	0	58.869	0.452	0 115.468
Stage 3	-15.85	278.862	57.167	ACTIVE	0.205	7.551	0	59.964	0.452	0 117.131
Stage 3	-16.05	281.222	57.651	ACTIVE	0.205	7.551	0	61.059	0.452	0 118.71
Stage 3	-16.25	283.992	58.218	ACTIVE	0.205	7.551	0	62.155	0.452	0 120.373
Stage 3	-16.45	286.362	58.704	ACTIVE	0.205	7.551	0	63.25	0.452	0 121.954
Stage 3	-16.65	289.133	60.764	UL-RL	0.205	7.551	0	64.345	0.452	0 125.109
Stage 3	-16.85	291.901	64.845	UL-RL	0.205	7.551	0	65.44	0.452	0 130.286
Stage 3	-17.05	294.285	68.851	UL-RL	0.205	7.551	0	66.536	0.452	0 135.387
Stage 3	-17.1	294.882	69.853	UL-RL	0.205	7.551	0	66.81	0.452	0 136.662

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	182 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato RIGHT											
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 3	0	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-0.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-0.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-0.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-0.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-1	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-1.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-1.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-1.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-1.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-2.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-2.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-2.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-2.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-3	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-3.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-3.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-3.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-3.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-4.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-4.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-4.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-4.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-5	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-5.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-5.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-5.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-5.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-6.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-6.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-6.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-6.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-7	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-7.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-7.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-7.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-7.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8.65	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-8.85	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-9.05	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-9.25	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-9.45	0	0	REMOVED	0	0	0	0	0	0	0
Stage 3	-9.65	2.85	21.52	PASSIVE	0.2057.551	0	0	0	0	0	21.52
Stage 3	-9.85	6.65	50.214	PASSIVE	0.2057.551	0	0	0	0	0	50.214
Stage 3	-10.05	10.45	78.908	PASSIVE	0.2057.551	0	0	0	0	0	78.908
Stage 3	-10.25	14.25	92.693	V-C	0.2057.551	0	0	0	0	0	92.693
Stage 3	-10.45	18.05	94.708	V-C	0.2057.551	0	0	0	0	0	94.708
Stage 3	-10.65	21.85	96.524	V-C	0.2057.551	0	0	0	0	0	96.524
Stage 3	-10.85	25.65	98.182	V-C	0.2057.551	0	0	0	0	0	98.182
Stage 3	-11.05	29.45	99.71	V-C	0.2057.551	0	0	0	0	0	99.71
Stage 3	-11.25	33.25	101.125	V-C	0.2057.551	0	0	0	0	0	101.125
Stage 3	-11.45	37.05	102.442	V-C	0.2057.551	0	0	0	0	0	102.442
Stage 3	-11.65	40.85	103.672	V-C	0.2057.551	0	0	0	0	0	103.672
Stage 3	-11.85	44.65	104.824	V-C	0.2057.551	0	0	0	0	0	104.824

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	183 di 325

Design Assumption: Nominal Risultati Terreno Muro:										
Stage	Z (m)	Sigma V	Sigma H	LEFT Stato	Lato RIGHT					
					Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 3	-12.05	48.45	105.905	V-C	0.2057.551	0	0	0	0	105.905
Stage 3	-12.25	52.25	106.921	V-C	0.2057.551	0	0	0	0	106.921
Stage 3	-12.45	56.05	107.88	V-C	0.2057.551	0	0	0	0	107.88
Stage 3	-12.65	57.671	107.778	V-C	0.2057.551	0	2.179	0.452	0	109.957
Stage 3	-12.85	58.567	107.024	UL-RL	0.2057.551	0	5.083	0.452	0	112.107
Stage 3	-13.05	59.462	106.077	UL-RL	0.2057.551	0	7.988	0.452	0	114.065
Stage 3	-13.25	60.357	105.095	UL-RL	0.2057.551	0	10.893	0.452	0	115.988
Stage 3	-13.45	61.252	104.081	UL-RL	0.2057.551	0	13.798	0.452	0	117.879
Stage 3	-13.65	62.148	103.039	UL-RL	0.2057.551	0	16.702	0.452	0	119.741
Stage 3	-13.85	63.043	101.97	UL-RL	0.2057.551	0	19.607	0.452	0	121.577
Stage 3	-14.05	63.938	100.878	UL-RL	0.2057.551	0	22.512	0.452	0	123.39
Stage 3	-14.25	64.833	99.766	UL-RL	0.2057.551	0	25.417	0.452	0	125.183
Stage 3	-14.45	65.729	98.636	UL-RL	0.2057.551	0	28.321	0.452	0	126.957
Stage 3	-14.65	66.624	97.49	UL-RL	0.2057.551	0	31.226	0.452	0	128.716
Stage 3	-14.85	67.519	96.331	UL-RL	0.2057.551	0	34.131	0.452	0	130.462
Stage 3	-15.05	68.414	95.16	UL-RL	0.2057.551	0	37.036	0.452	0	132.196
Stage 3	-15.25	69.309	93.98	UL-RL	0.2057.551	0	39.94	0.452	0	133.921
Stage 3	-15.45	70.205	92.793	UL-RL	0.2057.551	0	42.845	0.452	0	135.638
Stage 3	-15.65	71.1	91.599	UL-RL	0.2057.551	0	45.75	0.452	0	137.349
Stage 3	-15.85	71.995	90.401	UL-RL	0.2057.551	0	48.655	0.452	0	139.056
Stage 3	-16.05	72.89	89.199	UL-RL	0.2057.551	0	51.559	0.452	0	140.759
Stage 3	-16.25	73.786	87.995	UL-RL	0.2057.551	0	54.464	0.452	0	142.459
Stage 3	-16.45	74.681	86.79	UL-RL	0.2057.551	0	57.369	0.452	0	144.159
Stage 3	-16.65	75.576	85.584	UL-RL	0.2057.551	0	60.274	0.452	0	145.857
Stage 3	-16.85	76.471	84.377	UL-RL	0.2057.551	0	63.179	0.452	0	147.556
Stage 3	-17.05	77.367	83.171	UL-RL	0.2057.551	0	66.083	0.452	0	149.254
Stage 3	-17.1	77.59	82.869	UL-RL	0.2057.551	0	66.81	0.452	0	149.678

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	184 di 325

**Tabella Risultati Terreno Right wall - Nominal - Stage 3**

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 3	0	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-0.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-0.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-0.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-0.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-1	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-1.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-1.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-1.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-1.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-2.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-2.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-2.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-2.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-3	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-3.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-3.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-3.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-3.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-4.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-4.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-4.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-4.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-5	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-5.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-5.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-5.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-5.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-6.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-6.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-6.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-6.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-7	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-7.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-7.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-7.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-7.8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8.2	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8.4	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8.6	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8.65	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-8.85	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-9.05	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-9.25	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-9.45	0	0	REMOVED	0	0	0	0	0	0
Stage 3	-9.65	2.85	21.52	PASSIVE	0.2057.551	0	0	0	0	21.52
Stage 3	-9.85	6.65	50.214	PASSIVE	0.2057.551	0	0	0	0	50.214
Stage 3	-10.05	10.45	73.389	UL-RL	0.2057.551	0	0	0	0	73.389
Stage 3	-10.25	14.25	76.664	UL-RL	0.2057.551	0	0	0	0	76.664
Stage 3	-10.45	18.05	79.52	UL-RL	0.2057.551	0	0	0	0	79.52
Stage 3	-10.65	21.85	82.067	UL-RL	0.2057.551	0	0	0	0	82.067
Stage 3	-10.85	25.65	84.37	UL-RL	0.2057.551	0	0	0	0	84.37
Stage 3	-11.05	29.45	86.471	UL-RL	0.2057.551	0	0	0	0	86.471
Stage 3	-11.25	33.25	88.398	UL-RL	0.2057.551	0	0	0	0	88.398

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	185 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Lato		Coesione	Pore	Gradiente U*	Peq
					Ka	Kp				
Stage 3	-11.45	37.05	90.175	UL-RL	0.2057.551	0	0	0	0	90.175
Stage 3	-11.65	40.85	91.817	UL-RL	0.2057.551	0	0	0	0	91.817
Stage 3	-11.85	44.65	93.34	UL-RL	0.2057.551	0	0	0	0	93.34
Stage 3	-12.05	48.45	94.754	UL-RL	0.2057.551	0	0	0	0	94.754
Stage 3	-12.25	52.25	96.07	UL-RL	0.2057.551	0	0	0	0	96.07
Stage 3	-12.45	56.05	97.297	UL-RL	0.2057.551	0	0	0	0	97.297
Stage 3	-12.65	57.671	97.351	UL-RL	0.2057.551	0	2.179	0.452	0	99.53
Stage 3	-12.85	58.567	96.99	UL-RL	0.2057.551	0	5.083	0.452	0	102.074
Stage 3	-13.05	59.462	96.584	UL-RL	0.2057.551	0	7.988	0.452	0	104.572
Stage 3	-13.25	60.357	96.135	UL-RL	0.2057.551	0	10.893	0.452	0	107.028
Stage 3	-13.45	61.252	95.647	UL-RL	0.2057.551	0	13.798	0.452	0	109.445
Stage 3	-13.65	62.148	95.125	UL-RL	0.2057.551	0	16.702	0.452	0	111.827
Stage 3	-13.85	63.043	94.57	UL-RL	0.2057.551	0	19.607	0.452	0	114.177
Stage 3	-14.05	63.938	93.986	UL-RL	0.2057.551	0	22.512	0.452	0	116.498
Stage 3	-14.25	64.833	93.377	UL-RL	0.2057.551	0	25.417	0.452	0	118.794
Stage 3	-14.45	65.729	92.745	UL-RL	0.2057.551	0	28.321	0.452	0	121.066
Stage 3	-14.65	66.624	92.093	UL-RL	0.2057.551	0	31.226	0.452	0	123.319
Stage 3	-14.85	67.519	91.424	UL-RL	0.2057.551	0	34.131	0.452	0	125.554
Stage 3	-15.05	68.414	90.739	UL-RL	0.2057.551	0	37.036	0.452	0	127.775
Stage 3	-15.25	69.309	90.043	UL-RL	0.2057.551	0	39.94	0.452	0	129.983
Stage 3	-15.45	70.205	89.336	UL-RL	0.2057.551	0	42.845	0.452	0	132.181
Stage 3	-15.65	71.1	88.62	UL-RL	0.2057.551	0	45.75	0.452	0	134.37
Stage 3	-15.85	71.995	87.898	UL-RL	0.2057.551	0	48.655	0.452	0	136.553
Stage 3	-16.05	72.89	87.171	UL-RL	0.2057.551	0	51.559	0.452	0	138.73
Stage 3	-16.25	73.786	86.44	UL-RL	0.2057.551	0	54.464	0.452	0	140.904
Stage 3	-16.45	74.681	85.707	UL-RL	0.2057.551	0	57.369	0.452	0	143.076
Stage 3	-16.65	75.576	84.971	UL-RL	0.2057.551	0	60.274	0.452	0	145.245
Stage 3	-16.85	76.471	84.235	UL-RL	0.2057.551	0	63.179	0.452	0	147.414
Stage 3	-17.05	77.367	83.498	UL-RL	0.2057.551	0	66.083	0.452	0	149.581
Stage 3	-17.1	77.59	83.314	UL-RL	0.2057.551	0	66.81	0.452	0	150.123

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	186 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 3	0	20	4.401	V-C	0.3183.843	12	0	0	0	4.401
Stage 3	-0.2	16.253	16.929	V-C	0.3183.843	12	0	0	0	16.929
Stage 3	-0.4	22.868	19.343	V-C	0.3183.843	12	0	0	0	19.343
Stage 3	-0.6	23.735	21.647	V-C	0.3183.843	12	0	0	0	21.647
Stage 3	-0.8	29.248	23.848	V-C	0.3183.843	12	0	0	0	23.848
Stage 3	-1	34.1	25.953	V-C	0.3183.843	12	0	0	0	25.953
Stage 3	-1.2	36.295	27.965	V-C	0.3183.843	12	0	0	0	27.965
Stage 3	-1.4	40.971	29.891	V-C	0.3183.843	12	0	0	0	29.891
Stage 3	-1.6	43.579	31.737	V-C	0.3183.843	12	0	0	0	31.737
Stage 3	-1.8	48.122	33.281	UL-RL	0.3183.843	12	0	0	0	33.281
Stage 3	-2	52.507	34.734	UL-RL	0.3183.843	12	0	0	0	34.734
Stage 3	-2.2	55.417	36.121	UL-RL	0.3183.843	12	0	0	0	36.121
Stage 3	-2.4	59.743	37.446	UL-RL	0.3183.843	12	0	0	0	37.446
Stage 3	-2.6	62.797	38.717	UL-RL	0.3183.843	12	0	0	0	38.717
Stage 3	-2.8	67.072	39.938	UL-RL	0.3183.843	12	0	0	0	39.938
Stage 3	-3	71.278	41.114	UL-RL	0.3183.843	12	0	0	0	41.114
Stage 3	-3.2	74.463	42.252	UL-RL	0.3183.843	12	0	0	0	42.252
Stage 3	-3.4	78.639	43.355	UL-RL	0.3183.843	12	0	0	0	43.355
Stage 3	-3.6	81.896	44.429	UL-RL	0.3183.843	12	0	0	0	44.429
Stage 3	-3.8	86.046	45.478	UL-RL	0.3183.843	12	0	0	0	45.478
Stage 3	-4	90.157	46.507	UL-RL	0.3183.843	12	0	0	0	46.507
Stage 3	-4.2	93.487	47.521	UL-RL	0.3183.843	12	0	0	0	47.521
Stage 3	-4.4	97.58	48.524	UL-RL	0.3183.843	12	0	0	0	48.524
Stage 3	-4.6	100.953	49.519	UL-RL	0.3183.843	12	0	0	0	49.519
Stage 3	-4.8	105.03	50.511	UL-RL	0.3183.843	12	0	0	0	50.511
Stage 3	-5	108.534	51.232	UL-RL	0.3183.843	12	0.548	0.452	0	51.779
Stage 3	-5.2	110.859	51.685	UL-RL	0.3183.843	12	1.643	0.452	0	53.327
Stage 3	-5.4	113.803	52.145	UL-RL	0.3183.843	12	2.738	0.452	0	54.883
Stage 3	-5.6	116.157	52.616	UL-RL	0.3183.843	12	3.833	0.452	0	56.449
Stage 3	-5.8	119.09	53.101	UL-RL	0.3183.843	12	4.929	0.452	0	58.029
Stage 3	-6	122.007	53.602	UL-RL	0.3183.843	12	6.024	0.452	0	59.626
Stage 3	-6.2	124.392	54.123	UL-RL	0.3183.843	12	7.119	0.452	0	61.242
Stage 3	-6.4	127.3	54.666	UL-RL	0.3183.843	12	8.214	0.452	0	62.881
Stage 3	-6.6	129.706	55.234	UL-RL	0.3183.843	12	9.31	0.452	0	64.543
Stage 3	-6.8	132.606	55.828	UL-RL	0.3183.843	12	10.405	0.452	0	66.232
Stage 3	-7	135.494	56.45	UL-RL	0.3183.843	12	11.5	0.452	0	67.95
Stage 3	-7.2	137.923	57.103	UL-RL	0.3183.843	12	12.595	0.452	0	69.698
Stage 3	-7.4	140.804	57.788	UL-RL	0.3183.843	12	13.69	0.452	0	71.479
Stage 3	-7.6	143.675	58.507	UL-RL	0.3183.843	12	14.786	0.452	0	73.293
Stage 3	-7.8	146.124	59.261	UL-RL	0.3183.843	12	15.881	0.452	0	75.142
Stage 3	-8	148.99	60.05	UL-RL	0.3183.843	12	16.976	0.452	0	77.026
Stage 3	-8.2	151.453	60.877	UL-RL	0.3183.843	12	18.071	0.452	0	78.948
Stage 3	-8.4	154.313	61.741	UL-RL	0.3183.843	12	19.167	0.452	0	80.907
Stage 3	-8.6	157.165	62.643	UL-RL	0.3183.843	12	20.262	0.452	0	82.904
Stage 3	-8.65	157.784	62.874	UL-RL	0.3183.843	12	20.536	0.452	0	83.41
Stage 3	-8.85	160.264	63.824	UL-RL	0.3183.843	12	21.631	0.452	0	85.455
Stage 3	-9.05	163.113	64.812	UL-RL	0.3183.843	12	22.726	0.452	0	87.538
Stage 3	-9.25	165.955	65.838	UL-RL	0.3183.843	12	23.821	0.452	0	89.659
Stage 3	-9.45	168.449	66.901	UL-RL	0.3183.843	12	24.917	0.452	0	91.818
Stage 3	-9.65	171.287	35.114	ACTIVE	0.2057.551	0	26.012	0.452	0	61.126
Stage 3	-9.85	173.79	35.627	ACTIVE	0.2057.551	0	27.107	0.452	0	62.734
Stage 3	-10.05	176.625	36.208	ACTIVE	0.2057.551	0	28.202	0.452	0	64.41
Stage 3	-10.25	179.453	36.788	ACTIVE	0.2057.551	0	29.298	0.452	0	66.086
Stage 3	-10.45	181.968	37.303	ACTIVE	0.2057.551	0	30.393	0.452	0	67.696
Stage 3	-10.65	184.794	37.883	ACTIVE	0.2057.551	0	31.488	0.452	0	69.371
Stage 3	-10.85	187.315	38.4	ACTIVE	0.2057.551	0	32.583	0.452	0	70.983
Stage 3	-11.05	190.138	38.978	ACTIVE	0.2057.551	0	33.679	0.452	0	72.657
Stage 3	-11.25	192.956	39.556	ACTIVE	0.2057.551	0	34.774	0.452	0	74.33
Stage 3	-11.45	195.487	40.075	ACTIVE	0.2057.551	0	35.869	0.452	0	75.944
Stage 3	-11.65	198.303	40.652	ACTIVE	0.2057.551	0	36.964	0.452	0	77.616
Stage 3	-11.85	200.84	41.172	ACTIVE	0.2057.551	0	38.06	0.452	0	79.232

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	187 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT											
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq		
Stage 3	-12.05	203.654	41.749	ACTIVE	0.205	7.551	0	39.155	0.452	0	80.904
Stage 3	-12.25	206.463	42.325	ACTIVE	0.205	7.551	0	40.25	0.452	0	82.575
Stage 3	-12.45	209.008	42.847	ACTIVE	0.205	7.551	0	41.345	0.452	0	84.192
Stage 3	-12.65	211.815	43.422	ACTIVE	0.205	7.551	0	42.44	0.452	0	85.863
Stage 3	-12.85	214.365	43.945	ACTIVE	0.205	7.551	0	43.536	0.452	0	87.481
Stage 3	-13.05	217.17	44.52	ACTIVE	0.205	7.551	0	44.631	0.452	0	89.151
Stage 3	-13.25	219.972	45.094	ACTIVE	0.205	7.551	0	45.726	0.452	0	90.82
Stage 3	-13.45	222.529	45.618	ACTIVE	0.205	7.551	0	46.821	0.452	0	92.44
Stage 3	-13.65	225.328	46.192	ACTIVE	0.205	7.551	0	47.917	0.452	0	94.109
Stage 3	-13.85	227.89	46.717	ACTIVE	0.205	7.551	0	49.012	0.452	0	95.729
Stage 3	-14.05	230.688	47.291	ACTIVE	0.205	7.551	0	50.107	0.452	0	97.398
Stage 3	-14.25	233.483	47.864	ACTIVE	0.205	7.551	0	51.202	0.452	0	99.066
Stage 3	-14.45	236.05	48.39	ACTIVE	0.205	7.551	0	52.298	0.452	0	100.688
Stage 3	-14.65	238.843	48.963	ACTIVE	0.205	7.551	0	53.393	0.452	0	102.356
Stage 3	-14.85	241.414	49.49	ACTIVE	0.205	7.551	0	54.488	0.452	0	103.978
Stage 3	-15.05	244.206	50.062	ACTIVE	0.205	7.551	0	55.583	0.452	0	105.646
Stage 3	-15.25	246.996	50.634	ACTIVE	0.205	7.551	0	56.679	0.452	0	107.313
Stage 3	-15.45	249.571	51.162	ACTIVE	0.205	7.551	0	57.774	0.452	0	108.936
Stage 3	-15.65	252.359	51.734	ACTIVE	0.205	7.551	0	58.869	0.452	0	110.603
Stage 3	-15.85	255.145	52.305	ACTIVE	0.205	7.551	0	59.964	0.452	0	112.269
Stage 3	-16.05	257.725	52.834	ACTIVE	0.205	7.551	0	61.059	0.452	0	113.893
Stage 3	-16.25	260.51	53.404	ACTIVE	0.205	7.551	0	62.155	0.452	0	115.559
Stage 3	-16.45	263.093	53.934	ACTIVE	0.205	7.551	0	63.25	0.452	0	117.184
Stage 3	-16.65	265.876	55.748	UL-RL	0.205	7.551	0	64.345	0.452	0	120.093
Stage 3	-16.85	268.657	58.971	UL-RL	0.205	7.551	0	65.44	0.452	0	124.412
Stage 3	-17.05	271.245	62.196	UL-RL	0.205	7.551	0	66.536	0.452	0	128.731
Stage 3	-17.1	271.892	63.002	UL-RL	0.205	7.551	0	66.81	0.452	0	129.811



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	188 di 325

**Tabella Risultati Terreno Left Wall - Nominal - Stage 4**

Design Assumption: Nominal Risultati Terreno												
Stage	Z (m)	Sigma V	Sigma H	Muro: LEFT	Stato	Ka	Lato LEFT	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	0	60	5.546	ACTIVE	0.318	3.843	12	0	0	0	0	5.546
Stage 4	-0.2	40.372	20.729	UL-RL	0.318	3.843	12	0	0	0	0	20.729
Stage 4	-0.4	50.826	24.677	UL-RL	0.318	3.843	12	0	0	0	0	24.677
Stage 4	-0.6	49.134	25.111	UL-RL	0.318	3.843	12	0	0	0	0	25.111
Stage 4	-0.8	56.554	27.745	UL-RL	0.318	3.843	12	0	0	0	0	27.745
Stage 4	-1	62.575	29.954	UL-RL	0.318	3.843	12	0	0	0	0	29.954
Stage 4	-1.2	63.245	30.756	UL-RL	0.318	3.843	12	0	0	0	0	30.756
Stage 4	-1.4	68.854	32.704	UL-RL	0.318	3.843	12	0	0	0	0	32.704
Stage 4	-1.6	70.314	33.55	UL-RL	0.318	3.843	12	0	0	0	0	33.55
Stage 4	-1.8	75.632	35.285	UL-RL	0.318	3.843	12	0	0	0	0	35.285
Stage 4	-2	80.63	36.878	UL-RL	0.318	3.843	12	0	0	0	0	36.878
Stage 4	-2.2	82.672	37.682	UL-RL	0.318	3.843	12	0	0	0	0	37.682
Stage 4	-2.4	87.542	39.136	UL-RL	0.318	3.843	12	0	0	0	0	39.136
Stage 4	-2.6	89.866	39.912	UL-RL	0.318	3.843	12	0	0	0	0	39.912
Stage 4	-2.8	94.63	41.255	UL-RL	0.318	3.843	12	0	0	0	0	41.255
Stage 4	-3	99.254	42.528	UL-RL	0.318	3.843	12	0	0	0	0	42.528
Stage 4	-3.2	102.141	43.264	UL-RL	0.318	3.843	12	0	0	0	0	43.264
Stage 4	-3.4	106.685	44.468	UL-RL	0.318	3.843	12	0	0	0	0	44.468
Stage 4	-3.6	109.392	45.197	UL-RL	0.318	3.843	12	0	0	0	0	45.197
Stage 4	-3.8	113.884	46.353	UL-RL	0.318	3.843	12	0	0	0	0	46.353
Stage 4	-4	118.052	47.48	UL-RL	0.318	3.843	12	0	0	0	0	47.48
Stage 4	-4.2	120.918	48.214	UL-RL	0.318	3.843	12	0	0	0	0	48.214
Stage 4	-4.4	125.31	49.324	UL-RL	0.318	3.843	12	0	0	0	0	49.324
Stage 4	-4.6	128.262	50.08	UL-RL	0.318	3.843	12	0	0	0	0	50.08
Stage 4	-4.8	132.619	51.191	UL-RL	0.318	3.843	12	0	0	0	0	51.191
Stage 4	-5	136.379	52.028	UL-RL	0.318	3.843	12	0.548	0.452	0	0	52.575
Stage 4	-5.2	138.327	52.293	UL-RL	0.318	3.843	12	1.643	0.452	0	0	53.935
Stage 4	-5.4	141.516	52.881	UL-RL	0.318	3.843	12	2.738	0.452	0	0	55.62
Stage 4	-5.6	143.521	53.197	UL-RL	0.318	3.843	12	3.833	0.452	0	0	57.03
Stage 4	-5.8	146.687	53.822	UL-RL	0.318	3.843	12	4.929	0.452	0	0	58.751
Stage 4	-6	149.818	54.465	UL-RL	0.318	3.843	12	6.024	0.452	0	0	60.488
Stage 4	-6.2	151.886	54.871	UL-RL	0.318	3.843	12	7.119	0.452	0	0	61.99
Stage 4	-6.4	155	55.567	UL-RL	0.318	3.843	12	8.214	0.452	0	0	63.782
Stage 4	-6.6	157.11	56.047	UL-RL	0.318	3.843	12	9.31	0.452	0	0	65.356
Stage 4	-6.8	160.207	56.805	UL-RL	0.318	3.843	12	10.405	0.452	0	0	67.21
Stage 4	-7	163.279	57.593	UL-RL	0.318	3.843	12	11.5	0.452	0	0	69.093
Stage 4	-7.2	165.436	58.192	UL-RL	0.318	3.843	12	12.595	0.452	0	0	70.787
Stage 4	-7.4	168.495	59.054	UL-RL	0.318	3.843	12	13.69	0.452	0	0	72.744
Stage 4	-7.6	171.532	59.95	UL-RL	0.318	3.843	12	14.786	0.452	0	0	74.736
Stage 4	-7.8	173.729	60.679	UL-RL	0.318	3.843	12	15.881	0.452	0	0	76.56
Stage 4	-8	176.756	61.655	UL-RL	0.318	3.843	12	16.976	0.452	0	0	78.631
Stage 4	-8.2	178.979	62.474	UL-RL	0.318	3.843	12	18.071	0.452	0	0	80.546
Stage 4	-8.4	181.996	63.52	UL-RL	0.318	3.843	12	19.167	0.452	0	0	82.686
Stage 4	-8.6	184.997	64.487	UL-RL	0.318	3.843	12	20.262	0.452	0	0	84.749
Stage 4	-8.65	185.616	64.689	UL-RL	0.318	3.843	12	20.536	0.452	0	0	85.225
Stage 4	-8.85	187.872	65.533	UL-RL	0.318	3.843	12	21.631	0.452	0	0	87.164
Stage 4	-9.05	190.865	66.608	UL-RL	0.318	3.843	12	22.726	0.452	0	0	89.334
Stage 4	-9.25	193.844	67.728	UL-RL	0.318	3.843	12	23.821	0.452	0	0	91.549
Stage 4	-9.45	196.127	68.722	UL-RL	0.318	3.843	12	24.917	0.452	0	0	93.639
Stage 4	-9.65	199.098	40.819	UL-RL	0.205	7.551	0	26.012	0.452	0	0	66.831
Stage 4	-9.85	201.4	41.291	UL-RL	0.205	7.551	0	27.107	0.452	0	0	68.398
Stage 4	-10.05	204.265	41.879	UL-RL	0.205	7.551	0	28.202	0.452	0	0	70.081
Stage 4	-10.25	207.024	42.445	UL-RL	0.205	7.551	0	29.298	0.452	0	0	71.743
Stage 4	-10.45	209.159	42.883	UL-RL	0.205	7.551	0	30.393	0.452	0	0	73.276
Stage 4	-10.65	211.923	43.45	UL-RL	0.205	7.551	0	31.488	0.452	0	0	74.938
Stage 4	-10.85	214.084	43.893	UL-RL	0.205	7.551	0	32.583	0.452	0	0	76.477
Stage 4	-11.05	216.852	44.461	UL-RL	0.205	7.551	0	33.679	0.452	0	0	78.139
Stage 4	-11.25	219.615	45.028	UL-RL	0.205	7.551	0	34.774	0.452	0	0	79.801

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	189 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT											
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 4	-11.45	221.808	45.477	UL-RL	0.205	7.551	0	35.869	0.452	0	81.346
Stage 4	-11.65	224.575	46.045	UL-RL	0.205	7.551	0	36.964	0.452	0	83.009
Stage 4	-11.85	226.789	46.499	UL-RL	0.205	7.551	0	38.06	0.452	0	84.558
Stage 4	-12.05	229.559	47.067	UL-RL	0.205	7.551	0	39.155	0.452	0	86.221
Stage 4	-12.25	232.326	47.634	UL-RL	0.205	7.551	0	40.25	0.452	0	87.884
Stage 4	-12.45	234.566	48.093	UL-RL	0.205	7.551	0	41.345	0.452	0	89.438
Stage 4	-12.65	237.336	48.661	UL-RL	0.205	7.551	0	42.44	0.452	0	91.101
Stage 4	-12.85	239.594	49.124	UL-RL	0.205	7.551	0	43.536	0.452	0	92.659
Stage 4	-13.05	242.366	49.692	UL-RL	0.205	7.551	0	44.631	0.452	0	94.323
Stage 4	-13.25	245.134	50.259	UL-RL	0.205	7.551	0	45.726	0.452	0	95.985
Stage 4	-13.45	247.415	50.727	UL-RL	0.205	7.551	0	46.821	0.452	0	97.548
Stage 4	-13.65	250.185	51.295	UL-RL	0.205	7.551	0	47.917	0.452	0	99.211
Stage 4	-13.85	252.481	51.765	UL-RL	0.205	7.551	0	49.012	0.452	0	100.777
Stage 4	-14.05	255.254	52.333	UL-RL	0.205	7.551	0	50.107	0.452	0	102.44
Stage 4	-14.25	258.022	52.901	UL-RL	0.205	7.551	0	51.202	0.452	0	104.103
Stage 4	-14.45	260.338	53.375	UL-RL	0.205	7.551	0	52.298	0.452	0	105.673
Stage 4	-14.65	263.109	53.943	UL-RL	0.205	7.551	0	53.393	0.452	0	107.336
Stage 4	-14.85	265.437	54.42	UL-RL	0.205	7.551	0	54.488	0.452	0	108.908
Stage 4	-15.05	268.209	54.989	UL-RL	0.205	7.551	0	55.583	0.452	0	110.572
Stage 4	-15.25	270.979	55.556	UL-RL	0.205	7.551	0	56.679	0.452	0	112.235
Stage 4	-15.45	273.323	56.037	UL-RL	0.205	7.551	0	57.774	0.452	0	113.81
Stage 4	-15.65	276.094	56.605	UL-RL	0.205	7.551	0	58.869	0.452	0	115.474
Stage 4	-15.85	278.862	57.172	UL-RL	0.205	7.551	0	59.964	0.452	0	117.136
Stage 4	-16.05	281.222	57.656	UL-RL	0.205	7.551	0	61.059	0.452	0	118.715
Stage 4	-16.25	283.992	58.223	UL-RL	0.205	7.551	0	62.155	0.452	0	120.378
Stage 4	-16.45	286.362	58.709	UL-RL	0.205	7.551	0	63.25	0.452	0	121.959
Stage 4	-16.65	289.133	60.768	UL-RL	0.205	7.551	0	64.345	0.452	0	125.113
Stage 4	-16.85	291.901	64.849	UL-RL	0.205	7.551	0	65.44	0.452	0	130.29
Stage 4	-17.05	294.285	68.855	UL-RL	0.205	7.551	0	66.536	0.452	0	135.391
Stage 4	-17.1	294.882	69.857	UL-RL	0.205	7.551	0	66.81	0.452	0	136.666

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	190 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	0	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.65	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.85	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.05	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.25	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.45	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.65	2.85	21.518	UL-RL	0.2057.551	0	0	0	0	21.518
Stage 4	-9.85	6.65	50.212	UL-RL	0.2057.551	0	0	0	0	50.212
Stage 4	-10.05	10.45	78.905	UL-RL	0.2057.551	0	0	0	0	78.905
Stage 4	-10.25	14.25	92.69	UL-RL	0.2057.551	0	0	0	0	92.69
Stage 4	-10.45	18.05	94.704	UL-RL	0.2057.551	0	0	0	0	94.704
Stage 4	-10.65	21.85	96.521	UL-RL	0.2057.551	0	0	0	0	96.521
Stage 4	-10.85	25.65	98.179	UL-RL	0.2057.551	0	0	0	0	98.179
Stage 4	-11.05	29.45	99.707	UL-RL	0.2057.551	0	0	0	0	99.707
Stage 4	-11.25	33.25	101.122	UL-RL	0.2057.551	0	0	0	0	101.122
Stage 4	-11.45	37.05	102.439	UL-RL	0.2057.551	0	0	0	0	102.439
Stage 4	-11.65	40.85	103.668	UL-RL	0.2057.551	0	0	0	0	103.668
Stage 4	-11.85	44.65	104.82	UL-RL	0.2057.551	0	0	0	0	104.82

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	191 di 325

Design Assumption: Nominal Risultati Terreno Muro:										
Stage	Z (m)	Sigma V	Sigma H	LEFT Stato	Lato RIGHT					
					Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	-12.05	48.45	105.901	UL-RL	0.2057.551	0	0	0	0	105.901
Stage 4	-12.25	52.25	106.918	UL-RL	0.2057.551	0	0	0	0	106.918
Stage 4	-12.45	56.05	107.876	UL-RL	0.2057.551	0	0	0	0	107.876
Stage 4	-12.65	57.671	107.774	UL-RL	0.2057.551	0	2.179	0.452	0	109.953
Stage 4	-12.85	58.567	107.02	UL-RL	0.2057.551	0	5.083	0.452	0	112.103
Stage 4	-13.05	59.462	106.073	UL-RL	0.2057.551	0	7.988	0.452	0	114.061
Stage 4	-13.25	60.357	105.091	UL-RL	0.2057.551	0	10.893	0.452	0	115.984
Stage 4	-13.45	61.252	104.078	UL-RL	0.2057.551	0	13.798	0.452	0	117.875
Stage 4	-13.65	62.148	103.035	UL-RL	0.2057.551	0	16.702	0.452	0	119.737
Stage 4	-13.85	63.043	101.967	UL-RL	0.2057.551	0	19.607	0.452	0	121.574
Stage 4	-14.05	63.938	100.875	UL-RL	0.2057.551	0	22.512	0.452	0	123.387
Stage 4	-14.25	64.833	99.763	UL-RL	0.2057.551	0	25.417	0.452	0	125.179
Stage 4	-14.45	65.729	98.633	UL-RL	0.2057.551	0	28.321	0.452	0	126.954
Stage 4	-14.65	66.624	97.487	UL-RL	0.2057.551	0	31.226	0.452	0	128.713
Stage 4	-14.85	67.519	96.328	UL-RL	0.2057.551	0	34.131	0.452	0	130.458
Stage 4	-15.05	68.414	95.157	UL-RL	0.2057.551	0	37.036	0.452	0	132.193
Stage 4	-15.25	69.309	93.977	UL-RL	0.2057.551	0	39.94	0.452	0	133.918
Stage 4	-15.45	70.205	92.79	UL-RL	0.2057.551	0	42.845	0.452	0	135.635
Stage 4	-15.65	71.1	91.596	UL-RL	0.2057.551	0	45.75	0.452	0	137.346
Stage 4	-15.85	71.995	90.398	UL-RL	0.2057.551	0	48.655	0.452	0	139.053
Stage 4	-16.05	72.89	89.196	UL-RL	0.2057.551	0	51.559	0.452	0	140.756
Stage 4	-16.25	73.786	87.993	UL-RL	0.2057.551	0	54.464	0.452	0	142.457
Stage 4	-16.45	74.681	86.787	UL-RL	0.2057.551	0	57.369	0.452	0	144.156
Stage 4	-16.65	75.576	85.581	UL-RL	0.2057.551	0	60.274	0.452	0	145.855
Stage 4	-16.85	76.471	84.375	UL-RL	0.2057.551	0	63.179	0.452	0	147.553
Stage 4	-17.05	77.367	83.168	UL-RL	0.2057.551	0	66.083	0.452	0	149.252
Stage 4	-17.1	77.59	82.867	UL-RL	0.2057.551	0	66.81	0.452	0	149.676

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	192 di 325

**Tabella Risultati Terreno Right wall - Nominal - Stage 4**

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	0	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-0.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-1.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-2.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-3.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-4.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-5.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-6.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-7.8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.2	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.4	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.6	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.65	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-8.85	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.05	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.25	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.45	0	0	REMOVED	0	0	0	0	0	0
Stage 4	-9.65	2.85	21.518	UL-RL	0.2057.551	0	0	0	0	21.518
Stage 4	-9.85	6.65	50.212	UL-RL	0.2057.551	0	0	0	0	50.212
Stage 4	-10.05	10.45	73.387	UL-RL	0.2057.551	0	0	0	0	73.387
Stage 4	-10.25	14.25	76.661	UL-RL	0.2057.551	0	0	0	0	76.661
Stage 4	-10.45	18.05	79.517	UL-RL	0.2057.551	0	0	0	0	79.517
Stage 4	-10.65	21.85	82.064	UL-RL	0.2057.551	0	0	0	0	82.064
Stage 4	-10.85	25.65	84.367	UL-RL	0.2057.551	0	0	0	0	84.367
Stage 4	-11.05	29.45	86.467	UL-RL	0.2057.551	0	0	0	0	86.467
Stage 4	-11.25	33.25	88.395	UL-RL	0.2057.551	0	0	0	0	88.395

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	193 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Lato		Coesione	Pore	Gradiente U*	Peq
					Ka	Kp				
Stage 4	-11.45	37.05	90.171	UL-RL	0.2057.551	0	0	0	0	90.171
Stage 4	-11.65	40.85	91.814	UL-RL	0.2057.551	0	0	0	0	91.814
Stage 4	-11.85	44.65	93.336	UL-RL	0.2057.551	0	0	0	0	93.336
Stage 4	-12.05	48.45	94.751	UL-RL	0.2057.551	0	0	0	0	94.751
Stage 4	-12.25	52.25	96.066	UL-RL	0.2057.551	0	0	0	0	96.066
Stage 4	-12.45	56.05	97.293	UL-RL	0.2057.551	0	0	0	0	97.293
Stage 4	-12.65	57.671	97.348	UL-RL	0.2057.551	0	2.179	0.452	0	99.526
Stage 4	-12.85	58.567	96.986	UL-RL	0.2057.551	0	5.083	0.452	0	102.07
Stage 4	-13.05	59.462	96.58	UL-RL	0.2057.551	0	7.988	0.452	0	104.568
Stage 4	-13.25	60.357	96.131	UL-RL	0.2057.551	0	10.893	0.452	0	107.024
Stage 4	-13.45	61.252	95.644	UL-RL	0.2057.551	0	13.798	0.452	0	109.441
Stage 4	-13.65	62.148	95.121	UL-RL	0.2057.551	0	16.702	0.452	0	111.823
Stage 4	-13.85	63.043	94.566	UL-RL	0.2057.551	0	19.607	0.452	0	114.173
Stage 4	-14.05	63.938	93.983	UL-RL	0.2057.551	0	22.512	0.452	0	116.494
Stage 4	-14.25	64.833	93.373	UL-RL	0.2057.551	0	25.417	0.452	0	118.79
Stage 4	-14.45	65.729	92.741	UL-RL	0.2057.551	0	28.321	0.452	0	121.063
Stage 4	-14.65	66.624	92.09	UL-RL	0.2057.551	0	31.226	0.452	0	123.316
Stage 4	-14.85	67.519	91.42	UL-RL	0.2057.551	0	34.131	0.452	0	125.551
Stage 4	-15.05	68.414	90.736	UL-RL	0.2057.551	0	37.036	0.452	0	127.772
Stage 4	-15.25	69.309	90.04	UL-RL	0.2057.551	0	39.94	0.452	0	129.98
Stage 4	-15.45	70.205	89.333	UL-RL	0.2057.551	0	42.845	0.452	0	132.178
Stage 4	-15.65	71.1	88.617	UL-RL	0.2057.551	0	45.75	0.452	0	134.367
Stage 4	-15.85	71.995	87.895	UL-RL	0.2057.551	0	48.655	0.452	0	136.55
Stage 4	-16.05	72.89	87.168	UL-RL	0.2057.551	0	51.559	0.452	0	138.728
Stage 4	-16.25	73.786	86.438	UL-RL	0.2057.551	0	54.464	0.452	0	140.902
Stage 4	-16.45	74.681	85.704	UL-RL	0.2057.551	0	57.369	0.452	0	143.073
Stage 4	-16.65	75.576	84.969	UL-RL	0.2057.551	0	60.274	0.452	0	145.243
Stage 4	-16.85	76.471	84.233	UL-RL	0.2057.551	0	63.179	0.452	0	147.411
Stage 4	-17.05	77.367	83.496	UL-RL	0.2057.551	0	66.083	0.452	0	149.579
Stage 4	-17.1	77.59	83.311	UL-RL	0.2057.551	0	66.81	0.452	0	150.121

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	194 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	0	20	4.401	UL-RL 0.318 3.843	12	0	0	0	0	4.401
Stage 4	-0.2	16.253	16.929	UL-RL 0.318 3.843	12	0	0	0	0	16.929
Stage 4	-0.4	22.868	19.342	UL-RL 0.318 3.843	12	0	0	0	0	19.342
Stage 4	-0.6	23.735	21.647	UL-RL 0.318 3.843	12	0	0	0	0	21.647
Stage 4	-0.8	29.248	23.848	UL-RL 0.318 3.843	12	0	0	0	0	23.848
Stage 4	-1	34.1	25.952	UL-RL 0.318 3.843	12	0	0	0	0	25.952
Stage 4	-1.2	36.295	27.965	UL-RL 0.318 3.843	12	0	0	0	0	27.965
Stage 4	-1.4	40.971	29.891	UL-RL 0.318 3.843	12	0	0	0	0	29.891
Stage 4	-1.6	43.579	31.737	UL-RL 0.318 3.843	12	0	0	0	0	31.737
Stage 4	-1.8	48.122	33.28	UL-RL 0.318 3.843	12	0	0	0	0	33.28
Stage 4	-2	52.507	34.733	UL-RL 0.318 3.843	12	0	0	0	0	34.733
Stage 4	-2.2	55.417	36.12	UL-RL 0.318 3.843	12	0	0	0	0	36.12
Stage 4	-2.4	59.743	37.446	UL-RL 0.318 3.843	12	0	0	0	0	37.446
Stage 4	-2.6	62.797	38.716	UL-RL 0.318 3.843	12	0	0	0	0	38.716
Stage 4	-2.8	67.072	39.937	UL-RL 0.318 3.843	12	0	0	0	0	39.937
Stage 4	-3	71.278	41.113	UL-RL 0.318 3.843	12	0	0	0	0	41.113
Stage 4	-3.2	74.463	42.251	UL-RL 0.318 3.843	12	0	0	0	0	42.251
Stage 4	-3.4	78.639	43.354	UL-RL 0.318 3.843	12	0	0	0	0	43.354
Stage 4	-3.6	81.896	44.428	UL-RL 0.318 3.843	12	0	0	0	0	44.428
Stage 4	-3.8	86.046	45.477	UL-RL 0.318 3.843	12	0	0	0	0	45.477
Stage 4	-4	90.157	46.506	UL-RL 0.318 3.843	12	0	0	0	0	46.506
Stage 4	-4.2	93.487	47.52	UL-RL 0.318 3.843	12	0	0	0	0	47.52
Stage 4	-4.4	97.58	48.523	UL-RL 0.318 3.843	12	0	0	0	0	48.523
Stage 4	-4.6	100.953	49.518	UL-RL 0.318 3.843	12	0	0	0	0	49.518
Stage 4	-4.8	105.03	50.51	UL-RL 0.318 3.843	12	0	0	0	0	50.51
Stage 4	-5	108.534	51.23	UL-RL 0.318 3.843	12	0.548	0.452	0	0	51.778
Stage 4	-5.2	110.859	51.683	UL-RL 0.318 3.843	12	1.643	0.452	0	0	53.326
Stage 4	-5.4	113.803	52.144	UL-RL 0.318 3.843	12	2.738	0.452	0	0	54.882
Stage 4	-5.6	116.157	52.615	UL-RL 0.318 3.843	12	3.833	0.452	0	0	56.448
Stage 4	-5.8	119.09	53.1	UL-RL 0.318 3.843	12	4.929	0.452	0	0	58.028
Stage 4	-6	122.007	53.601	UL-RL 0.318 3.843	12	6.024	0.452	0	0	59.625
Stage 4	-6.2	124.392	54.122	UL-RL 0.318 3.843	12	7.119	0.452	0	0	61.241
Stage 4	-6.4	127.3	54.665	UL-RL 0.318 3.843	12	8.214	0.452	0	0	62.879
Stage 4	-6.6	129.706	55.232	UL-RL 0.318 3.843	12	9.31	0.452	0	0	64.542
Stage 4	-6.8	132.606	55.826	UL-RL 0.318 3.843	12	10.405	0.452	0	0	66.231
Stage 4	-7	135.494	56.449	UL-RL 0.318 3.843	12	11.5	0.452	0	0	67.949
Stage 4	-7.2	137.923	57.102	UL-RL 0.318 3.843	12	12.595	0.452	0	0	69.697
Stage 4	-7.4	140.804	57.787	UL-RL 0.318 3.843	12	13.69	0.452	0	0	71.478
Stage 4	-7.6	143.675	58.506	UL-RL 0.318 3.843	12	14.786	0.452	0	0	73.292
Stage 4	-7.8	146.124	59.26	UL-RL 0.318 3.843	12	15.881	0.452	0	0	75.141
Stage 4	-8	148.99	60.05	UL-RL 0.318 3.843	12	16.976	0.452	0	0	77.026
Stage 4	-8.2	151.453	60.876	UL-RL 0.318 3.843	12	18.071	0.452	0	0	78.948
Stage 4	-8.4	154.313	61.74	UL-RL 0.318 3.843	12	19.167	0.452	0	0	80.907
Stage 4	-8.6	157.165	62.642	UL-RL 0.318 3.843	12	20.262	0.452	0	0	82.904
Stage 4	-8.65	157.784	62.874	UL-RL 0.318 3.843	12	20.536	0.452	0	0	83.41
Stage 4	-8.85	160.264	63.824	UL-RL 0.318 3.843	12	21.631	0.452	0	0	85.455
Stage 4	-9.05	163.113	64.812	UL-RL 0.318 3.843	12	22.726	0.452	0	0	87.538
Stage 4	-9.25	165.955	65.838	UL-RL 0.318 3.843	12	23.821	0.452	0	0	89.66
Stage 4	-9.45	168.449	66.902	UL-RL 0.318 3.843	12	24.917	0.452	0	0	91.819
Stage 4	-9.65	171.287	35.117	UL-RL 0.205 7.551	0	26.012	0.452	0	0	61.129
Stage 4	-9.85	173.79	35.631	UL-RL 0.205 7.551	0	27.107	0.452	0	0	62.738
Stage 4	-10.05	176.625	36.213	UL-RL 0.205 7.551	0	28.202	0.452	0	0	64.415
Stage 4	-10.25	179.453	36.793	UL-RL 0.205 7.551	0	29.298	0.452	0	0	66.091
Stage 4	-10.45	181.968	37.309	UL-RL 0.205 7.551	0	30.393	0.452	0	0	67.702
Stage 4	-10.65	184.794	37.888	UL-RL 0.205 7.551	0	31.488	0.452	0	0	69.377
Stage 4	-10.85	187.315	38.406	UL-RL 0.205 7.551	0	32.583	0.452	0	0	70.989
Stage 4	-11.05	190.138	38.985	UL-RL 0.205 7.551	0	33.679	0.452	0	0	72.663
Stage 4	-11.25	192.956	39.563	UL-RL 0.205 7.551	0	34.774	0.452	0	0	74.336
Stage 4	-11.45	195.487	40.082	UL-RL 0.205 7.551	0	35.869	0.452	0	0	75.951
Stage 4	-11.65	198.303	40.659	UL-RL 0.205 7.551	0	36.964	0.452	0	0	77.623
Stage 4	-11.85	200.84	41.179	UL-RL 0.205 7.551	0	38.06	0.452	0	0	79.239

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	195 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT									
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 4	-12.05	203.654	41.756	UL-RL 0.205 7.551	0	39.155	0.452	0	80.911
Stage 4	-12.25	206.463	42.332	UL-RL 0.205 7.551	0	40.25	0.452	0	82.582
Stage 4	-12.45	209.008	42.854	UL-RL 0.205 7.551	0	41.345	0.452	0	84.199
Stage 4	-12.65	211.815	43.429	UL-RL 0.205 7.551	0	42.44	0.452	0	85.87
Stage 4	-12.85	214.365	43.952	UL-RL 0.205 7.551	0	43.536	0.452	0	87.488
Stage 4	-13.05	217.17	44.527	UL-RL 0.205 7.551	0	44.631	0.452	0	89.158
Stage 4	-13.25	219.972	45.101	UL-RL 0.205 7.551	0	45.726	0.452	0	90.827
Stage 4	-13.45	222.529	45.625	UL-RL 0.205 7.551	0	46.821	0.452	0	92.447
Stage 4	-13.65	225.328	46.199	UL-RL 0.205 7.551	0	47.917	0.452	0	94.116
Stage 4	-13.85	227.89	46.724	UL-RL 0.205 7.551	0	49.012	0.452	0	95.736
Stage 4	-14.05	230.688	47.297	UL-RL 0.205 7.551	0	50.107	0.452	0	97.405
Stage 4	-14.25	233.483	47.87	UL-RL 0.205 7.551	0	51.202	0.452	0	99.073
Stage 4	-14.45	236.05	48.396	UL-RL 0.205 7.551	0	52.298	0.452	0	100.694
Stage 4	-14.65	238.843	48.969	UL-RL 0.205 7.551	0	53.393	0.452	0	102.362
Stage 4	-14.85	241.414	49.496	UL-RL 0.205 7.551	0	54.488	0.452	0	103.984
Stage 4	-15.05	244.206	50.068	UL-RL 0.205 7.551	0	55.583	0.452	0	105.651
Stage 4	-15.25	246.996	50.64	UL-RL 0.205 7.551	0	56.679	0.452	0	107.318
Stage 4	-15.45	249.571	51.168	UL-RL 0.205 7.551	0	57.774	0.452	0	108.941
Stage 4	-15.65	252.359	51.739	UL-RL 0.205 7.551	0	58.869	0.452	0	110.608
Stage 4	-15.85	255.145	52.31	UL-RL 0.205 7.551	0	59.964	0.452	0	112.274
Stage 4	-16.05	257.725	52.839	UL-RL 0.205 7.551	0	61.059	0.452	0	113.898
Stage 4	-16.25	260.51	53.409	UL-RL 0.205 7.551	0	62.155	0.452	0	115.564
Stage 4	-16.45	263.093	53.939	UL-RL 0.205 7.551	0	63.25	0.452	0	117.189
Stage 4	-16.65	265.876	55.752	UL-RL 0.205 7.551	0	64.345	0.452	0	120.098
Stage 4	-16.85	268.657	58.976	UL-RL 0.205 7.551	0	65.44	0.452	0	124.416
Stage 4	-17.05	271.245	62.2	UL-RL 0.205 7.551	0	66.536	0.452	0	128.736
Stage 4	-17.1	271.892	63.006	UL-RL 0.205 7.551	0	66.81	0.452	0	129.815



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	196 di 325

**Tabella Risultati Terreno Left Wall - Nominal - Stage 5**

Design Assumption: Nominal Risultati Terreno									
Stage	Z (m)	Sigma V	Muro: LEFT		Lato LEFT				
			Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*
Stage 5	0	24	2.758	UL-RL0.3183.516	12	0	0	0	2.758
Stage 5	-0.2	18.586	16.801	UL-RL0.3183.516	12	0	0	0	16.801
Stage 5	-0.4	25.406	19.553	UL-RL0.3183.516	12	0	0	0	19.553
Stage 5	-0.6	26.348	20.604	UL-RL0.3183.516	12	0	0	0	20.604
Stage 5	-0.8	31.9	22.538	UL-RL0.3183.516	12	0	0	0	22.538
Stage 5	-1	36.775	24.252	UL-RL0.3183.516	12	0	0	0	24.252
Stage 5	-1.2	38.986	25.328	UL-RL0.3183.516	12	0	0	0	25.328
Stage 5	-1.4	43.673	26.844	UL-RL0.3183.516	12	0	0	0	26.844
Stage 5	-1.6	46.29	27.853	UL-RL0.3183.516	12	0	0	0	27.853
Stage 5	-1.8	50.839	29.208	UL-RL0.3183.516	12	0	0	0	29.208
Stage 5	-2	55.23	30.475	UL-RL0.3183.516	12	0	0	0	30.475
Stage 5	-2.2	58.145	31.377	UL-RL0.3183.516	12	0	0	0	31.377
Stage 5	-2.4	62.474	32.542	UL-RL0.3183.516	12	0	0	0	32.542
Stage 5	-2.6	65.531	33.397	UL-RL0.3183.516	12	0	0	0	33.397
Stage 5	-2.8	69.809	34.488	UL-RL0.3183.516	12	0	0	0	34.488
Stage 5	-3	74.018	35.544	UL-RL0.3183.516	12	0	0	0	35.544
Stage 5	-3.2	77.266	36.289	UL-RL0.3183.516	12	0	0	0	36.289
Stage 5	-3.4	81.44	37.316	UL-RL0.3183.516	12	0	0	0	37.316
Stage 5	-3.6	84.696	38.133	UL-RL0.3183.516	12	0	0	0	38.133
Stage 5	-3.8	88.844	39.147	UL-RL0.3183.516	12	0	0	0	39.147
Stage 5	-4	92.905	40.211	UL-RL0.3183.516	12	0	0	0	40.211
Stage 5	-4.2	96.236	41.052	UL-RL0.3183.516	12	0	0	0	41.052
Stage 5	-4.4	100.33	42.077	UL-RL0.3183.516	12	0	0	0	42.077
Stage 5	-4.6	103.704	42.956	UL-RL0.3183.516	12	0	0	0	42.956
Stage 5	-4.8	107.782	44.014	UL-RL0.3183.516	12	0	0	0	44.014
Stage 5	-5	111.287	44.817	UL-RL0.3183.489	12	0.548	0.452	0	45.365
Stage 5	-5.2	113.612	45.23	UL-RL0.3183.456	12	1.643	0.452	0	46.873
Stage 5	-5.4	116.558	45.813	UL-RL0.3183.416	12	2.738	0.452	0	48.552
Stage 5	-5.6	118.912	46.294	UL-RL0.3183.386	12	3.833	0.452	0	50.127
Stage 5	-5.8	121.846	46.941	UL-RL0.3183.349	12	4.929	0.452	0	51.869
Stage 5	-6	124.763	47.619	UL-RL0.3183.315	12	6.024	0.452	0	53.643
Stage 5	-6.2	127.149	48.213	UL-RL0.3183.288	12	7.119	0.452	0	55.332
Stage 5	-6.4	130.057	48.966	UL-RL0.3183.256	12	8.214	0.452	0	57.18
Stage 5	-6.6	132.464	49.643	UL-RL0.3183.231	12	9.31	0.452	0	58.952
Stage 5	-6.8	135.364	50.473	UL-RL0.3183.202	12	10.405	0.452	0	60.878
Stage 5	-7	138.252	51.341	UL-RL0.3183.174	12	11.5	0.452	0	62.841
Stage 5	-7.2	140.682	52.145	UL-RL0.3183.152	12	12.595	0.452	0	64.741
Stage 5	-7.4	143.563	53.094	UL-RL0.3183.126	12	13.69	0.452	0	66.784
Stage 5	-7.6	146.434	54.08	UL-RL0.3183.102	12	14.786	0.452	0	68.866
Stage 5	-7.8	148.884	55.008	UL-RL0.3183.082	12	15.881	0.452	0	70.889
Stage 5	-8	151.75	56.071	UL-RL0.3183.059	12	16.976	0.452	0	73.047
Stage 5	-8.2	154.213	57.078	UL-RL0.318 3.04	12	18.071	0.452	0	75.15
Stage 5	-8.4	157.074	58.198	UL-RL0.3183.019	12	19.167	0.452	0	77.365
Stage 5	-8.6	159.926	59.234	UL-RL0.3182.998	12	20.262	0.452	0	79.495
Stage 5	-8.65	160.556	59.464	UL-RL0.3182.994	12	20.536	0.452	0	80
Stage 5	-8.85	163.037	60.46	UL-RL0.3182.977	12	21.631	0.452	0	82.091
Stage 5	-9.05	165.886	61.579	UL-RL0.3182.958	12	22.726	0.452	0	84.305
Stage 5	-9.25	168.727	62.734	UL-RL0.318 2.94	12	23.821	0.452	0	86.556
Stage 5	-9.45	171.221	63.846	UL-RL0.3182.924	12	24.917	0.452	0	88.763
Stage 5	-9.65	174.059	43.902	UL-RL0.2056.513	0	26.012	0.452	0	69.913
Stage 5	-9.85	176.562	44.637	UL-RL0.2056.495	0	27.107	0.452	0	71.744
Stage 5	-10.05	179.377	45.398	UL-RL0.2056.476	0	28.202	0.452	0	73.6
Stage 5	-10.25	182.167	46.117	UL-RL0.2056.457	0	29.298	0.452	0	75.415
Stage 5	-10.45	184.644	46.739	UL-RL0.2056.441	0	30.393	0.452	0	77.132
Stage 5	-10.65	187.433	47.396	UL-RL0.2056.424	0	31.488	0.452	0	78.884
Stage 5	-10.85	189.919	47.963	UL-RL0.2056.409	0	32.583	0.452	0	80.546
Stage 5	-11.05	192.708	48.563	UL-RL0.2056.392	0	33.679	0.452	0	82.242
Stage 5	-11.25	195.492	49.138	UL-RL0.2056.376	0	34.774	0.452	0	83.912

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	197 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato LEFT										
Stage	Z (m)	Sigma V	Sigma H Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 5	-11.45	197.99	49.632	UL-RL0.205	6.362	0	35.869	0.452	0	85.502
Stage 5	-11.65	200.774	50.163	UL-RL0.205	6.347	0	36.964	0.452	0	87.127
Stage 5	-11.85	203.28	50.619	UL-RL0.205	6.333	0	38.06	0.452	0	88.678
Stage 5	-12.05	206.063	51.112	UL-RL0.205	6.319	0	39.155	0.452	0	90.267
Stage 5	-12.25	208.843	51.589	UL-RL0.205	6.305	0	40.25	0.452	0	91.839
Stage 5	-12.45	211.359	51.998	UL-RL0.205	6.292	0	41.345	0.452	0	93.344
Stage 5	-12.65	214.138	52.448	UL-RL0.205	6.279	0	42.44	0.452	0	94.888
Stage 5	-12.85	216.661	52.833	UL-RL0.205	6.267	0	43.536	0.452	0	96.369
Stage 5	-13.05	219.439	53.26	UL-RL0.205	6.255	0	44.631	0.452	0	97.891
Stage 5	-13.25	222.215	53.677	UL-RL0.205	6.242	0	45.726	0.452	0	99.403
Stage 5	-13.45	224.746	54.036	UL-RL0.205	6.231	0	46.821	0.452	0	100.857
Stage 5	-13.65	227.521	54.437	UL-RL0.205	6.219	0	47.917	0.452	0	102.354
Stage 5	-13.85	230.058	54.784	UL-RL0.205	6.209	0	49.012	0.452	0	103.795
Stage 5	-14.05	232.832	55.173	UL-RL0.205	6.198	0	50.107	0.452	0	105.28
Stage 5	-14.25	235.604	55.556	UL-RL0.205	6.187	0	51.202	0.452	0	106.759
Stage 5	-14.45	238.148	55.89	UL-RL0.205	6.177	0	52.298	0.452	0	108.188
Stage 5	-14.65	240.919	56.266	UL-RL0.205	6.166	0	53.393	0.452	0	109.659
Stage 5	-14.85	243.468	56.595	UL-RL0.205	6.157	0	54.488	0.452	0	111.083
Stage 5	-15.05	246.239	56.966	UL-RL0.205	6.147	0	55.583	0.452	0	112.549
Stage 5	-15.25	249.007	57.334	UL-RL0.205	6.137	0	56.679	0.452	0	114.013
Stage 5	-15.45	251.563	57.658	UL-RL0.205	6.128	0	57.774	0.452	0	115.432
Stage 5	-15.65	254.331	58.024	UL-RL0.205	6.119	0	58.869	0.452	0	116.893
Stage 5	-15.85	257.096	58.388	UL-RL0.205	6.109	0	59.964	0.452	0	118.352
Stage 5	-16.05	259.658	58.71	UL-RL0.205	6.101	0	61.059	0.452	0	119.77
Stage 5	-16.25	262.423	59.074	UL-RL0.205	6.092	0	62.155	0.452	0	121.228
Stage 5	-16.45	264.988	59.396	UL-RL0.205	6.084	0	63.25	0.452	0	122.646
Stage 5	-16.65	267.753	61.25	UL-RL0.205	6.076	0	64.345	0.452	0	125.595
Stage 5	-16.85	270.516	65.126	UL-RL0.205	6.067	0	65.44	0.452	0	130.567
Stage 5	-17.05	273.087	68.966	UL-RL0.205	6.06	0	66.536	0.452	0	135.502
Stage 5	-17.1	273.73	69.927	UL-RL0.205	6.058	0	66.81	0.452	0	136.736

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	198 di 325

Design Assumption: Nominal Risultati Terreno Muro: LEFT Lato RIGHT											
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq	
Stage 5	0	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-0.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-0.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-0.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-0.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-1	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-1.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-1.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-1.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-1.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-2.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-2.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-2.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-2.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-3	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-3.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-3.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-3.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-3.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-4.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-4.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-4.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-4.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-5	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-5.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-5.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-5.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-5.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-6.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-6.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-6.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-6.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-7	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-7.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-7.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-7.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-7.8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8.2	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8.4	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8.6	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8.65	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-8.85	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-9.05	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-9.25	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-9.45	0	0	REMOVED	0	0	0	0	0	0	0
Stage 5	-9.65	2.85	10.12	UL-RL	0.2055.164	0	0	0	0	0	10.12
Stage 5	-9.85	6.65	29.619	UL-RL	0.2055.164	0	0	0	0	0	29.619
Stage 5	-10.05	10.45	49.141	UL-RL	0.2055.164	0	0	0	0	0	49.141
Stage 5	-10.25	14.25	68.682	UL-RL	0.2055.164	0	0	0	0	0	68.682
Stage 5	-10.45	18.05	88.242	UL-RL	0.2055.164	0	0	0	0	0	88.242
Stage 5	-10.65	21.85	91.504	UL-RL	0.2055.164	0	0	0	0	0	91.504
Stage 5	-10.85	25.65	93.133	UL-RL	0.2055.164	0	0	0	0	0	93.133
Stage 5	-11.05	29.45	94.645	UL-RL	0.2055.164	0	0	0	0	0	94.645
Stage 5	-11.25	33.25	96.06	UL-RL	0.2055.164	0	0	0	0	0	96.06
Stage 5	-11.45	37.05	97.388	UL-RL	0.2055.164	0	0	0	0	0	97.388
Stage 5	-11.65	40.85	98.642	UL-RL	0.2055.164	0	0	0	0	0	98.642
Stage 5	-11.85	44.65	99.827	UL-RL	0.2055.164	0	0	0	0	0	99.827

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	199 di 325

Design Assumption: Nominal Risultati Terreno Muro:										
Stage	Z (m)	Sigma V	Sigma H	LEFT Stato	Lato RIGHT					
					Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 5	-12.05	48.45	100.952	UL-RL	0.2055.164	0	0	0	0	100.952
Stage 5	-12.25	52.25	102.022	UL-RL	0.2055.164	0	0	0	0	102.022
Stage 5	-12.45	56.05	103.041	UL-RL	0.2055.164	0	0	0	0	103.041
Stage 5	-12.65	57.671	103.008	UL-RL	0.2055.138	0	2.179	0.452	0	105.186
Stage 5	-12.85	58.567	102.329	UL-RL	0.2055.105	0	5.083	0.452	0	107.412
Stage 5	-13.05	59.462	101.462	UL-RL	0.2055.073	0	7.988	0.452	0	109.45
Stage 5	-13.25	60.357	100.566	UL-RL	0.2055.042	0	10.893	0.452	0	111.459
Stage 5	-13.45	61.252	99.643	UL-RL	0.2055.011	0	13.798	0.452	0	113.441
Stage 5	-13.65	62.148	98.695	UL-RL	0.2054.982	0	16.702	0.452	0	115.397
Stage 5	-13.85	63.043	97.725	UL-RL	0.2054.953	0	19.607	0.452	0	117.332
Stage 5	-14.05	63.938	96.734	UL-RL	0.2054.925	0	22.512	0.452	0	119.246
Stage 5	-14.25	64.833	95.725	UL-RL	0.2054.898	0	25.417	0.452	0	121.142
Stage 5	-14.45	65.729	94.701	UL-RL	0.2054.871	0	28.321	0.452	0	123.022
Stage 5	-14.65	66.624	93.663	UL-RL	0.2054.846	0	31.226	0.452	0	124.889
Stage 5	-14.85	67.519	92.614	UL-RL	0.2054.821	0	34.131	0.452	0	126.744
Stage 5	-15.05	68.414	91.554	UL-RL	0.2054.796	0	37.036	0.452	0	128.589
Stage 5	-15.25	69.309	90.486	UL-RL	0.2054.773	0	39.94	0.452	0	130.426
Stage 5	-15.45	70.205	89.411	UL-RL	0.2054.75	0	42.845	0.452	0	132.256
Stage 5	-15.65	71.1	88.33	UL-RL	0.2054.727	0	45.75	0.452	0	134.08
Stage 5	-15.85	71.995	87.246	UL-RL	0.2054.705	0	48.655	0.452	0	135.9
Stage 5	-16.05	72.89	86.158	UL-RL	0.2054.684	0	51.559	0.452	0	137.718
Stage 5	-16.25	73.786	85.069	UL-RL	0.2054.663	0	54.464	0.452	0	139.533
Stage 5	-16.45	74.681	83.978	UL-RL	0.2054.642	0	57.369	0.452	0	141.347
Stage 5	-16.65	75.576	82.886	UL-RL	0.2054.622	0	60.274	0.452	0	143.16
Stage 5	-16.85	76.471	81.794	UL-RL	0.2054.603	0	63.179	0.452	0	144.973
Stage 5	-17.05	77.367	80.703	UL-RL	0.2054.584	0	66.083	0.452	0	146.786
Stage 5	-17.1	77.59	80.43	UL-RL	0.2054.579	0	66.81	0.452	0	147.239

### Tabella Risultati Terreno Right wall - Nominal - Stage 5

Design Assumption: Nominal Risultati Terreno Muro: RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Lato LEFT						
				Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 5	0	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-0.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-0.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-0.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-0.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-1	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-1.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-1.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-1.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-1.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-2.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-2.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-2.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-2.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-3	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-3.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-3.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-3.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-3.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-4.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-4.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-4.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-4.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-5	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-5.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-5.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-5.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-5.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-6.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-6.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-6.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-6.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-7	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-7.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-7.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-7.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-7.8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8.2	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8.4	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8.6	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8.65	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-8.85	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-9.05	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-9.25	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-9.45	0	0	REMOVED	0	0	0	0	0	0
Stage 5	-9.65	2.85	14.718	PASSIVE	0.2055.164	0	0	0	0	14.718
Stage 5	-9.85	6.65	34.341	PASSIVE	0.2055.164	0	0	0	0	34.341
Stage 5	-10.05	10.45	53.965	PASSIVE	0.2055.164	0	0	0	0	53.965
Stage 5	-10.25	14.25	73.588	PASSIVE	0.2055.164	0	0	0	0	73.588
Stage 5	-10.45	18.05	80.259	UL-RL	0.2055.164	0	0	0	0	80.259
Stage 5	-10.65	21.85	82.498	UL-RL	0.2055.164	0	0	0	0	82.498
Stage 5	-10.85	25.65	84.513	UL-RL	0.2055.164	0	0	0	0	84.513
Stage 5	-11.05	29.45	86.345	UL-RL	0.2055.164	0	0	0	0	86.345
Stage 5	-11.25	33.25	88.024	UL-RL	0.2055.164	0	0	0	0	88.024

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	201 di 325

Design Assumption: Nominal Risultati Terreno Muro:										
Stage	Z (m)	Sigma V	Sigma H	RIGHT Stato	Lato		Coesione	Pore	Gradiente U*	Peq
					Ka	Kp				
Stage 5	-11.45	37.05	89.57	UL-RL	0.2055.164	0	0	0	0	89.57
Stage 5	-11.65	40.85	90.999	UL-RL	0.2055.164	0	0	0	0	90.999
Stage 5	-11.85	44.65	92.324	UL-RL	0.2055.164	0	0	0	0	92.324
Stage 5	-12.05	48.45	93.556	UL-RL	0.2055.164	0	0	0	0	93.556
Stage 5	-12.25	52.25	94.703	UL-RL	0.2055.164	0	0	0	0	94.703
Stage 5	-12.45	56.05	95.774	UL-RL	0.2055.164	0	0	0	0	95.774
Stage 5	-12.65	57.671	95.686	UL-RL	0.2055.138	0	2.179	0.452	0	97.864
Stage 5	-12.85	58.567	95.192	UL-RL	0.2055.105	0	5.083	0.452	0	100.276
Stage 5	-13.05	59.462	94.664	UL-RL	0.2055.073	0	7.988	0.452	0	102.652
Stage 5	-13.25	60.357	94.102	UL-RL	0.2055.042	0	10.893	0.452	0	104.995
Stage 5	-13.45	61.252	93.511	UL-RL	0.2055.011	0	13.798	0.452	0	107.309
Stage 5	-13.65	62.148	92.892	UL-RL	0.2054.982	0	16.702	0.452	0	109.594
Stage 5	-13.85	63.043	92.248	UL-RL	0.2054.953	0	19.607	0.452	0	111.855
Stage 5	-14.05	63.938	91.582	UL-RL	0.2054.925	0	22.512	0.452	0	114.094
Stage 5	-14.25	64.833	90.895	UL-RL	0.2054.898	0	25.417	0.452	0	116.312
Stage 5	-14.45	65.729	90.19	UL-RL	0.2054.871	0	28.321	0.452	0	118.512
Stage 5	-14.65	66.624	89.47	UL-RL	0.2054.846	0	31.226	0.452	0	120.696
Stage 5	-14.85	67.519	88.736	UL-RL	0.2054.821	0	34.131	0.452	0	122.867
Stage 5	-15.05	68.414	87.99	UL-RL	0.2054.796	0	37.036	0.452	0	125.026
Stage 5	-15.25	69.309	87.234	UL-RL	0.2054.773	0	39.94	0.452	0	127.175
Stage 5	-15.45	70.205	86.47	UL-RL	0.2054.75	0	42.845	0.452	0	129.316
Stage 5	-15.65	71.1	85.7	UL-RL	0.2054.727	0	45.75	0.452	0	131.45
Stage 5	-15.85	71.995	84.924	UL-RL	0.2054.705	0	48.655	0.452	0	133.578
Stage 5	-16.05	72.89	84.144	UL-RL	0.2054.684	0	51.559	0.452	0	135.703
Stage 5	-16.25	73.786	83.36	UL-RL	0.2054.663	0	54.464	0.452	0	137.825
Stage 5	-16.45	74.681	82.575	UL-RL	0.2054.642	0	57.369	0.452	0	139.944
Stage 5	-16.65	75.576	81.788	UL-RL	0.2054.622	0	60.274	0.452	0	142.062
Stage 5	-16.85	76.471	81.001	UL-RL	0.2054.603	0	63.179	0.452	0	144.179
Stage 5	-17.05	77.367	80.212	UL-RL	0.2054.584	0	66.083	0.452	0	146.295
Stage 5	-17.1	77.59	80.015	UL-RL	0.2054.579	0	66.81	0.452	0	146.824

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	202 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 5	0	20	1.431	UL-RL	0.3183.516	12	0	0	0	1.431
Stage 5	-0.2	16.253	13.73	UL-RL	0.3183.516	12	0	0	0	13.73
Stage 5	-0.4	22.868	15.919	UL-RL	0.3183.516	12	0	0	0	15.919
Stage 5	-0.6	23.735	18.003	UL-RL	0.3183.516	12	0	0	0	18.003
Stage 5	-0.8	29.248	19.991	UL-RL	0.3183.516	12	0	0	0	19.991
Stage 5	-1	34.1	21.89	UL-RL	0.3183.516	12	0	0	0	21.89
Stage 5	-1.2	36.295	23.707	UL-RL	0.3183.516	12	0	0	0	23.707
Stage 5	-1.4	40.971	25.448	UL-RL	0.3183.516	12	0	0	0	25.448
Stage 5	-1.6	43.579	27.121	UL-RL	0.3183.516	12	0	0	0	27.121
Stage 5	-1.8	48.122	28.504	UL-RL	0.3183.516	12	0	0	0	28.504
Stage 5	-2	52.507	29.81	UL-RL	0.3183.516	12	0	0	0	29.81
Stage 5	-2.2	55.417	31.065	UL-RL	0.3183.516	12	0	0	0	31.065
Stage 5	-2.4	59.743	32.274	UL-RL	0.3183.516	12	0	0	0	32.274
Stage 5	-2.6	62.797	33.443	UL-RL	0.3183.516	12	0	0	0	33.443
Stage 5	-2.8	67.072	34.579	UL-RL	0.3183.516	12	0	0	0	34.579
Stage 5	-3	71.278	35.688	UL-RL	0.3183.516	12	0	0	0	35.688
Stage 5	-3.2	74.463	36.775	UL-RL	0.3183.516	12	0	0	0	36.775
Stage 5	-3.4	78.639	37.845	UL-RL	0.3183.516	12	0	0	0	37.845
Stage 5	-3.6	81.896	38.903	UL-RL	0.3183.516	12	0	0	0	38.903
Stage 5	-3.8	86.046	39.955	UL-RL	0.3183.516	12	0	0	0	39.955
Stage 5	-4	90.157	41.004	UL-RL	0.3183.516	12	0	0	0	41.004
Stage 5	-4.2	93.487	42.056	UL-RL	0.3183.516	12	0	0	0	42.056
Stage 5	-4.4	97.58	43.113	UL-RL	0.3183.516	12	0	0	0	43.113
Stage 5	-4.6	100.953	44.18	UL-RL	0.3183.516	12	0	0	0	44.18
Stage 5	-4.8	105.03	45.261	UL-RL	0.3183.516	12	0	0	0	45.261
Stage 5	-5	108.534	46.086	UL-RL	0.3183.488	12	0.548	0.452	0	46.634
Stage 5	-5.2	110.859	46.659	UL-RL	0.3183.454	12	1.643	0.452	0	48.302
Stage 5	-5.4	113.803	47.255	UL-RL	0.3183.414	12	2.738	0.452	0	49.993
Stage 5	-5.6	116.157	47.875	UL-RL	0.3183.382	12	3.833	0.452	0	51.709
Stage 5	-5.8	119.09	48.523	UL-RL	0.3183.345	12	4.929	0.452	0	53.451
Stage 5	-6	122.007	49.199	UL-RL	0.318 3.31	12	6.024	0.452	0	55.223
Stage 5	-6.2	124.392	49.906	UL-RL	0.3183.283	12	7.119	0.452	0	57.025
Stage 5	-6.4	127.3	50.645	UL-RL	0.3183.251	12	8.214	0.452	0	58.859
Stage 5	-6.6	129.706	51.417	UL-RL	0.3183.225	12	9.31	0.452	0	60.727
Stage 5	-6.8	132.606	52.223	UL-RL	0.3183.196	12	10.405	0.452	0	62.628
Stage 5	-7	135.494	53.064	UL-RL	0.3183.168	12	11.5	0.452	0	64.564
Stage 5	-7.2	137.923	53.94	UL-RL	0.3183.145	12	12.595	0.452	0	66.535
Stage 5	-7.4	140.804	54.851	UL-RL	0.3183.119	12	13.69	0.452	0	68.541
Stage 5	-7.6	143.675	55.796	UL-RL	0.3183.094	12	14.786	0.452	0	70.582
Stage 5	-7.8	146.124	56.775	UL-RL	0.3183.074	12	15.881	0.452	0	72.656
Stage 5	-8	148.99	57.788	UL-RL	0.3183.051	12	16.976	0.452	0	74.764
Stage 5	-8.2	151.453	58.832	UL-RL	0.3183.031	12	18.071	0.452	0	76.904
Stage 5	-8.4	154.313	59.907	UL-RL	0.318 3.01	12	19.167	0.452	0	79.074
Stage 5	-8.6	157.165	61.011	UL-RL	0.3182.989	12	20.262	0.452	0	81.273
Stage 5	-8.65	157.784	61.292	UL-RL	0.3182.985	12	20.536	0.452	0	81.827
Stage 5	-8.85	160.264	62.429	UL-RL	0.3182.968	12	21.631	0.452	0	84.06
Stage 5	-9.05	163.113	63.594	UL-RL	0.3182.949	12	22.726	0.452	0	86.32
Stage 5	-9.25	165.955	64.786	UL-RL	0.318 2.93	12	23.821	0.452	0	88.607
Stage 5	-9.45	168.449	66.005	UL-RL	0.3182.915	12	24.917	0.452	0	90.922
Stage 5	-9.65	171.287	35.114	ACTIVE	0.2056.501	0	26.012	0.452	0	61.126
Stage 5	-9.85	173.79	35.627	ACTIVE	0.2056.483	0	27.107	0.452	0	62.734
Stage 5	-10.05	176.625	36.208	ACTIVE	0.2056.464	0	28.202	0.452	0	64.41
Stage 5	-10.25	179.453	36.788	ACTIVE	0.2056.445	0	29.298	0.452	0	66.086
Stage 5	-10.45	181.968	37.303	ACTIVE	0.2056.429	0	30.393	0.452	0	67.696
Stage 5	-10.65	184.794	37.883	ACTIVE	0.2056.411	0	31.488	0.452	0	69.371
Stage 5	-10.85	187.315	38.4	ACTIVE	0.2056.395	0	32.583	0.452	0	70.983
Stage 5	-11.05	190.138	39.203	UL-RL	0.2056.379	0	33.679	0.452	0	72.881
Stage 5	-11.25	192.956	40.225	UL-RL	0.2056.362	0	34.774	0.452	0	74.999
Stage 5	-11.45	195.487	41.156	UL-RL	0.2056.348	0	35.869	0.452	0	77.025
Stage 5	-11.65	198.303	42.115	UL-RL	0.2056.333	0	36.964	0.452	0	79.08
Stage 5	-11.85	200.84	42.989	UL-RL	0.2056.319	0	38.06	0.452	0	81.048

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	203 di 325

Design Assumption: Nominal Risultati Terreno Muro: RIGHT Lato RIGHT										
Stage	Z (m)	Sigma V	Sigma H	Stato	Ka	Kp	Coesione	Pore	Gradiente U*	Peq
Stage 5	-12.05	203.654	43.892	UL-RL	0.205	6.305	0	39.155	0.452	0 83.047
Stage 5	-12.25	206.463	44.769	UL-RL	0.205	6.29	0	40.25	0.452	0 85.019
Stage 5	-12.45	209.008	45.569	UL-RL	0.205	6.278	0	41.345	0.452	0 86.914
Stage 5	-12.65	211.815	46.4	UL-RL	0.205	6.264	0	42.44	0.452	0 88.841
Stage 5	-12.85	214.365	47.16	UL-RL	0.205	6.253	0	43.536	0.452	0 90.695
Stage 5	-13.05	217.17	47.952	UL-RL	0.205	6.24	0	44.631	0.452	0 92.583
Stage 5	-13.25	219.972	48.728	UL-RL	0.205	6.227	0	45.726	0.452	0 94.454
Stage 5	-13.45	222.529	49.438	UL-RL	0.205	6.216	0	46.821	0.452	0 96.259
Stage 5	-13.65	225.328	50.184	UL-RL	0.205	6.204	0	47.917	0.452	0 98.1
Stage 5	-13.85	227.89	50.868	UL-RL	0.205	6.194	0	49.012	0.452	0 99.88
Stage 5	-14.05	230.688	51.59	UL-RL	0.205	6.183	0	50.107	0.452	0 101.697
Stage 5	-14.25	233.483	52.302	UL-RL	0.205	6.172	0	51.202	0.452	0 103.504
Stage 5	-14.45	236.05	52.958	UL-RL	0.205	6.162	0	52.298	0.452	0 105.255
Stage 5	-14.65	238.843	53.652	UL-RL	0.205	6.151	0	53.393	0.452	0 107.045
Stage 5	-14.85	241.414	54.295	UL-RL	0.205	6.142	0	54.488	0.452	0 108.783
Stage 5	-15.05	244.206	54.978	UL-RL	0.205	6.132	0	55.583	0.452	0 110.561
Stage 5	-15.25	246.996	55.655	UL-RL	0.205	6.122	0	56.679	0.452	0 112.334
Stage 5	-15.45	249.571	56.285	UL-RL	0.205	6.113	0	57.774	0.452	0 114.059
Stage 5	-15.65	252.359	56.955	UL-RL	0.205	6.104	0	58.869	0.452	0 115.824
Stage 5	-15.85	255.145	57.623	UL-RL	0.205	6.094	0	59.964	0.452	0 117.587
Stage 5	-16.05	257.725	58.246	UL-RL	0.205	6.086	0	61.059	0.452	0 119.306
Stage 5	-16.25	260.51	58.911	UL-RL	0.205	6.077	0	62.155	0.452	0 121.065
Stage 5	-16.45	263.093	59.533	UL-RL	0.205	6.069	0	63.25	0.452	0 122.783
Stage 5	-16.65	265.876	61.439	UL-RL	0.205	6.061	0	64.345	0.452	0 125.784
Stage 5	-16.85	268.657	64.754	UL-RL	0.205	6.053	0	65.44	0.452	0 130.195
Stage 5	-17.05	271.245	68.07	UL-RL	0.205	6.045	0	66.536	0.452	0 134.606
Stage 5	-17.1	271.892	68.899	UL-RL	0.205	6.043	0	66.81	0.452	0 135.709

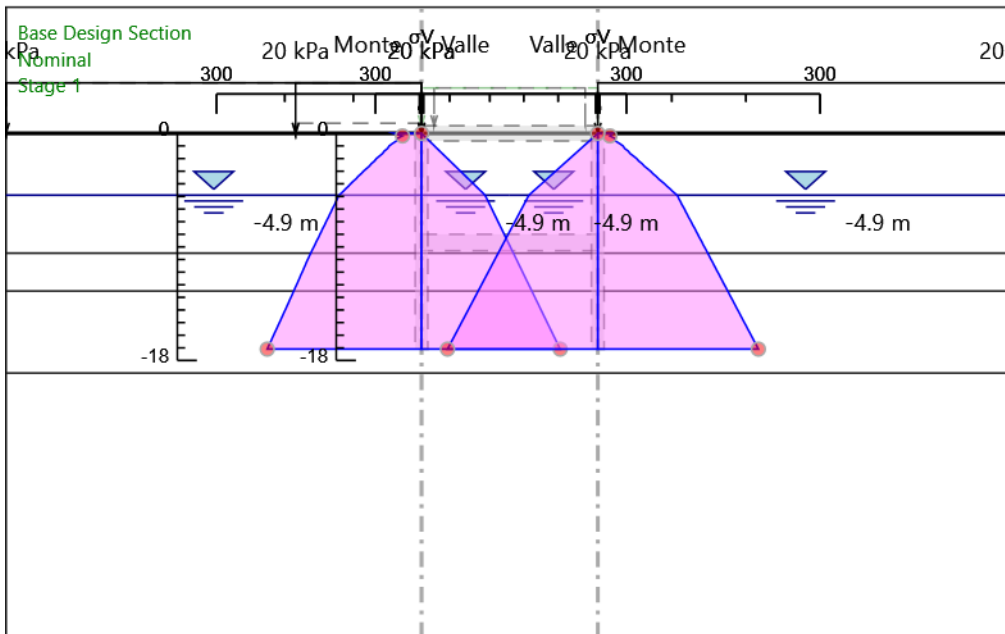


**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	204 di 325

**Grafico Risultati Terreno Sigma V**

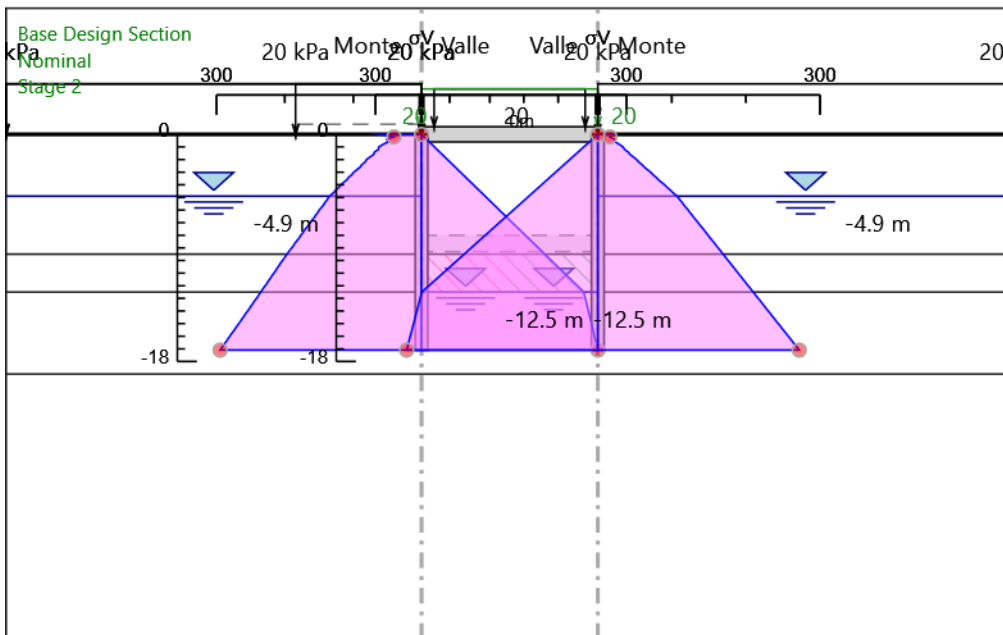


Design Assumption: Nominal  
Stage: Stage 1  
Sigma V

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	205 di 325



Design Assumption: Nominal

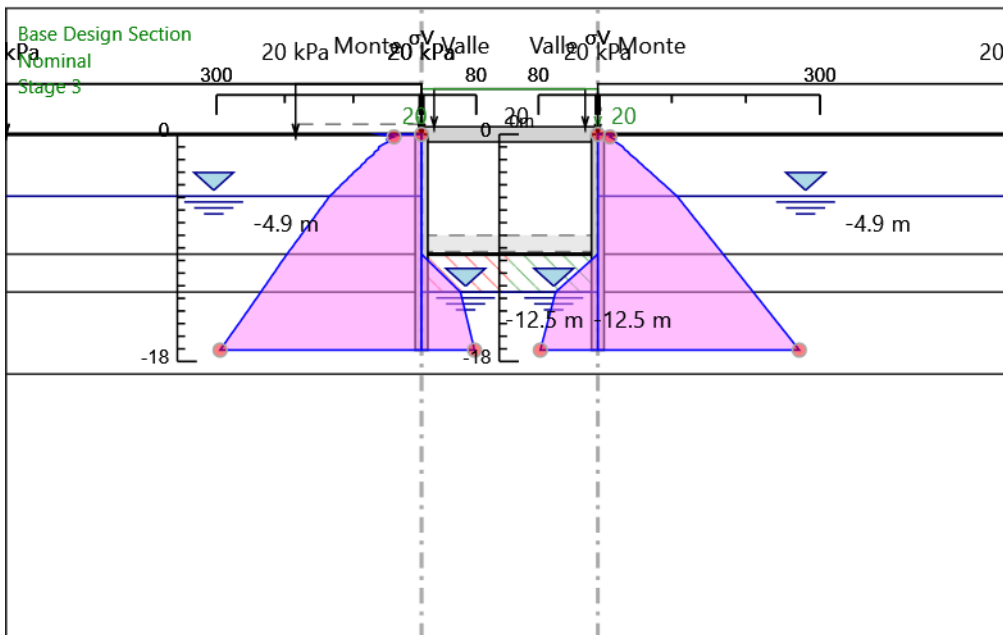
Stage: Stage 2

Sigma V

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	206 di 325



Design Assumption: Nominal

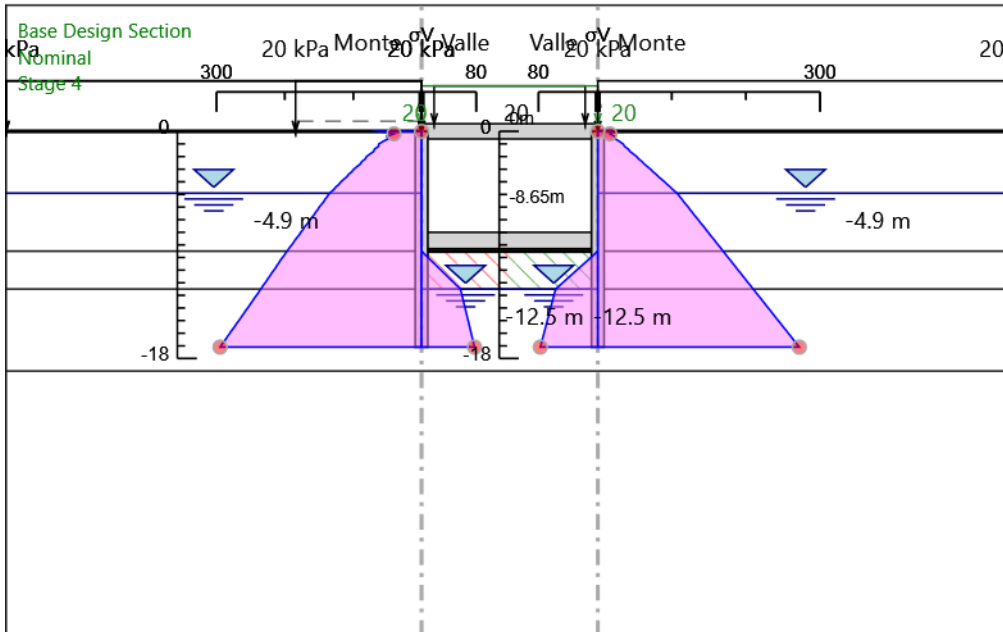
Stage: Stage 3

Sigma V

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	207 di 325



Design Assumption: Nominal

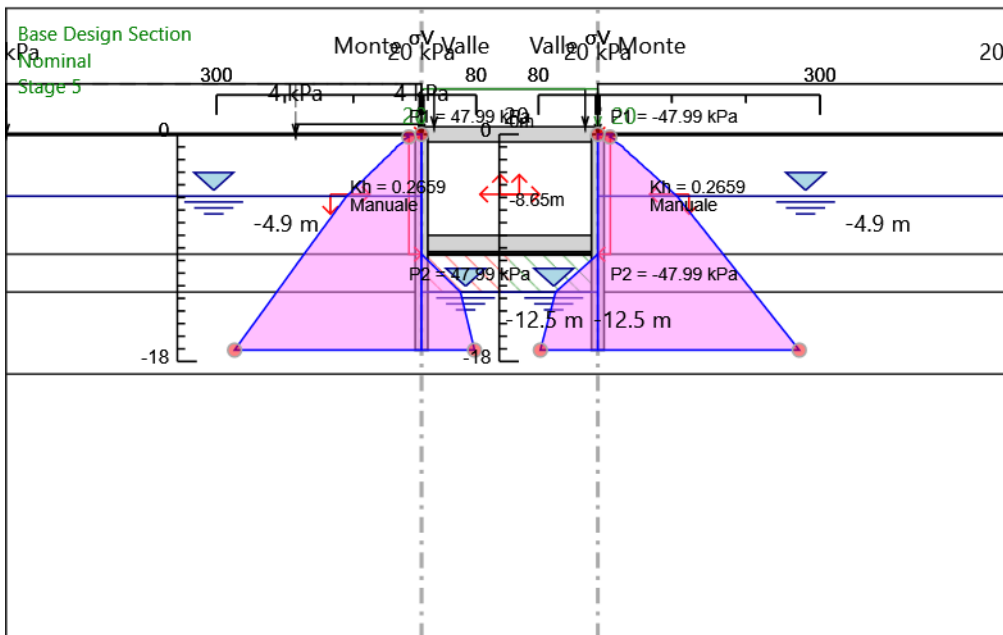
Stage: Stage 4

Sigma V

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	208 di 325



Design Assumption: Nominal

Stage: Stage 5

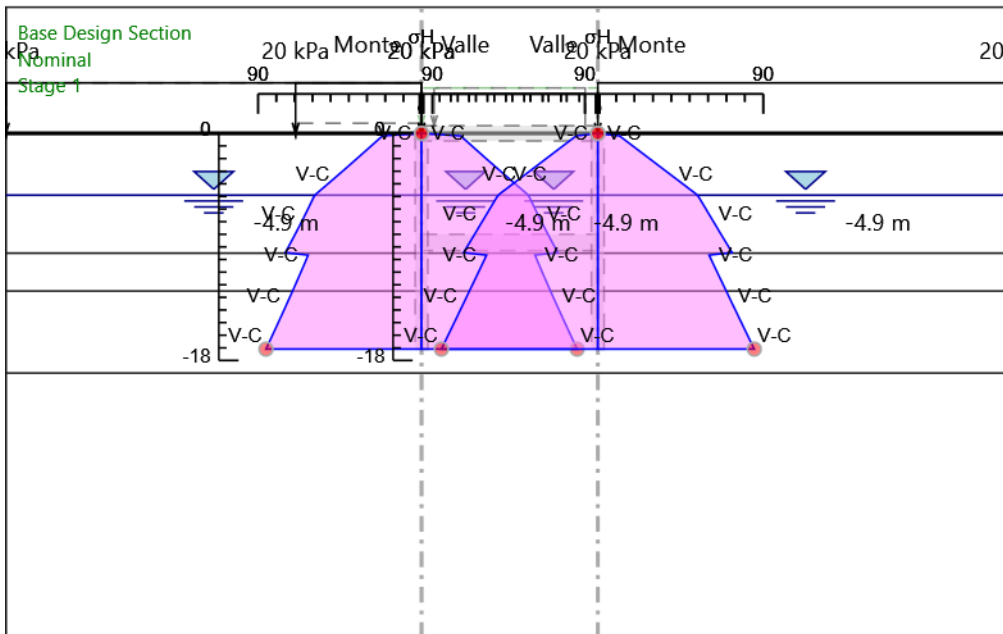
Sigma V

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	209 di 325

## Grafico Risultati Terreno Sigma H

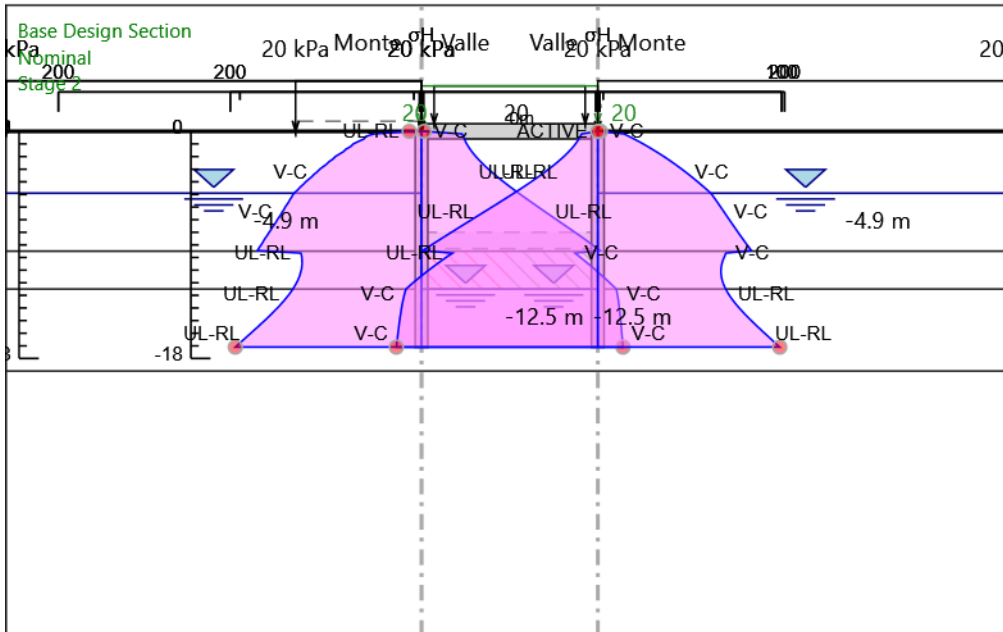


Design Assumption: Nominal  
Stage: Stage 1  
Sigma H

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	210 di 325



Design Assumption: Nominal

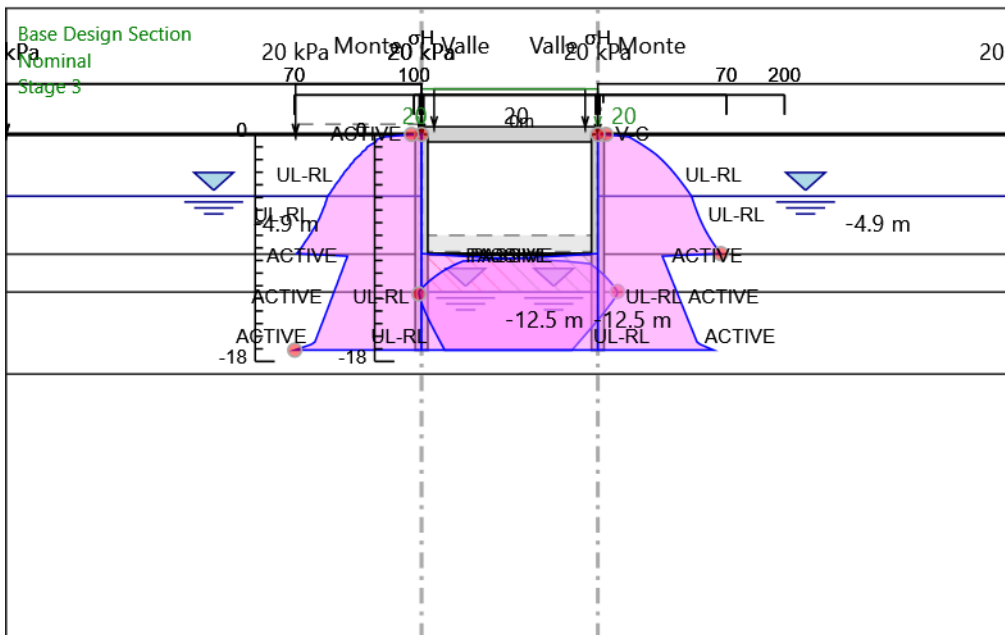
Stage: Stage 2

Sigma H

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	211 di 325



Design Assumption: Nominal

Stage: Stage 3

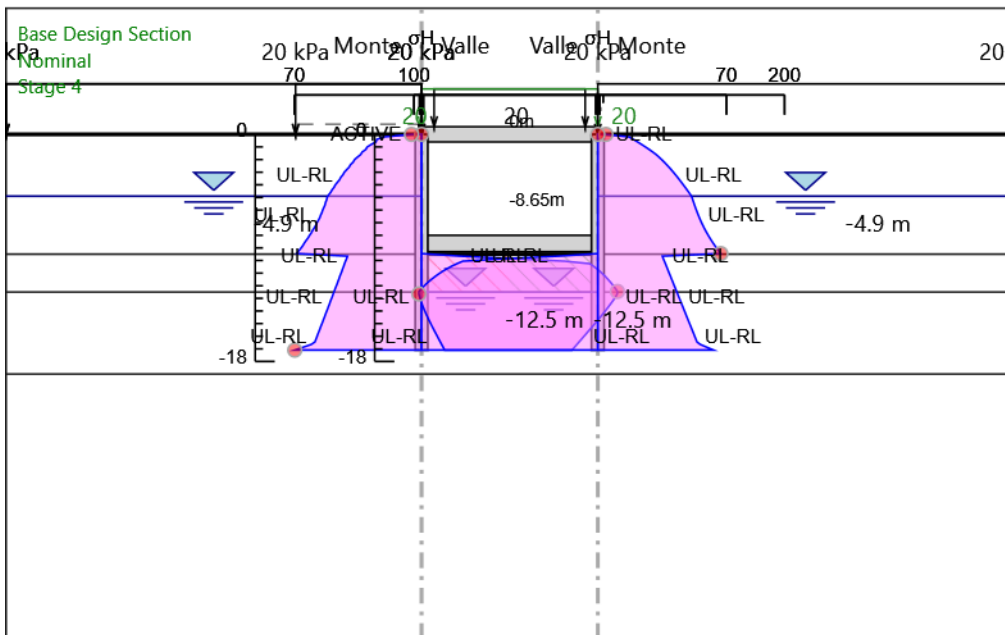
Sigma H



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	212 di 325



Design Assumption: Nominal

Stage: Stage 4

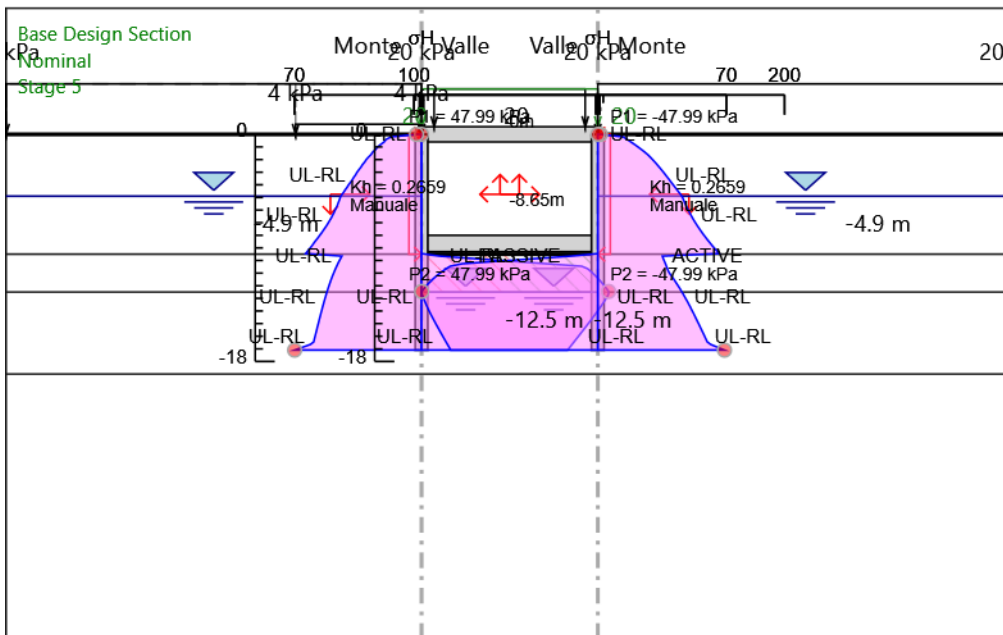
Sigma H

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA LOTTO CODIFICA DOCUMENTO REV FOGLIO

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Design Assumption: Nominal

Stage: Stage 5

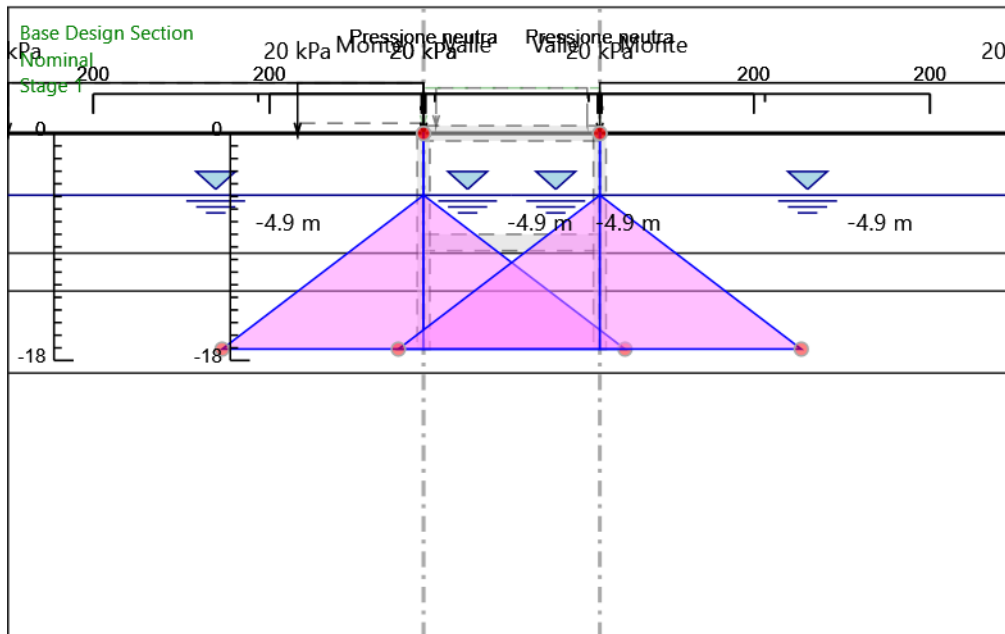
Sigma H

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Grafico Risultati Terreno Pore

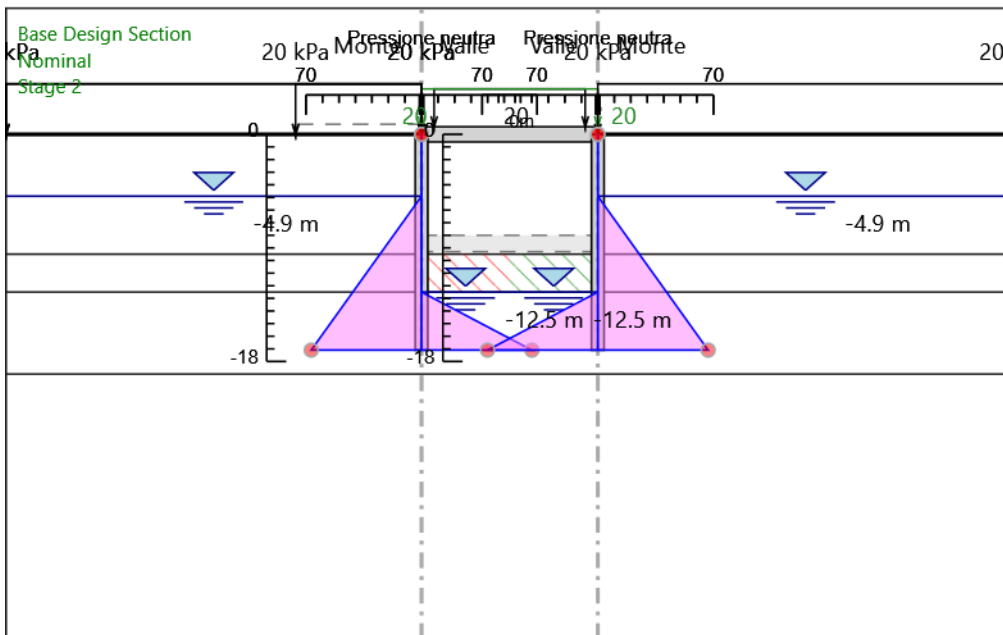


Design Assumption: Nominal  
Stage: Stage 1  
Pore

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal

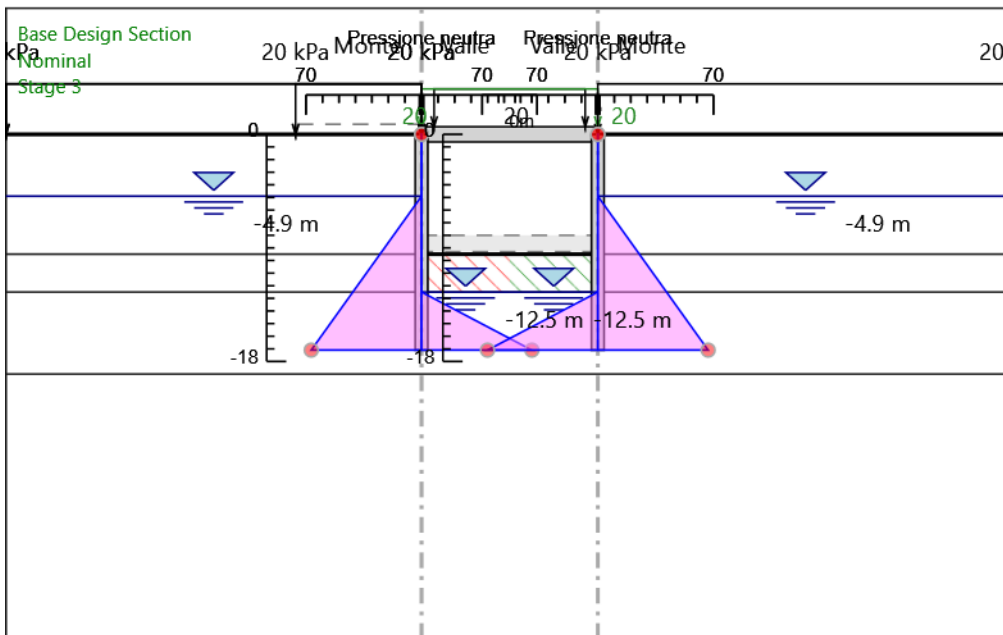
Stage: Stage 2

Pore

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal

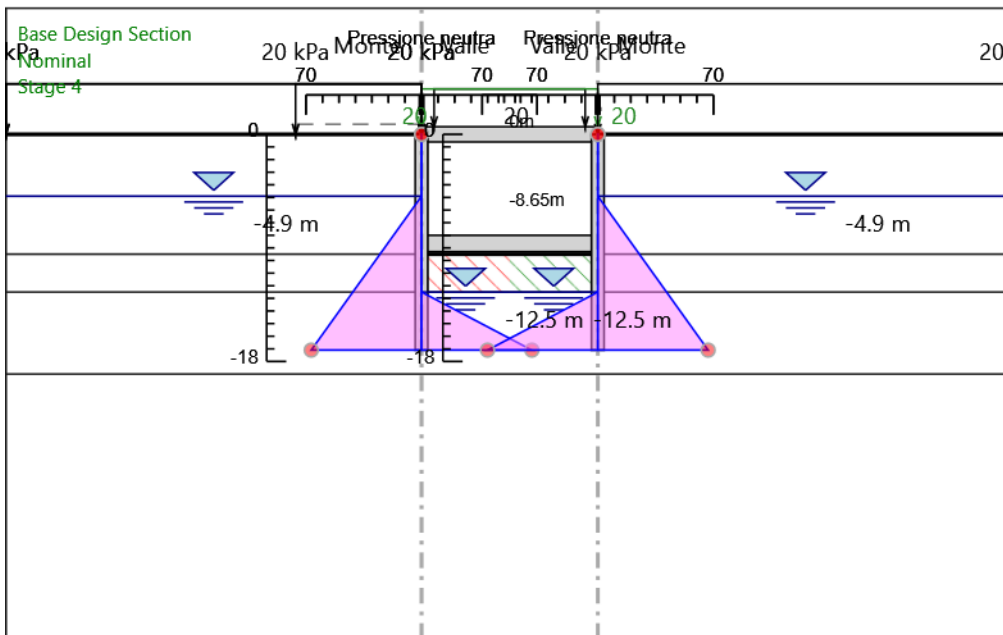
Stage: Stage 3

Pore

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal

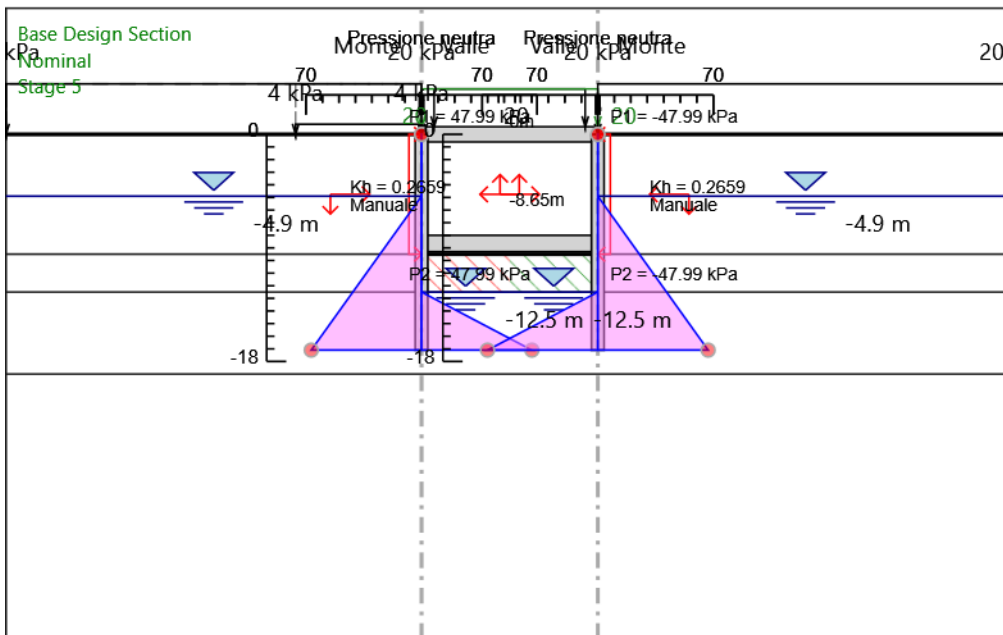
Stage: Stage 4

Pore

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption: Nominal

Stage: Stage 5

Pore

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Riepilogo spinte

Design Assumption:	Tipo Risultato:	Muro:	LEFT	Lato	LEFT		
Nominal	Riepilogo spinte						
Stage	Vera effettiva	Pressione neutra	Vera Totale	Min ammissibile	Max ammissibile	Percentuale di resistenza massima	Vera / Attiva
	(kN/m)	(kN/m)	(kN/m)	(kN/m)	(kN/m)		
Stage 1	1058.3	744.2	1802.5	498.1	15445.3	6.85%	2.12
Stage 2	1209	407.6	1616.6	634.7	19107.2	6.33%	1.9
Stage 3	843.7	407.6	1251.2	634.7	19107.2	4.42%	1.33
Stage 4	843.7	407.6	1251.3	634.7	19107.2	4.42%	1.33
Stage 5	806.2	407.6	1213.7	528.9	14085.3	5.72%	1.52

Design Assumption:	Tipo Risultato:	Muro:	LEFT	Lato	RIGHT		
Nominal	Riepilogo spinte						
Stage	Vera effettiva	Pressione neutra	Vera Totale	Min ammissibile	Max ammissibile	Percentuale di resistenza massima	Vera / Attiva
	(kN/m)	(kN/m)	(kN/m)	(kN/m)	(kN/m)		
Stage 1	1058.3	744.2	1802.5	388.5	12993.9	8.14%	2.72
Stage 2	1309.6	153.7	1463.3	521.8	17052.1	7.68%	2.51
Stage 3	710.7	153.7	864.4	81	2983.2	23.82%	8.77
Stage 4	710.7	153.7	864.4	81	2983.2	23.82%	8.77
Stage 5	665.5	153.7	819.2	81	1935.8	34.38%	8.22




**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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Design Assumption:	Tipo Risultato:	Muro:	RIGHT	Lato	LEFT		
Nominal	Riepilogo spinte						
Stage	Vera effettiva (kN/m)	Pressione neutra (kN/m)	Vera Totale (kN/m)	Min ammissibile (kN/m)	Max ammissibile (kN/m)	Percentuale di resistenza massima	Vera / Attiva
Stage 1	1001.7	744.2	1745.9	388.5	12993.9	7.71%	2.58
Stage 2	1211.1	153.7	1364.8	521.8	17052.1	7.1%	2.32
Stage 3	656	153.7	809.7	81	2983.2	21.99%	8.1
Stage 4	655.9	153.7	809.7	81	2983.2	21.99%	8.1
Stage 5	633.9	153.7	787.6	81	1935.8	32.75%	7.83

Design Assumption:	Tipo Risultato:	Muro:	RIGHT	Lato	RIGHT		
Nominal	Riepilogo spinte						
Stage	Vera effettiva (kN/m)	Pressione neutra (kN/m)	Vera Totale (kN/m)	Min ammissibile (kN/m)	Max ammissibile (kN/m)	Percentuale di resistenza massima	Vera / Attiva
Stage 1	1001.7	744.2	1745.9	443.8	14294.8	7.01%	2.26
Stage 2	1110.5	407.6	1518.1	518.3	16655.8	6.67%	2.14
Stage 3	788.9	407.6	1196.5	518.3	16655.8	4.74%	1.52
Stage 4	788.9	407.6	1196.5	518.3	16655.8	4.74%	1.52
Stage 5	774.7	407.6	1182.2	518.3	13861.6	5.59%	1.49

 <b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE	<b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA          (PONTREMOLESE)</b>  <b>TRATTA PARMA - VICOFERTILE</b>					
	<b>PROGETTO DEFINITIVO</b>  <b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO          METODO MILANO</b>	COMMESSA IP00	LOTTO 00	CODIFICA D26CL	DOCUMENTO GA0700001	REV B

## Descrizione Coefficienti Design Assumption

### Coefficienti A

Nome	Carichi Sfavo- revoli (F_dead_load _unfavour)	Carichi Permanenti Favorevoli (F_dead_loa d_favour)	Carichi Variabili Sfavo- revoli (F_live_load _unfavour)	Carichi Variabili Favorevoli (F_live_loa d_favour)	Carico Sismico (F_seis m_load)	Pressio ni Acqua Lato Monte (F_Wa terDR)	Pressio ni Acqua Lato Valle (F_Wat erRes)	Carichi Permane nti Destabili zzanti (F_UPL_ Gdstab)	Carichi Perman enti Stabilizz anti (F_UPL_ Gdstab)	Carichi Variabili Destabili zzanti (F_UPL_ Qdstab)	Carichi Permane nti Destabili zzanti (F_HYD_ Gdstab)	Carichi Perman enti Stabilizz anti (F_HYD_ Gdstab)	Carichi Variabili Destabili zzanti (F_HYD_ Qdstab)
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/Frequ ente/Quasi Permanente )	1	1	1	1	0	1	1	1	1	1	1	1	1
NTC2018: A1+M1+R1 (R3 per tiranti)	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: SISMICA STR	1	1	1	1	1	1	1	1	1	1	1	1	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

### 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

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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## Risultati NTC2018: SLE (Rara/Frequente/Quasi Permanente)

### 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 orizzontale (mm)
Stage 1	0	0
Stage 1	-0.2	0
Stage 1	-0.4	0
Stage 1	-0.6	0
Stage 1	-0.8	0
Stage 1	-1	0
Stage 1	-1.2	0
Stage 1	-1.4	0
Stage 1	-1.6	0
Stage 1	-1.8	0
Stage 1	-2	0
Stage 1	-2.2	0
Stage 1	-2.4	0
Stage 1	-2.6	0
Stage 1	-2.8	0
Stage 1	-3	0
Stage 1	-3.2	0
Stage 1	-3.4	0
Stage 1	-3.6	0
Stage 1	-3.8	0
Stage 1	-4	0
Stage 1	-4.2	0
Stage 1	-4.4	0
Stage 1	-4.6	0
Stage 1	-4.8	0
Stage 1	-5	0
Stage 1	-5.2	0
Stage 1	-5.4	0
Stage 1	-5.6	0
Stage 1	-5.8	0
Stage 1	-6	0
Stage 1	-6.2	0
Stage 1	-6.4	0
Stage 1	-6.6	0
Stage 1	-6.8	0
Stage 1	-7	0
Stage 1	-7.2	0
Stage 1	-7.4	0
Stage 1	-7.6	0
Stage 1	-7.8	0
Stage 1	-8	0
Stage 1	-8.2	0
Stage 1	-8.4	0
Stage 1	-8.6	0
Stage 1	-8.65	0
Stage 1	-8.85	0
Stage 1	-9.05	0
Stage 1	-9.25	0
Stage 1	-9.45	0
Stage 1	-9.65	0
Stage 1	-9.85	0
Stage 1	-10.05	0
Stage 1	-10.25	0
Stage 1	-10.45	0
Stage 1	-10.65	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	223 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	-10.85	0
Stage 1	-11.05	0
Stage 1	-11.25	0
Stage 1	-11.45	0
Stage 1	-11.65	0
Stage 1	-11.85	0
Stage 1	-12.05	0
Stage 1	-12.25	0
Stage 1	-12.45	0
Stage 1	-12.65	0
Stage 1	-12.85	0
Stage 1	-13.05	0
Stage 1	-13.25	0
Stage 1	-13.45	0
Stage 1	-13.65	0
Stage 1	-13.85	0
Stage 1	-14.05	0
Stage 1	-14.25	0
Stage 1	-14.45	0
Stage 1	-14.65	0
Stage 1	-14.85	0
Stage 1	-15.05	0
Stage 1	-15.25	0
Stage 1	-15.45	0
Stage 1	-15.65	0
Stage 1	-15.85	0
Stage 1	-16.05	0
Stage 1	-16.25	0
Stage 1	-16.45	0
Stage 1	-16.65	0
Stage 1	-16.85	0
Stage 1	-17.05	0
Stage 1	-17.1	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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**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 orizzontale (mm)
Stage 1	0	0
Stage 1	-0.2	0
Stage 1	-0.4	0
Stage 1	-0.6	0
Stage 1	-0.8	0
Stage 1	-1	0
Stage 1	-1.2	0
Stage 1	-1.4	0
Stage 1	-1.6	0
Stage 1	-1.8	0
Stage 1	-2	0
Stage 1	-2.2	0
Stage 1	-2.4	0
Stage 1	-2.6	0
Stage 1	-2.8	0
Stage 1	-3	0
Stage 1	-3.2	0
Stage 1	-3.4	0
Stage 1	-3.6	0
Stage 1	-3.8	0
Stage 1	-4	0
Stage 1	-4.2	0
Stage 1	-4.4	0
Stage 1	-4.6	0
Stage 1	-4.8	0
Stage 1	-5	0
Stage 1	-5.2	0
Stage 1	-5.4	0
Stage 1	-5.6	0
Stage 1	-5.8	0
Stage 1	-6	0
Stage 1	-6.2	0
Stage 1	-6.4	0
Stage 1	-6.6	0
Stage 1	-6.8	0
Stage 1	-7	0
Stage 1	-7.2	0
Stage 1	-7.4	0
Stage 1	-7.6	0
Stage 1	-7.8	0
Stage 1	-8	0
Stage 1	-8.2	0
Stage 1	-8.4	0
Stage 1	-8.6	0
Stage 1	-8.65	0
Stage 1	-8.85	0
Stage 1	-9.05	0
Stage 1	-9.25	0
Stage 1	-9.45	0
Stage 1	-9.65	0
Stage 1	-9.85	0
Stage 1	-10.05	0
Stage 1	-10.25	0
Stage 1	-10.45	0
Stage 1	-10.65	0
Stage 1	-10.85	0
Stage 1	-11.05	0
Stage 1	-11.25	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	225 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 1	-11.45	0
Stage 1	-11.65	0
Stage 1	-11.85	0
Stage 1	-12.05	0
Stage 1	-12.25	0
Stage 1	-12.45	0
Stage 1	-12.65	0
Stage 1	-12.85	0
Stage 1	-13.05	0
Stage 1	-13.25	0
Stage 1	-13.45	0
Stage 1	-13.65	0
Stage 1	-13.85	0
Stage 1	-14.05	0
Stage 1	-14.25	0
Stage 1	-14.45	0
Stage 1	-14.65	0
Stage 1	-14.85	0
Stage 1	-15.05	0
Stage 1	-15.25	0
Stage 1	-15.45	0
Stage 1	-15.65	0
Stage 1	-15.85	0
Stage 1	-16.05	0
Stage 1	-16.25	0
Stage 1	-16.45	0
Stage 1	-16.65	0
Stage 1	-16.85	0
Stage 1	-17.05	0
Stage 1	-17.1	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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**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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	227 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
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**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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	229 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	230 di 325

**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 orizzontale (mm)	
Stage 2	0	0.2	
Stage 2	-0.2	0.09	
Stage 2	-0.4	0	
Stage 2	-0.6	-0.09	
Stage 2	-0.8	-0.17	
Stage 2	-1	-0.24	
Stage 2	-1.2	-0.3	
Stage 2	-1.4	-0.35	
Stage 2	-1.6	-0.4	
Stage 2	-1.8	-0.44	
Stage 2	-2	-0.47	
Stage 2	-2.2	-0.49	
Stage 2	-2.4	-0.52	
Stage 2	-2.6	-0.53	
Stage 2	-2.8	-0.54	
Stage 2	-3	-0.55	
Stage 2	-3.2	-0.55	
Stage 2	-3.4	-0.55	
Stage 2	-3.6	-0.55	
Stage 2	-3.8	-0.54	
Stage 2	-4	-0.53	
Stage 2	-4.2	-0.51	
Stage 2	-4.4	-0.5	
Stage 2	-4.6	-0.48	
Stage 2	-4.8	-0.46	
Stage 2	-5	-0.44	
Stage 2	-5.2	-0.41	
Stage 2	-5.4	-0.39	
Stage 2	-5.6	-0.36	
Stage 2	-5.8	-0.34	
Stage 2	-6	-0.31	
Stage 2	-6.2	-0.28	
Stage 2	-6.4	-0.26	
Stage 2	-6.6	-0.23	
Stage 2	-6.8	-0.2	
Stage 2	-7	-0.17	
Stage 2	-7.2	-0.15	
Stage 2	-7.4	-0.12	
Stage 2	-7.6	-0.09	
Stage 2	-7.8	-0.07	
Stage 2	-8	-0.04	
Stage 2	-8.2	-0.02	
Stage 2	-8.4	0	
Stage 2	-8.6	0.02	
Stage 2	-8.65	0.03	
Stage 2	-8.85	0.05	
Stage 2	-9.05	0.07	
Stage 2	-9.25	0.09	
Stage 2	-9.45	0.1	
Stage 2	-9.65	0.12	
Stage 2	-9.85	0.13	
Stage 2	-10.05	0.15	
Stage 2	-10.25	0.16	
Stage 2	-10.45	0.17	
Stage 2	-10.65	0.18	
Stage 2	-10.85	0.19	
Stage 2	-11.05	0.2	
Stage 2	-11.25	0.21	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	231 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 2	-11.45	0.21
Stage 2	-11.65	0.22
Stage 2	-11.85	0.22
Stage 2	-12.05	0.23
Stage 2	-12.25	0.23
Stage 2	-12.45	0.23
Stage 2	-12.65	0.23
Stage 2	-12.85	0.23
Stage 2	-13.05	0.23
Stage 2	-13.25	0.23
Stage 2	-13.45	0.22
Stage 2	-13.65	0.22
Stage 2	-13.85	0.22
Stage 2	-14.05	0.21
Stage 2	-14.25	0.21
Stage 2	-14.45	0.21
Stage 2	-14.65	0.2
Stage 2	-14.85	0.2
Stage 2	-15.05	0.19
Stage 2	-15.25	0.18
Stage 2	-15.45	0.18
Stage 2	-15.65	0.17
Stage 2	-15.85	0.17
Stage 2	-16.05	0.16
Stage 2	-16.25	0.15
Stage 2	-16.45	0.15
Stage 2	-16.65	0.14
Stage 2	-16.85	0.13
Stage 2	-17.05	0.13
Stage 2	-17.1	0.13

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	232 di 325

**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 orizzontale (mm)
Stage 2	0	0.14
Stage 2	-0.2	0.25
Stage 2	-0.4	0.34
Stage 2	-0.6	0.43
Stage 2	-0.8	0.5
Stage 2	-1	0.57
Stage 2	-1.2	0.63
Stage 2	-1.4	0.68
Stage 2	-1.6	0.72
Stage 2	-1.8	0.76
Stage 2	-2	0.79
Stage 2	-2.2	0.82
Stage 2	-2.4	0.83
Stage 2	-2.6	0.85
Stage 2	-2.8	0.86
Stage 2	-3	0.86
Stage 2	-3.2	0.86
Stage 2	-3.4	0.85
Stage 2	-3.6	0.84
Stage 2	-3.8	0.83
Stage 2	-4	0.82
Stage 2	-4.2	0.8
Stage 2	-4.4	0.78
Stage 2	-4.6	0.76
Stage 2	-4.8	0.73
Stage 2	-5	0.71
Stage 2	-5.2	0.68
Stage 2	-5.4	0.65
Stage 2	-5.6	0.62
Stage 2	-5.8	0.59
Stage 2	-6	0.55
Stage 2	-6.2	0.52
Stage 2	-6.4	0.49
Stage 2	-6.6	0.46
Stage 2	-6.8	0.42
Stage 2	-7	0.39
Stage 2	-7.2	0.36
Stage 2	-7.4	0.32
Stage 2	-7.6	0.29
Stage 2	-7.8	0.26
Stage 2	-8	0.23
Stage 2	-8.2	0.2
Stage 2	-8.4	0.17
Stage 2	-8.6	0.14
Stage 2	-8.65	0.13
Stage 2	-8.85	0.11
Stage 2	-9.05	0.08
Stage 2	-9.25	0.06
Stage 2	-9.45	0.03
Stage 2	-9.65	0.01
Stage 2	-9.85	-0.01
Stage 2	-10.05	-0.03
Stage 2	-10.25	-0.05
Stage 2	-10.45	-0.07
Stage 2	-10.65	-0.08
Stage 2	-10.85	-0.1
Stage 2	-11.05	-0.11
Stage 2	-11.25	-0.12

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	233 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: RIGHT	
Stage	Z (m)	Spostamento orizzontale (mm)	
Stage 2	-11.45	-0.13	
Stage 2	-11.65	-0.14	
Stage 2	-11.85	-0.15	
Stage 2	-12.05	-0.15	
Stage 2	-12.25	-0.16	
Stage 2	-12.45	-0.16	
Stage 2	-12.65	-0.17	
Stage 2	-12.85	-0.17	
Stage 2	-13.05	-0.17	
Stage 2	-13.25	-0.17	
Stage 2	-13.45	-0.17	
Stage 2	-13.65	-0.17	
Stage 2	-13.85	-0.17	
Stage 2	-14.05	-0.17	
Stage 2	-14.25	-0.17	
Stage 2	-14.45	-0.16	
Stage 2	-14.65	-0.16	
Stage 2	-14.85	-0.15	
Stage 2	-15.05	-0.15	
Stage 2	-15.25	-0.15	
Stage 2	-15.45	-0.14	
Stage 2	-15.65	-0.14	
Stage 2	-15.85	-0.13	
Stage 2	-16.05	-0.12	
Stage 2	-16.25	-0.12	
Stage 2	-16.45	-0.11	
Stage 2	-16.65	-0.11	
Stage 2	-16.85	-0.1	
Stage 2	-17.05	-0.1	
Stage 2	-17.1	-0.1	

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	234 di 325

**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	0	-691.41	152.78
Stage 2	-0.2	-660.86	152.78
Stage 2	-0.4	-630.46	151.98
Stage 2	-0.6	-600.37	150.45
Stage 2	-0.8	-570.61	148.83
Stage 2	-1	-541.27	146.69
Stage 2	-1.2	-512.44	144.15
Stage 2	-1.4	-484.14	141.51
Stage 2	-1.6	-456.43	138.54
Stage 2	-1.8	-429.33	135.48
Stage 2	-2	-402.9	132.18
Stage 2	-2.2	-377.16	128.68
Stage 2	-2.4	-352.13	125.14
Stage 2	-2.6	-327.84	121.46
Stage 2	-2.8	-304.29	117.79
Stage 2	-3	-281.48	114.01
Stage 2	-3.2	-259.45	110.17
Stage 2	-3.4	-238.17	106.38
Stage 2	-3.6	-217.66	102.56
Stage 2	-3.8	-197.9	98.81
Stage 2	-4	-178.89	95.07
Stage 2	-4.2	-160.62	91.34
Stage 2	-4.4	-143.07	87.72
Stage 2	-4.6	-126.25	84.14
Stage 2	-4.8	-110.11	80.69
Stage 2	-5	-94.65	77.3
Stage 2	-5.2	-79.86	73.92
Stage 2	-5.4	-65.75	70.58
Stage 2	-5.6	-52.31	67.21
Stage 2	-5.8	-39.53	63.87
Stage 2	-6	-27.43	60.52
Stage 2	-6.2	-16	57.15
Stage 2	-6.4	-5.23	53.83
Stage 2	-6.6	4.87	50.5
Stage 2	-6.8	14.31	47.2
Stage 2	-7	23.09	43.9
Stage 2	-7.2	31.21	40.59
Stage 2	-7.4	38.67	37.32
Stage 2	-7.6	45.48	34.03
Stage 2	-7.8	51.62	30.73
Stage 2	-8	57.12	27.46
Stage 2	-8.2	61.95	24.17
Stage 2	-8.4	66.13	20.89
Stage 2	-8.6	69.65	17.6
Stage 2	-8.65	70.43	15.52
Stage 2	-8.85	73.12	13.45
Stage 2	-9.05	75.14	10.14
Stage 2	-9.25	76.5	6.79
Stage 2	-9.45	77.18	3.41
Stage 2	-9.65	77.19	0.02
Stage 2	-9.85	76.87	-1.57
Stage 2	-10.05	76.29	-2.94
Stage 2	-10.25	75.46	-4.15
Stage 2	-10.45	74.41	-5.23
Stage 2	-10.65	73.17	-6.18
Stage 2	-10.85	71.77	-7.03

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	235 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.05	70.21	-7.81
Stage 2	-11.25	68.5	-8.54
Stage 2	-11.45	66.65	-9.26
Stage 2	-11.65	64.65	-9.96
Stage 2	-11.85	62.52	-10.69
Stage 2	-12.05	60.22	-11.45
Stage 2	-12.25	57.77	-12.28
Stage 2	-12.45	55.13	-13.2
Stage 2	-12.65	52.28	-14.21
Stage 2	-12.85	49.27	-15.08
Stage 2	-13.05	46.12	-15.73
Stage 2	-13.25	42.89	-16.18
Stage 2	-13.45	39.59	-16.46
Stage 2	-13.65	36.28	-16.57
Stage 2	-13.85	32.98	-16.52
Stage 2	-14.05	29.71	-16.32
Stage 2	-14.25	26.52	-15.99
Stage 2	-14.45	23.41	-15.54
Stage 2	-14.65	20.41	-14.98
Stage 2	-14.85	17.55	-14.31
Stage 2	-15.05	14.84	-13.53
Stage 2	-15.25	12.31	-12.67
Stage 2	-15.45	9.97	-11.72
Stage 2	-15.65	7.83	-10.67
Stage 2	-15.85	5.92	-9.56
Stage 2	-16.05	4.25	-8.37
Stage 2	-16.25	2.83	-7.09
Stage 2	-16.45	1.68	-5.74
Stage 2	-16.65	0.82	-4.31
Stage 2	-16.85	0.26	-2.81
Stage 2	-17.05	0.01	-1.24
Stage 2	-17.1	0	-0.21



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	236 di 325

**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	0	700.85	-153.17
Stage 2	-0.2	670.21	-153.17
Stage 2	-0.4	639.8	-152.08
Stage 2	-0.6	609.68	-150.58
Stage 2	-0.8	579.94	-148.7
Stage 2	-1	550.64	-146.48
Stage 2	-1.2	521.85	-143.98
Stage 2	-1.4	493.61	-141.21
Stage 2	-1.6	465.97	-138.21
Stage 2	-1.8	438.96	-135.02
Stage 2	-2	412.63	-131.66
Stage 2	-2.2	387	-128.18
Stage 2	-2.4	362.08	-124.58
Stage 2	-2.6	337.9	-120.9
Stage 2	-2.8	314.47	-117.16
Stage 2	-3	291.79	-113.39
Stage 2	-3.2	269.87	-109.6
Stage 2	-3.4	248.71	-105.81
Stage 2	-3.6	228.3	-102.05
Stage 2	-3.8	208.63	-98.32
Stage 2	-4	189.7	-94.65
Stage 2	-4.2	171.49	-91.04
Stage 2	-4.4	153.99	-87.51
Stage 2	-4.6	137.18	-84.07
Stage 2	-4.8	121.04	-80.72
Stage 2	-5	105.54	-77.49
Stage 2	-5.2	90.67	-74.32
Stage 2	-5.4	76.44	-71.16
Stage 2	-5.6	62.84	-68.03
Stage 2	-5.8	49.85	-64.91
Stage 2	-6	37.49	-61.83
Stage 2	-6.2	25.73	-58.77
Stage 2	-6.4	14.58	-55.75
Stage 2	-6.6	4.03	-52.77
Stage 2	-6.8	-5.93	-49.82
Stage 2	-7	-15.32	-46.91
Stage 2	-7.2	-24.12	-44.04
Stage 2	-7.4	-32.36	-41.2
Stage 2	-7.6	-40.04	-38.39
Stage 2	-7.8	-47.17	-35.62
Stage 2	-8	-53.74	-32.88
Stage 2	-8.2	-59.77	-30.16
Stage 2	-8.4	-65.27	-27.47
Stage 2	-8.6	-70.23	-24.8
Stage 2	-8.65	-71.38	-23.13
Stage 2	-8.85	-75.68	-21.47
Stage 2	-9.05	-79.44	-18.82
Stage 2	-9.25	-82.68	-16.18
Stage 2	-9.45	-85.39	-13.53
Stage 2	-9.65	-87.56	-10.88
Stage 2	-9.85	-89.07	-7.53
Stage 2	-10.05	-89.97	-4.51
Stage 2	-10.25	-90.33	-1.8
Stage 2	-10.45	-90.2	0.64
Stage 2	-10.65	-89.63	2.84
Stage 2	-10.85	-88.67	4.83

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	237 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.05	-87.34	6.64
Stage 2	-11.25	-85.68	8.28
Stage 2	-11.45	-83.72	9.81
Stage 2	-11.65	-81.47	11.23
Stage 2	-11.85	-78.96	12.59
Stage 2	-12.05	-76.18	13.9
Stage 2	-12.25	-73.14	15.2
Stage 2	-12.45	-69.84	16.5
Stage 2	-12.65	-66.27	17.84
Stage 2	-12.85	-62.47	18.97
Stage 2	-13.05	-58.51	19.82
Stage 2	-13.25	-54.43	20.42
Stage 2	-13.45	-50.27	20.79
Stage 2	-13.65	-46.08	20.94
Stage 2	-13.85	-41.9	20.9
Stage 2	-14.05	-37.77	20.67
Stage 2	-14.25	-33.71	20.27
Stage 2	-14.45	-29.77	19.71
Stage 2	-14.65	-25.97	19.01
Stage 2	-14.85	-22.33	18.17
Stage 2	-15.05	-18.9	17.2
Stage 2	-15.25	-15.67	16.11
Stage 2	-15.45	-12.69	14.9
Stage 2	-15.65	-9.98	13.59
Stage 2	-15.85	-7.54	12.17
Stage 2	-16.05	-5.41	10.65
Stage 2	-16.25	-3.61	9.03
Stage 2	-16.45	-2.14	7.31
Stage 2	-16.65	-1.05	5.49
Stage 2	-16.85	-0.33	3.58
Stage 2	-17.05	-0.01	1.58
Stage 2	-17.1	0	0.27

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	238 di 325

**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 orizzontale (mm)	
Stage 3	0	1.77	
Stage 3	-0.2	1.82	
Stage 3	-0.4	1.88	
Stage 3	-0.6	1.96	
Stage 3	-0.8	2.05	
Stage 3	-1	2.16	
Stage 3	-1.2	2.27	
Stage 3	-1.4	2.4	
Stage 3	-1.6	2.54	
Stage 3	-1.8	2.69	
Stage 3	-2	2.84	
Stage 3	-2.2	3	
Stage 3	-2.4	3.16	
Stage 3	-2.6	3.33	
Stage 3	-2.8	3.51	
Stage 3	-3	3.68	
Stage 3	-3.2	3.86	
Stage 3	-3.4	4.04	
Stage 3	-3.6	4.22	
Stage 3	-3.8	4.4	
Stage 3	-4	4.58	
Stage 3	-4.2	4.75	
Stage 3	-4.4	4.93	
Stage 3	-4.6	5.09	
Stage 3	-4.8	5.26	
Stage 3	-5	5.42	
Stage 3	-5.2	5.57	
Stage 3	-5.4	5.72	
Stage 3	-5.6	5.86	
Stage 3	-5.8	6	
Stage 3	-6	6.13	
Stage 3	-6.2	6.25	
Stage 3	-6.4	6.36	
Stage 3	-6.6	6.46	
Stage 3	-6.8	6.55	
Stage 3	-7	6.64	
Stage 3	-7.2	6.71	
Stage 3	-7.4	6.78	
Stage 3	-7.6	6.83	
Stage 3	-7.8	6.88	
Stage 3	-8	6.91	
Stage 3	-8.2	6.94	
Stage 3	-8.4	6.95	
Stage 3	-8.6	6.96	
Stage 3	-8.65	6.96	
Stage 3	-8.85	6.95	
Stage 3	-9.05	6.93	
Stage 3	-9.25	6.91	
Stage 3	-9.45	6.87	
Stage 3	-9.65	6.83	
Stage 3	-9.85	6.77	
Stage 3	-10.05	6.71	
Stage 3	-10.25	6.64	
Stage 3	-10.45	6.57	
Stage 3	-10.65	6.49	
Stage 3	-10.85	6.4	
Stage 3	-11.05	6.3	
Stage 3	-11.25	6.2	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	239 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	-11.45	6.1
Stage 3	-11.65	5.99
Stage 3	-11.85	5.87
Stage 3	-12.05	5.75
Stage 3	-12.25	5.63
Stage 3	-12.45	5.5
Stage 3	-12.65	5.37
Stage 3	-12.85	5.24
Stage 3	-13.05	5.1
Stage 3	-13.25	4.96
Stage 3	-13.45	4.82
Stage 3	-13.65	4.68
Stage 3	-13.85	4.53
Stage 3	-14.05	4.39
Stage 3	-14.25	4.24
Stage 3	-14.45	4.09
Stage 3	-14.65	3.94
Stage 3	-14.85	3.79
Stage 3	-15.05	3.64
Stage 3	-15.25	3.49
Stage 3	-15.45	3.33
Stage 3	-15.65	3.18
Stage 3	-15.85	3.03
Stage 3	-16.05	2.87
Stage 3	-16.25	2.72
Stage 3	-16.45	2.56
Stage 3	-16.65	2.41
Stage 3	-16.85	2.26
Stage 3	-17.05	2.1
Stage 3	-17.1	2.06

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	240 di 325

**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 orizzontale (mm)	
Stage 3	0	1.63	
Stage 3	-0.2	1.57	
Stage 3	-0.4	1.5	
Stage 3	-0.6	1.4	
Stage 3	-0.8	1.3	
Stage 3	-1	1.18	
Stage 3	-1.2	1.04	
Stage 3	-1.4	0.89	
Stage 3	-1.6	0.74	
Stage 3	-1.8	0.57	
Stage 3	-2	0.4	
Stage 3	-2.2	0.21	
Stage 3	-2.4	0.02	
Stage 3	-2.6	-0.17	
Stage 3	-2.8	-0.37	
Stage 3	-3	-0.58	
Stage 3	-3.2	-0.79	
Stage 3	-3.4	-1	
Stage 3	-3.6	-1.21	
Stage 3	-3.8	-1.42	
Stage 3	-4	-1.63	
Stage 3	-4.2	-1.84	
Stage 3	-4.4	-2.05	
Stage 3	-4.6	-2.26	
Stage 3	-4.8	-2.46	
Stage 3	-5	-2.66	
Stage 3	-5.2	-2.85	
Stage 3	-5.4	-3.04	
Stage 3	-5.6	-3.23	
Stage 3	-5.8	-3.41	
Stage 3	-6	-3.58	
Stage 3	-6.2	-3.74	
Stage 3	-6.4	-3.9	
Stage 3	-6.6	-4.04	
Stage 3	-6.8	-4.18	
Stage 3	-7	-4.32	
Stage 3	-7.2	-4.44	
Stage 3	-7.4	-4.55	
Stage 3	-7.6	-4.66	
Stage 3	-7.8	-4.75	
Stage 3	-8	-4.83	
Stage 3	-8.2	-4.91	
Stage 3	-8.4	-4.98	
Stage 3	-8.6	-5.03	
Stage 3	-8.65	-5.04	
Stage 3	-8.85	-5.09	
Stage 3	-9.05	-5.12	
Stage 3	-9.25	-5.15	
Stage 3	-9.45	-5.16	
Stage 3	-9.65	-5.17	
Stage 3	-9.85	-5.17	
Stage 3	-10.05	-5.16	
Stage 3	-10.25	-5.14	
Stage 3	-10.45	-5.12	
Stage 3	-10.65	-5.09	
Stage 3	-10.85	-5.05	
Stage 3	-11.05	-5.01	
Stage 3	-11.25	-4.96	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	241 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 3	-11.45	-4.91
Stage 3	-11.65	-4.85
Stage 3	-11.85	-4.78
Stage 3	-12.05	-4.71
Stage 3	-12.25	-4.64
Stage 3	-12.45	-4.56
Stage 3	-12.65	-4.48
Stage 3	-12.85	-4.4
Stage 3	-13.05	-4.31
Stage 3	-13.25	-4.22
Stage 3	-13.45	-4.13
Stage 3	-13.65	-4.03
Stage 3	-13.85	-3.94
Stage 3	-14.05	-3.84
Stage 3	-14.25	-3.74
Stage 3	-14.45	-3.64
Stage 3	-14.65	-3.53
Stage 3	-14.85	-3.43
Stage 3	-15.05	-3.32
Stage 3	-15.25	-3.22
Stage 3	-15.45	-3.11
Stage 3	-15.65	-3.01
Stage 3	-15.85	-2.9
Stage 3	-16.05	-2.79
Stage 3	-16.25	-2.68
Stage 3	-16.45	-2.58
Stage 3	-16.65	-2.47
Stage 3	-16.85	-2.36
Stage 3	-17.05	-2.25
Stage 3	-17.1	-2.23

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	242 di 325

**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	0	-1161.57	386.23
Stage 3	-0.2	-1084.33	386.23
Stage 3	-0.4	-1007.91	382.08
Stage 3	-0.6	-932.48	377.14
Stage 3	-0.8	-858.06	372.12
Stage 3	-1	-784.74	366.57
Stage 3	-1.2	-712.63	360.58
Stage 3	-1.4	-641.74	354.43
Stage 3	-1.6	-572.16	347.89
Stage 3	-1.8	-503.93	341.18
Stage 3	-2	-437.1	334.12
Stage 3	-2.2	-371.75	326.75
Stage 3	-2.4	-307.91	319.21
Stage 3	-2.6	-245.64	311.38
Stage 3	-2.8	-184.95	303.4
Stage 3	-3	-125.92	295.15
Stage 3	-3.2	-68.6	286.64
Stage 3	-3.4	-13	277.99
Stage 3	-3.6	40.82	269.1
Stage 3	-3.8	92.83	260.06
Stage 3	-4	142.99	250.79
Stage 3	-4.2	191.25	241.29
Stage 3	-4.4	237.58	231.65
Stage 3	-4.6	281.93	221.78
Stage 3	-4.8	324.29	211.77
Stage 3	-5	364.59	201.53
Stage 3	-5.2	402.8	191.01
Stage 3	-5.4	438.84	180.22
Stage 3	-5.6	472.66	169.1
Stage 3	-5.8	504.2	157.69
Stage 3	-6	533.39	145.94
Stage 3	-6.2	560.16	133.85
Stage 3	-6.4	584.45	121.45
Stage 3	-6.6	606.18	108.69
Stage 3	-6.8	625.31	95.62
Stage 3	-7	641.74	82.18
Stage 3	-7.2	655.42	68.36
Stage 3	-7.4	666.26	54.2
Stage 3	-7.6	674.19	39.65
Stage 3	-7.8	679.13	24.7
Stage 3	-8	681.01	9.39
Stage 3	-8.2	679.74	-6.33
Stage 3	-8.4	675.25	-22.44
Stage 3	-8.6	667.45	-38.98
Stage 3	-8.65	664.97	-49.57
Stage 3	-8.85	652.93	-60.23
Stage 3	-9.05	637.4	-77.66
Stage 3	-9.25	618.29	-95.53
Stage 3	-9.45	595.52	-113.84
Stage 3	-9.65	569.01	-132.56
Stage 3	-9.85	540.69	-141.63
Stage 3	-10.05	511.63	-145.26
Stage 3	-10.25	482.93	-143.5
Stage 3	-10.45	455.07	-139.3
Stage 3	-10.65	428.07	-135.02
Stage 3	-10.85	401.93	-130.7

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	243 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.05	376.66	-126.36
Stage 3	-11.25	352.25	-122.04
Stage 3	-11.45	328.7	-117.77
Stage 3	-11.65	305.99	-113.55
Stage 3	-11.85	284.1	-109.42
Stage 3	-12.05	263.03	-105.37
Stage 3	-12.25	242.74	-101.43
Stage 3	-12.45	223.22	-97.62
Stage 3	-12.65	204.43	-93.93
Stage 3	-12.85	186.4	-90.16
Stage 3	-13.05	169.15	-86.27
Stage 3	-13.25	152.69	-82.32
Stage 3	-13.45	137.02	-78.31
Stage 3	-13.65	122.17	-74.25
Stage 3	-13.85	108.15	-70.14
Stage 3	-14.05	94.95	-65.98
Stage 3	-14.25	82.59	-61.79
Stage 3	-14.45	71.08	-57.57
Stage 3	-14.65	60.42	-53.31
Stage 3	-14.85	50.61	-49.03
Stage 3	-15.05	41.67	-44.72
Stage 3	-15.25	33.59	-40.4
Stage 3	-15.45	26.38	-36.06
Stage 3	-15.65	20.04	-31.69
Stage 3	-15.85	14.57	-27.32
Stage 3	-16.05	9.99	-22.93
Stage 3	-16.25	6.28	-18.52
Stage 3	-16.45	3.46	-14.1
Stage 3	-16.65	1.53	-9.66
Stage 3	-16.85	0.43	-5.51
Stage 3	-17.05	0.02	-2.06
Stage 3	-17.1	0	-0.33



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	244 di 325

**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	0	1254.97	-386.34
Stage 3	-0.2	1177.7	-386.34
Stage 3	-0.4	1101.11	-382.95
Stage 3	-0.6	1025.29	-379.09
Stage 3	-0.8	950.34	-374.76
Stage 3	-1	876.34	-369.99
Stage 3	-1.2	803.38	-364.8
Stage 3	-1.4	731.54	-359.2
Stage 3	-1.6	660.9	-353.22
Stage 3	-1.8	591.52	-346.88
Stage 3	-2	523.48	-340.22
Stage 3	-2.2	456.82	-333.27
Stage 3	-2.4	391.61	-326.05
Stage 3	-2.6	327.9	-318.56
Stage 3	-2.8	265.74	-310.82
Stage 3	-3	205.17	-302.83
Stage 3	-3.2	146.25	-294.61
Stage 3	-3.4	89.02	-286.16
Stage 3	-3.6	33.52	-277.49
Stage 3	-3.8	-20.2	-268.6
Stage 3	-4	-72.1	-259.5
Stage 3	-4.2	-122.14	-250.2
Stage 3	-4.4	-170.28	-240.7
Stage 3	-4.6	-216.48	-230.99
Stage 3	-4.8	-260.7	-221.09
Stage 3	-5	-302.9	-210.99
Stage 3	-5.2	-343.02	-200.63
Stage 3	-5.4	-381.01	-189.97
Stage 3	-5.6	-416.81	-178.99
Stage 3	-5.8	-450.35	-167.7
Stage 3	-6	-481.57	-156.09
Stage 3	-6.2	-510.41	-144.17
Stage 3	-6.4	-536.79	-131.92
Stage 3	-6.6	-560.66	-119.34
Stage 3	-6.8	-581.95	-106.44
Stage 3	-7	-600.58	-93.19
Stage 3	-7.2	-616.5	-79.6
Stage 3	-7.4	-629.64	-65.66
Stage 3	-7.6	-639.91	-51.36
Stage 3	-7.8	-647.25	-36.71
Stage 3	-8	-651.58	-21.68
Stage 3	-8.2	-652.84	-6.27
Stage 3	-8.4	-650.94	9.52
Stage 3	-8.6	-645.8	25.7
Stage 3	-8.65	-643.99	36.06
Stage 3	-8.85	-634.69	46.49
Stage 3	-9.05	-621.98	63.58
Stage 3	-9.25	-605.76	81.09
Stage 3	-9.45	-585.96	99.02
Stage 3	-9.65	-562.48	117.38
Stage 3	-9.85	-537.42	125.3
Stage 3	-10.05	-511.86	127.81
Stage 3	-10.25	-486.66	126.01
Stage 3	-10.45	-461.88	123.9
Stage 3	-10.65	-437.57	121.53
Stage 3	-10.85	-413.77	118.99

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	245 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.05	-390.51	116.31
Stage 3	-11.25	-367.8	113.55
Stage 3	-11.45	-345.65	110.74
Stage 3	-11.65	-324.07	107.89
Stage 3	-11.85	-303.06	105.05
Stage 3	-12.05	-282.62	102.23
Stage 3	-12.25	-262.73	99.46
Stage 3	-12.45	-243.37	96.76
Stage 3	-12.65	-224.55	94.14
Stage 3	-12.85	-206.26	91.41
Stage 3	-13.05	-188.57	88.49
Stage 3	-13.25	-171.49	85.4
Stage 3	-13.45	-155.05	82.16
Stage 3	-13.65	-139.3	78.76
Stage 3	-13.85	-124.26	75.22
Stage 3	-14.05	-109.95	71.53
Stage 3	-14.25	-96.41	67.71
Stage 3	-14.45	-83.66	63.76
Stage 3	-14.65	-71.72	59.69
Stage 3	-14.85	-60.62	55.49
Stage 3	-15.05	-50.39	51.18
Stage 3	-15.25	-41.04	46.75
Stage 3	-15.45	-32.59	42.22
Stage 3	-15.65	-25.08	37.57
Stage 3	-15.85	-18.52	32.82
Stage 3	-16.05	-12.92	27.96
Stage 3	-16.25	-8.32	22.99
Stage 3	-16.45	-4.74	17.92
Stage 3	-16.65	-2.19	12.74
Stage 3	-16.85	-0.65	7.71
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.1	0	0.51

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	246 di 325

**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 orizzontale (mm)
Stage 4	0	1.77
Stage 4	-0.2	1.82
Stage 4	-0.4	1.88
Stage 4	-0.6	1.96
Stage 4	-0.8	2.05
Stage 4	-1	2.16
Stage 4	-1.2	2.27
Stage 4	-1.4	2.4
Stage 4	-1.6	2.54
Stage 4	-1.8	2.69
Stage 4	-2	2.84
Stage 4	-2.2	3
Stage 4	-2.4	3.16
Stage 4	-2.6	3.33
Stage 4	-2.8	3.51
Stage 4	-3	3.68
Stage 4	-3.2	3.86
Stage 4	-3.4	4.04
Stage 4	-3.6	4.22
Stage 4	-3.8	4.4
Stage 4	-4	4.58
Stage 4	-4.2	4.75
Stage 4	-4.4	4.93
Stage 4	-4.6	5.09
Stage 4	-4.8	5.26
Stage 4	-5	5.42
Stage 4	-5.2	5.57
Stage 4	-5.4	5.72
Stage 4	-5.6	5.86
Stage 4	-5.8	6
Stage 4	-6	6.13
Stage 4	-6.2	6.25
Stage 4	-6.4	6.36
Stage 4	-6.6	6.46
Stage 4	-6.8	6.55
Stage 4	-7	6.64
Stage 4	-7.2	6.71
Stage 4	-7.4	6.78
Stage 4	-7.6	6.83
Stage 4	-7.8	6.88
Stage 4	-8	6.91
Stage 4	-8.2	6.94
Stage 4	-8.4	6.95
Stage 4	-8.6	6.96
Stage 4	-8.65	6.96
Stage 4	-8.85	6.95
Stage 4	-9.05	6.93
Stage 4	-9.25	6.91
Stage 4	-9.45	6.87
Stage 4	-9.65	6.83
Stage 4	-9.85	6.77
Stage 4	-10.05	6.71
Stage 4	-10.25	6.64
Stage 4	-10.45	6.57
Stage 4	-10.65	6.49
Stage 4	-10.85	6.4
Stage 4	-11.05	6.3
Stage 4	-11.25	6.2

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	247 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 4	-11.45	6.1
Stage 4	-11.65	5.98
Stage 4	-11.85	5.87
Stage 4	-12.05	5.75
Stage 4	-12.25	5.63
Stage 4	-12.45	5.5
Stage 4	-12.65	5.37
Stage 4	-12.85	5.24
Stage 4	-13.05	5.1
Stage 4	-13.25	4.96
Stage 4	-13.45	4.82
Stage 4	-13.65	4.68
Stage 4	-13.85	4.53
Stage 4	-14.05	4.39
Stage 4	-14.25	4.24
Stage 4	-14.45	4.09
Stage 4	-14.65	3.94
Stage 4	-14.85	3.79
Stage 4	-15.05	3.64
Stage 4	-15.25	3.49
Stage 4	-15.45	3.33
Stage 4	-15.65	3.18
Stage 4	-15.85	3.03
Stage 4	-16.05	2.87
Stage 4	-16.25	2.72
Stage 4	-16.45	2.56
Stage 4	-16.65	2.41
Stage 4	-16.85	2.26
Stage 4	-17.05	2.1
Stage 4	-17.1	2.06

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	248 di 325

**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 orizzontale (mm)	
Stage 4	0	1.63	
Stage 4	-0.2	1.57	
Stage 4	-0.4	1.5	
Stage 4	-0.6	1.4	
Stage 4	-0.8	1.3	
Stage 4	-1	1.18	
Stage 4	-1.2	1.04	
Stage 4	-1.4	0.89	
Stage 4	-1.6	0.74	
Stage 4	-1.8	0.57	
Stage 4	-2	0.4	
Stage 4	-2.2	0.21	
Stage 4	-2.4	0.02	
Stage 4	-2.6	-0.17	
Stage 4	-2.8	-0.38	
Stage 4	-3	-0.58	
Stage 4	-3.2	-0.79	
Stage 4	-3.4	-1	
Stage 4	-3.6	-1.21	
Stage 4	-3.8	-1.42	
Stage 4	-4	-1.63	
Stage 4	-4.2	-1.84	
Stage 4	-4.4	-2.05	
Stage 4	-4.6	-2.26	
Stage 4	-4.8	-2.46	
Stage 4	-5	-2.66	
Stage 4	-5.2	-2.85	
Stage 4	-5.4	-3.04	
Stage 4	-5.6	-3.23	
Stage 4	-5.8	-3.41	
Stage 4	-6	-3.58	
Stage 4	-6.2	-3.74	
Stage 4	-6.4	-3.9	
Stage 4	-6.6	-4.04	
Stage 4	-6.8	-4.18	
Stage 4	-7	-4.32	
Stage 4	-7.2	-4.44	
Stage 4	-7.4	-4.55	
Stage 4	-7.6	-4.66	
Stage 4	-7.8	-4.75	
Stage 4	-8	-4.83	
Stage 4	-8.2	-4.91	
Stage 4	-8.4	-4.98	
Stage 4	-8.6	-5.03	
Stage 4	-8.65	-5.04	
Stage 4	-8.85	-5.09	
Stage 4	-9.05	-5.12	
Stage 4	-9.25	-5.15	
Stage 4	-9.45	-5.16	
Stage 4	-9.65	-5.17	
Stage 4	-9.85	-5.17	
Stage 4	-10.05	-5.16	
Stage 4	-10.25	-5.14	
Stage 4	-10.45	-5.12	
Stage 4	-10.65	-5.09	
Stage 4	-10.85	-5.05	
Stage 4	-11.05	-5.01	
Stage 4	-11.25	-4.96	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	249 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 4	-11.45	-4.91
Stage 4	-11.65	-4.85
Stage 4	-11.85	-4.78
Stage 4	-12.05	-4.71
Stage 4	-12.25	-4.64
Stage 4	-12.45	-4.56
Stage 4	-12.65	-4.48
Stage 4	-12.85	-4.4
Stage 4	-13.05	-4.31
Stage 4	-13.25	-4.22
Stage 4	-13.45	-4.13
Stage 4	-13.65	-4.03
Stage 4	-13.85	-3.94
Stage 4	-14.05	-3.84
Stage 4	-14.25	-3.74
Stage 4	-14.45	-3.64
Stage 4	-14.65	-3.53
Stage 4	-14.85	-3.43
Stage 4	-15.05	-3.32
Stage 4	-15.25	-3.22
Stage 4	-15.45	-3.11
Stage 4	-15.65	-3.01
Stage 4	-15.85	-2.9
Stage 4	-16.05	-2.79
Stage 4	-16.25	-2.68
Stage 4	-16.45	-2.58
Stage 4	-16.65	-2.47
Stage 4	-16.85	-2.36
Stage 4	-17.05	-2.25
Stage 4	-17.1	-2.23

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	250 di 325

**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	0	-1161.63	386.26
Stage 4	-0.2	-1084.38	386.26
Stage 4	-0.4	-1007.96	382.12
Stage 4	-0.6	-932.52	377.18
Stage 4	-0.8	-858.09	372.16
Stage 4	-1	-784.76	366.61
Stage 4	-1.2	-712.64	360.62
Stage 4	-1.4	-641.75	354.47
Stage 4	-1.6	-572.16	347.93
Stage 4	-1.8	-503.92	341.22
Stage 4	-2	-437.09	334.16
Stage 4	-2.2	-371.73	326.79
Stage 4	-2.4	-307.88	319.25
Stage 4	-2.6	-245.59	311.42
Stage 4	-2.8	-184.91	303.44
Stage 4	-3	-125.87	295.19
Stage 4	-3.2	-68.53	286.68
Stage 4	-3.4	-12.93	278.03
Stage 4	-3.6	40.9	269.14
Stage 4	-3.8	92.92	260.1
Stage 4	-4	143.09	250.83
Stage 4	-4.2	191.35	241.33
Stage 4	-4.4	237.69	231.69
Stage 4	-4.6	282.05	221.82
Stage 4	-4.8	324.42	211.81
Stage 4	-5	364.73	201.57
Stage 4	-5.2	402.94	191.05
Stage 4	-5.4	438.99	180.27
Stage 4	-5.6	472.82	169.14
Stage 4	-5.8	504.37	157.74
Stage 4	-6	533.57	145.99
Stage 4	-6.2	560.34	133.89
Stage 4	-6.4	584.64	121.49
Stage 4	-6.6	606.39	108.73
Stage 4	-6.8	625.52	95.66
Stage 4	-7	641.96	82.22
Stage 4	-7.2	655.65	68.4
Stage 4	-7.4	666.49	54.24
Stage 4	-7.6	674.43	39.7
Stage 4	-7.8	679.38	24.75
Stage 4	-8	681.27	9.44
Stage 4	-8.2	680.01	-6.29
Stage 4	-8.4	675.53	-22.4
Stage 4	-8.6	667.75	-38.94
Stage 4	-8.65	665.27	-49.53
Stage 4	-8.65	664.66	-49.53
Stage 4	-8.85	652.63	-60.16
Stage 4	-9.05	637.11	-77.59
Stage 4	-9.25	618.02	-95.46
Stage 4	-9.45	595.26	-113.77
Stage 4	-9.65	568.76	-132.5
Stage 4	-9.85	540.45	-141.56
Stage 4	-10.05	511.41	-145.2
Stage 4	-10.25	482.73	-143.43
Stage 4	-10.45	454.88	-139.24
Stage 4	-10.65	427.89	-134.96

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	251 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-10.85	401.76	-130.64
Stage 4	-11.05	376.5	-126.3
Stage 4	-11.25	352.1	-121.98
Stage 4	-11.45	328.56	-117.72
Stage 4	-11.65	305.86	-113.5
Stage 4	-11.85	283.98	-109.37
Stage 4	-12.05	262.92	-105.32
Stage 4	-12.25	242.64	-101.38
Stage 4	-12.45	223.13	-97.58
Stage 4	-12.65	204.35	-93.89
Stage 4	-12.85	186.33	-90.12
Stage 4	-13.05	169.08	-86.23
Stage 4	-13.25	152.63	-82.28
Stage 4	-13.45	136.97	-78.28
Stage 4	-13.65	122.13	-74.22
Stage 4	-13.85	108.11	-70.11
Stage 4	-14.05	94.92	-65.95
Stage 4	-14.25	82.56	-61.76
Stage 4	-14.45	71.05	-57.55
Stage 4	-14.65	60.4	-53.29
Stage 4	-14.85	50.59	-49.02
Stage 4	-15.05	41.65	-44.71
Stage 4	-15.25	33.57	-40.38
Stage 4	-15.45	26.37	-36.04
Stage 4	-15.65	20.03	-31.68
Stage 4	-15.85	14.57	-27.31
Stage 4	-16.05	9.98	-22.92
Stage 4	-16.25	6.28	-18.51
Stage 4	-16.45	3.46	-14.1
Stage 4	-16.65	1.53	-9.66
Stage 4	-16.85	0.43	-5.51
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.1	0	-0.33



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	252 di 325

**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	0	1255.02	-386.38
Stage 4	-0.2	1177.75	-386.38
Stage 4	-0.4	1101.15	-382.99
Stage 4	-0.6	1025.33	-379.12
Stage 4	-0.8	950.37	-374.79
Stage 4	-1	876.36	-370.02
Stage 4	-1.2	803.4	-364.83
Stage 4	-1.4	731.55	-359.24
Stage 4	-1.6	660.89	-353.26
Stage 4	-1.8	591.51	-346.92
Stage 4	-2	523.46	-340.26
Stage 4	-2.2	456.8	-333.31
Stage 4	-2.4	391.58	-326.09
Stage 4	-2.6	327.86	-318.6
Stage 4	-2.8	265.69	-310.86
Stage 4	-3	205.11	-302.87
Stage 4	-3.2	146.18	-294.65
Stage 4	-3.4	88.95	-286.2
Stage 4	-3.6	33.44	-277.53
Stage 4	-3.8	-20.29	-268.64
Stage 4	-4	-72.2	-259.54
Stage 4	-4.2	-122.24	-250.24
Stage 4	-4.4	-170.39	-240.74
Stage 4	-4.6	-216.6	-231.03
Stage 4	-4.8	-260.83	-221.13
Stage 4	-5	-303.03	-211.03
Stage 4	-5.2	-343.17	-200.67
Stage 4	-5.4	-381.17	-190.01
Stage 4	-5.6	-416.97	-179.03
Stage 4	-5.8	-450.52	-167.74
Stage 4	-6	-481.75	-156.14
Stage 4	-6.2	-510.59	-144.21
Stage 4	-6.4	-536.98	-131.96
Stage 4	-6.6	-560.86	-119.39
Stage 4	-6.8	-582.16	-106.48
Stage 4	-7	-600.8	-93.23
Stage 4	-7.2	-616.73	-79.64
Stage 4	-7.4	-629.87	-65.7
Stage 4	-7.6	-640.16	-51.41
Stage 4	-7.8	-647.51	-36.75
Stage 4	-8	-651.85	-21.72
Stage 4	-8.2	-653.11	-6.32
Stage 4	-8.4	-651.22	9.47
Stage 4	-8.6	-646.09	25.65
Stage 4	-8.65	-644.29	36.02
Stage 4	-8.65	-643.68	36.02
Stage 4	-8.85	-634.39	46.42
Stage 4	-9.05	-621.69	63.51
Stage 4	-9.25	-605.49	81.02
Stage 4	-9.45	-585.7	98.95
Stage 4	-9.65	-562.23	117.31
Stage 4	-9.85	-537.19	125.24
Stage 4	-10.05	-511.64	127.74
Stage 4	-10.25	-486.45	125.95
Stage 4	-10.45	-461.68	123.83
Stage 4	-10.65	-437.39	121.47

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	253 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-10.85	-413.6	118.93
Stage 4	-11.05	-390.35	116.26
Stage 4	-11.25	-367.65	113.5
Stage 4	-11.45	-345.51	110.68
Stage 4	-11.65	-323.95	107.84
Stage 4	-11.85	-302.95	105
Stage 4	-12.05	-282.51	102.18
Stage 4	-12.25	-262.63	99.41
Stage 4	-12.45	-243.28	96.72
Stage 4	-12.65	-224.46	94.1
Stage 4	-12.85	-206.19	91.37
Stage 4	-13.05	-188.5	88.45
Stage 4	-13.25	-171.43	85.37
Stage 4	-13.45	-155	82.13
Stage 4	-13.65	-139.26	78.73
Stage 4	-13.85	-124.22	75.19
Stage 4	-14.05	-109.92	71.5
Stage 4	-14.25	-96.38	67.68
Stage 4	-14.45	-83.63	63.74
Stage 4	-14.65	-71.7	59.67
Stage 4	-14.85	-60.6	55.48
Stage 4	-15.05	-50.37	51.16
Stage 4	-15.25	-41.02	46.74
Stage 4	-15.45	-32.58	42.21
Stage 4	-15.65	-25.07	37.56
Stage 4	-15.85	-18.51	32.81
Stage 4	-16.05	-12.92	27.95
Stage 4	-16.25	-8.32	22.99
Stage 4	-16.45	-4.74	17.92
Stage 4	-16.65	-2.19	12.74
Stage 4	-16.85	-0.65	7.71
Stage 4	-17.05	-0.03	3.11
Stage 4	-17.1	0	0.51

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	254 di 325

**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 orizzontale (mm)	
Stage 5	0	0.82	
Stage 5	-0.2	0.9	
Stage 5	-0.4	0.99	
Stage 5	-0.6	1.09	
Stage 5	-0.8	1.21	
Stage 5	-1	1.34	
Stage 5	-1.2	1.47	
Stage 5	-1.4	1.62	
Stage 5	-1.6	1.77	
Stage 5	-1.8	1.93	
Stage 5	-2	2.1	
Stage 5	-2.2	2.27	
Stage 5	-2.4	2.45	
Stage 5	-2.6	2.63	
Stage 5	-2.8	2.82	
Stage 5	-3	3	
Stage 5	-3.2	3.19	
Stage 5	-3.4	3.38	
Stage 5	-3.6	3.56	
Stage 5	-3.8	3.75	
Stage 5	-4	3.93	
Stage 5	-4.2	4.11	
Stage 5	-4.4	4.29	
Stage 5	-4.6	4.47	
Stage 5	-4.8	4.64	
Stage 5	-5	4.8	
Stage 5	-5.2	4.96	
Stage 5	-5.4	5.12	
Stage 5	-5.6	5.26	
Stage 5	-5.8	5.4	
Stage 5	-6	5.54	
Stage 5	-6.2	5.66	
Stage 5	-6.4	5.78	
Stage 5	-6.6	5.89	
Stage 5	-6.8	5.99	
Stage 5	-7	6.08	
Stage 5	-7.2	6.16	
Stage 5	-7.4	6.23	
Stage 5	-7.6	6.29	
Stage 5	-7.8	6.35	
Stage 5	-8	6.39	
Stage 5	-8.2	6.42	
Stage 5	-8.4	6.45	
Stage 5	-8.6	6.46	
Stage 5	-8.65	6.46	
Stage 5	-8.85	6.46	
Stage 5	-9.05	6.46	
Stage 5	-9.25	6.44	
Stage 5	-9.45	6.41	
Stage 5	-9.65	6.38	
Stage 5	-9.85	6.34	
Stage 5	-10.05	6.29	
Stage 5	-10.25	6.23	
Stage 5	-10.45	6.17	
Stage 5	-10.65	6.09	
Stage 5	-10.85	6.02	
Stage 5	-11.05	5.93	
Stage 5	-11.25	5.84	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	255 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: LEFT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	-11.45	5.75
Stage 5	-11.65	5.65
Stage 5	-11.85	5.54
Stage 5	-12.05	5.44
Stage 5	-12.25	5.32
Stage 5	-12.45	5.21
Stage 5	-12.65	5.09
Stage 5	-12.85	4.96
Stage 5	-13.05	4.84
Stage 5	-13.25	4.71
Stage 5	-13.45	4.58
Stage 5	-13.65	4.45
Stage 5	-13.85	4.31
Stage 5	-14.05	4.17
Stage 5	-14.25	4.04
Stage 5	-14.45	3.9
Stage 5	-14.65	3.76
Stage 5	-14.85	3.61
Stage 5	-15.05	3.47
Stage 5	-15.25	3.33
Stage 5	-15.45	3.19
Stage 5	-15.65	3.04
Stage 5	-15.85	2.9
Stage 5	-16.05	2.75
Stage 5	-16.25	2.61
Stage 5	-16.45	2.46
Stage 5	-16.65	2.32
Stage 5	-16.85	2.17
Stage 5	-17.05	2.03
Stage 5	-17.1	1.99

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	256 di 325

**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 orizzontale (mm)	
Stage 5	0	0.7	
Stage 5	-0.2	0.62	
Stage 5	-0.4	0.52	
Stage 5	-0.6	0.41	
Stage 5	-0.8	0.29	
Stage 5	-1	0.16	
Stage 5	-1.2	0.01	
Stage 5	-1.4	-0.14	
Stage 5	-1.6	-0.3	
Stage 5	-1.8	-0.48	
Stage 5	-2	-0.65	
Stage 5	-2.2	-0.84	
Stage 5	-2.4	-1.02	
Stage 5	-2.6	-1.21	
Stage 5	-2.8	-1.41	
Stage 5	-3	-1.61	
Stage 5	-3.2	-1.81	
Stage 5	-3.4	-2.01	
Stage 5	-3.6	-2.21	
Stage 5	-3.8	-2.41	
Stage 5	-4	-2.6	
Stage 5	-4.2	-2.8	
Stage 5	-4.4	-2.99	
Stage 5	-4.6	-3.18	
Stage 5	-4.8	-3.37	
Stage 5	-5	-3.55	
Stage 5	-5.2	-3.73	
Stage 5	-5.4	-3.9	
Stage 5	-5.6	-4.06	
Stage 5	-5.8	-4.22	
Stage 5	-6	-4.37	
Stage 5	-6.2	-4.51	
Stage 5	-6.4	-4.65	
Stage 5	-6.6	-4.77	
Stage 5	-6.8	-4.89	
Stage 5	-7	-5	
Stage 5	-7.2	-5.1	
Stage 5	-7.4	-5.19	
Stage 5	-7.6	-5.27	
Stage 5	-7.8	-5.34	
Stage 5	-8	-5.41	
Stage 5	-8.2	-5.46	
Stage 5	-8.4	-5.5	
Stage 5	-8.6	-5.54	
Stage 5	-8.65	-5.54	
Stage 5	-8.85	-5.57	
Stage 5	-9.05	-5.58	
Stage 5	-9.25	-5.58	
Stage 5	-9.45	-5.58	
Stage 5	-9.65	-5.57	
Stage 5	-9.85	-5.55	
Stage 5	-10.05	-5.52	
Stage 5	-10.25	-5.48	
Stage 5	-10.45	-5.44	
Stage 5	-10.65	-5.39	
Stage 5	-10.85	-5.33	
Stage 5	-11.05	-5.27	
Stage 5	-11.25	-5.21	

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	257 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: Spostamento		Muro: RIGHT
Stage	Z (m)	Spostamento orizzontale (mm)
Stage 5	-11.45	-5.14
Stage 5	-11.65	-5.06
Stage 5	-11.85	-4.98
Stage 5	-12.05	-4.89
Stage 5	-12.25	-4.8
Stage 5	-12.45	-4.71
Stage 5	-12.65	-4.62
Stage 5	-12.85	-4.52
Stage 5	-13.05	-4.42
Stage 5	-13.25	-4.31
Stage 5	-13.45	-4.2
Stage 5	-13.65	-4.1
Stage 5	-13.85	-3.98
Stage 5	-14.05	-3.87
Stage 5	-14.25	-3.76
Stage 5	-14.45	-3.64
Stage 5	-14.65	-3.53
Stage 5	-14.85	-3.41
Stage 5	-15.05	-3.29
Stage 5	-15.25	-3.17
Stage 5	-15.45	-3.06
Stage 5	-15.65	-2.94
Stage 5	-15.85	-2.82
Stage 5	-16.05	-2.7
Stage 5	-16.25	-2.58
Stage 5	-16.45	-2.46
Stage 5	-16.65	-2.34
Stage 5	-16.85	-2.22
Stage 5	-17.05	-2.09
Stage 5	-17.1	-2.06

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	258 di 325

**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	0	-1016.86	348.15
Stage 5	-0.2	-947.23	348.15
Stage 5	-0.4	-878.29	344.71
Stage 5	-0.6	-810.15	340.68
Stage 5	-0.8	-742.87	336.41
Stage 5	-1	-676.53	331.71
Stage 5	-1.2	-611.2	326.65
Stage 5	-1.4	-546.93	321.33
Stage 5	-1.6	-483.8	315.68
Stage 5	-1.8	-421.84	309.79
Stage 5	-2	-361.12	303.6
Stage 5	-2.2	-301.69	297.13
Stage 5	-2.4	-243.6	290.45
Stage 5	-2.6	-186.9	283.52
Stage 5	-2.8	-131.62	276.39
Stage 5	-3	-77.82	269.02
Stage 5	-3.2	-25.53	261.42
Stage 5	-3.4	25.2	253.65
Stage 5	-3.6	74.33	245.67
Stage 5	-3.8	121.83	237.51
Stage 5	-4	167.66	229.14
Stage 5	-4.2	211.77	220.56
Stage 5	-4.4	254.13	211.8
Stage 5	-4.6	294.7	202.83
Stage 5	-4.8	333.44	193.7
Stage 5	-5	370.31	184.36
Stage 5	-5.2	405.26	174.76
Stage 5	-5.4	438.23	164.86
Stage 5	-5.6	469.16	154.65
Stage 5	-5.8	497.99	144.14
Stage 5	-6	524.65	133.29
Stage 5	-6.2	549.07	122.12
Stage 5	-6.4	571.2	110.63
Stage 5	-6.6	590.96	98.79
Stage 5	-6.8	608.28	86.62
Stage 5	-7	623.1	74.1
Stage 5	-7.2	635.34	61.22
Stage 5	-7.4	644.94	47.98
Stage 5	-7.6	651.82	34.37
Stage 5	-7.8	655.89	20.37
Stage 5	-8	657.09	6
Stage 5	-8.2	655.33	-8.78
Stage 5	-8.4	650.54	-23.95
Stage 5	-8.6	642.64	-39.53
Stage 5	-8.65	640.16	-49.52
Stage 5	-8.65	639.49	-49.52
Stage 5	-8.85	629.7	-48.96
Stage 5	-9.05	616.61	-65.43
Stage 5	-9.25	600.15	-82.32
Stage 5	-9.45	580.22	-99.64
Stage 5	-9.65	556.74	-117.38
Stage 5	-9.85	531.19	-127.77
Stage 5	-10.05	504.65	-132.68
Stage 5	-10.25	478.23	-132.13
Stage 5	-10.45	452.41	-129.1
Stage 5	-10.65	427.22	-125.93

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	259 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-10.85	402.68	-122.67
Stage 5	-11.05	378.82	-119.35
Stage 5	-11.25	355.62	-115.99
Stage 5	-11.45	333.09	-112.62
Stage 5	-11.65	311.24	-109.26
Stage 5	-11.85	290.06	-105.93
Stage 5	-12.05	269.53	-102.63
Stage 5	-12.25	249.65	-99.39
Stage 5	-12.45	230.41	-96.22
Stage 5	-12.65	211.78	-93.13
Stage 5	-12.85	193.8	-89.91
Stage 5	-13.05	176.5	-86.52
Stage 5	-13.25	159.89	-83.02
Stage 5	-13.45	144.01	-79.41
Stage 5	-13.65	128.87	-75.7
Stage 5	-13.85	114.49	-71.9
Stage 5	-14.05	100.89	-67.99
Stage 5	-14.25	88.09	-64.01
Stage 5	-14.45	76.1	-59.96
Stage 5	-14.65	64.93	-55.82
Stage 5	-14.85	54.61	-51.61
Stage 5	-15.05	45.15	-47.33
Stage 5	-15.25	36.55	-42.98
Stage 5	-15.45	28.84	-38.57
Stage 5	-15.65	22.02	-34.1
Stage 5	-15.85	16.11	-29.56
Stage 5	-16.05	11.11	-24.97
Stage 5	-16.25	7.05	-20.32
Stage 5	-16.45	3.93	-15.6
Stage 5	-16.65	1.76	-10.83
Stage 5	-16.85	0.5	-6.3
Stage 5	-17.05	0.02	-2.41
Stage 5	-17.1	0	-0.39



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	260 di 325

**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	0	1057.26	-348.32
Stage 5	-0.2	987.6	-348.32
Stage 5	-0.4	918.49	-345.54
Stage 5	-0.6	850.03	-342.3
Stage 5	-0.8	782.31	-338.61
Stage 5	-1	715.41	-334.48
Stage 5	-1.2	649.43	-329.95
Stage 5	-1.4	584.42	-325.01
Stage 5	-1.6	520.48	-319.7
Stage 5	-1.8	457.68	-314.02
Stage 5	-2	396.07	-308.04
Stage 5	-2.2	335.72	-301.76
Stage 5	-2.4	276.68	-295.21
Stage 5	-2.6	219	-288.39
Stage 5	-2.8	162.74	-281.31
Stage 5	-3	107.94	-273.99
Stage 5	-3.2	54.65	-266.43
Stage 5	-3.4	2.93	-258.63
Stage 5	-3.6	-47.19	-250.61
Stage 5	-3.8	-95.67	-242.36
Stage 5	-4	-142.45	-233.9
Stage 5	-4.2	-187.49	-225.22
Stage 5	-4.4	-230.76	-216.33
Stage 5	-4.6	-272.2	-207.23
Stage 5	-4.8	-311.79	-197.92
Stage 5	-5	-349.47	-188.4
Stage 5	-5.2	-385.19	-178.62
Stage 5	-5.4	-418.89	-168.51
Stage 5	-5.6	-450.51	-158.08
Stage 5	-5.8	-479.97	-147.32
Stage 5	-6	-507.22	-136.24
Stage 5	-6.2	-532.18	-124.82
Stage 5	-6.4	-554.8	-113.07
Stage 5	-6.6	-574.99	-100.97
Stage 5	-6.8	-592.7	-88.53
Stage 5	-7	-607.85	-75.74
Stage 5	-7.2	-620.36	-62.58
Stage 5	-7.4	-630.18	-49.07
Stage 5	-7.6	-637.21	-35.18
Stage 5	-7.8	-641.39	-20.92
Stage 5	-8	-642.65	-6.27
Stage 5	-8.2	-640.89	8.77
Stage 5	-8.4	-636.05	24.21
Stage 5	-8.6	-628.04	40.05
Stage 5	-8.65	-625.53	50.21
Stage 5	-8.65	-625.06	50.21
Stage 5	-8.85	-615.09	49.83
Stage 5	-9.05	-601.77	66.62
Stage 5	-9.25	-585	83.83
Stage 5	-9.45	-564.7	101.48
Stage 5	-9.65	-540.79	119.58
Stage 5	-9.85	-515.29	127.5
Stage 5	-10.05	-489.28	130.01
Stage 5	-10.25	-463.78	127.54
Stage 5	-10.45	-438.82	124.78
Stage 5	-10.65	-414.46	121.82

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	261 di 325

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-10.85	-390.72	118.71
Stage 5	-11.05	-367.62	115.5
Stage 5	-11.25	-345.17	112.24
Stage 5	-11.45	-323.38	108.95
Stage 5	-11.65	-302.24	105.67
Stage 5	-11.85	-281.76	102.43
Stage 5	-12.05	-261.91	99.24
Stage 5	-12.25	-242.68	96.13
Stage 5	-12.45	-224.06	93.12
Stage 5	-12.65	-206.02	90.22
Stage 5	-12.85	-188.57	87.23
Stage 5	-13.05	-171.76	84.09
Stage 5	-13.25	-155.59	80.81
Stage 5	-13.45	-140.11	77.4
Stage 5	-13.65	-125.35	73.85
Stage 5	-13.85	-111.31	70.19
Stage 5	-14.05	-98.02	66.41
Stage 5	-14.25	-85.54	62.42
Stage 5	-14.45	-73.87	58.36
Stage 5	-14.65	-63.02	54.25
Stage 5	-14.85	-53	50.09
Stage 5	-15.05	-43.83	45.87
Stage 5	-15.25	-35.5	41.62
Stage 5	-15.45	-28.04	37.32
Stage 5	-15.65	-21.44	32.97
Stage 5	-15.85	-15.73	28.59
Stage 5	-16.05	-10.89	24.17
Stage 5	-16.25	-6.95	19.7
Stage 5	-16.45	-3.91	15.2
Stage 5	-16.65	-1.78	10.65
Stage 5	-16.85	-0.52	6.32
Stage 5	-17.05	-0.02	2.49
Stage 5	-17.05	-0.02	2.49
Stage 5	-17.1	0	0.4

 <p><b>ITALFERR</b> GRUPPO FERROVIE DELLO STATO ITALIANE</p>	<p><b>COMPLETAMENTO RADDOPPIO LINEA PARMA – LA SPEZIA (PONTREMOLESE)</b></p> <p><b>TRATTA PARMA - VICOFERTILE</b></p>												
<p><b>PROGETTO DEFINITIVO</b></p> <p><b>GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO METODO MILANO</b></p>	<table border="1"> <thead> <tr> <th>COMMESSA</th> <th>LOTTO</th> <th>CODIFICA</th> <th>DOCUMENTO</th> <th>REV</th> <th>FOGLIO</th> </tr> </thead> <tbody> <tr> <td>IP00</td> <td>00</td> <td>D26CL</td> <td>GA0700001</td> <td>B</td> <td>262 di 325</td> </tr> </tbody> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO	IP00	00	D26CL	GA0700001	B	262 di 325
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO								
IP00	00	D26CL	GA0700001	B	262 di 325								

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

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)	Tipo Risultato: Soletta	Slab				
		Taglio-a (kN/m)	Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)
Stage 1	0	0	0	0	0	0
Stage 2	454.3263	455.6737	691.4135	-700.8451	-153.3073	45
Stage 3	448.329	461.671	1161.574	-1254.967	-386.7803	45
Stage 4	448.329	461.671	1161.631	-1255.024	-386.8177	45
Stage 5	340.114	345.886	1016.86	-1057.264	-348.4572	29

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)	Tipo Risultato: Soletta	Slab_New				
		Taglio-a (kN/m)	Taglio-b (kN/m)	Momento-a (kN*m/m)	Momento-b (kN*m/m)	Assiale (kN/m)
Stage 1	0	0	0	0	0	0
Stage 2	0	0	0	0	0	0
Stage 3	0	0	0	0	0	0
Stage 4	175	175	0.611846	-0.611846	-0.024687493	25
Stage 5	175.0139	174.9861	0.670607	-0.4757789	-10.60221	25

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	263 di 325

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

### 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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	264 di 325

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	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	265 di 325

**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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	266 di 325

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	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**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	0	-983.3	218.26
Stage 2	-0.2	-939.65	218.26
Stage 2	-0.4	-896.24	217.08
Stage 2	-0.6	-853.27	214.84
Stage 2	-0.8	-810.77	212.5
Stage 2	-1	-768.88	209.41
Stage 2	-1.2	-727.74	205.74
Stage 2	-1.4	-687.35	201.92
Stage 2	-1.6	-647.83	197.64
Stage 2	-1.8	-609.18	193.24
Stage 2	-2	-571.48	188.48
Stage 2	-2.2	-534.79	183.43
Stage 2	-2.4	-499.12	178.35
Stage 2	-2.6	-464.52	173.05
Stage 2	-2.8	-430.96	167.75
Stage 2	-3	-398.5	162.32
Stage 2	-3.2	-367.14	156.78
Stage 2	-3.4	-336.88	151.32
Stage 2	-3.6	-307.72	145.81
Stage 2	-3.8	-279.64	140.4
Stage 2	-4	-252.64	134.99
Stage 2	-4.2	-226.72	129.61
Stage 2	-4.4	-201.84	124.38
Stage 2	-4.6	-178	119.2
Stage 2	-4.8	-155.16	114.2
Stage 2	-5	-133.31	109.28
Stage 2	-5.2	-112.43	104.38
Stage 2	-5.4	-92.52	99.55
Stage 2	-5.6	-73.59	94.68
Stage 2	-5.8	-55.61	89.87
Stage 2	-6	-38.6	85.05
Stage 2	-6.2	-22.56	80.22
Stage 2	-6.4	-7.46	75.47
Stage 2	-6.6	6.68	70.7
Stage 2	-6.8	19.88	66.01
Stage 2	-7	32.14	61.31
Stage 2	-7.2	43.46	56.61
Stage 2	-7.4	53.86	51.97
Stage 2	-7.6	63.32	47.32
Stage 2	-7.8	71.85	42.66
Stage 2	-8	79.46	38.06
Stage 2	-8.2	86.15	33.43
Stage 2	-8.4	91.92	28.85
Stage 2	-8.6	96.77	24.23
Stage 2	-8.65	97.83	21.33
Stage 2	-8.85	101.52	18.44
Stage 2	-9.05	104.29	13.83
Stage 2	-9.25	106.12	9.18
Stage 2	-9.45	107.02	4.49
Stage 2	-9.65	106.98	-0.2
Stage 2	-9.85	106.48	-2.5
Stage 2	-10.05	105.58	-4.48
Stage 2	-10.25	104.34	-6.23
Stage 2	-10.45	102.78	-7.78
Stage 2	-10.65	100.95	-9.13
Stage 2	-10.85	98.89	-10.34
Stage 2	-11.05	96.6	-11.42
Stage 2	-11.25	94.11	-12.44



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	268 di 325

**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	-11.45	91.43	-13.42
Stage 2	-11.65	88.56	-14.36
Stage 2	-11.85	85.49	-15.32
Stage 2	-12.05	82.23	-16.31
Stage 2	-12.25	78.76	-17.38
Stage 2	-12.45	75.05	-18.55
Stage 2	-12.65	71.08	-19.83
Stage 2	-12.85	66.89	-20.93
Stage 2	-13.05	62.55	-21.73
Stage 2	-13.25	58.09	-22.27
Stage 2	-13.45	53.58	-22.59
Stage 2	-13.65	49.04	-22.66
Stage 2	-13.85	44.54	-22.54
Stage 2	-14.05	40.09	-22.22
Stage 2	-14.25	35.75	-21.73
Stage 2	-14.45	31.53	-21.09
Stage 2	-14.65	27.47	-20.28
Stage 2	-14.85	23.6	-19.35
Stage 2	-15.05	19.95	-18.27
Stage 2	-15.25	16.53	-17.08
Stage 2	-15.45	13.38	-15.78
Stage 2	-15.65	10.5	-14.36
Stage 2	-15.85	7.94	-12.84
Stage 2	-16.05	5.69	-11.23
Stage 2	-16.25	3.79	-9.51
Stage 2	-16.45	2.25	-7.69
Stage 2	-16.65	1.1	-5.77
Stage 2	-16.85	0.35	-3.76
Stage 2	-17.05	0.01	-1.66
Stage 2	-17.1	0	-0.28

**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	0	997.43	-218.84
Stage 2	-0.2	953.66	-218.84
Stage 2	-0.4	910.21	-217.24
Stage 2	-0.6	867.2	-215.04
Stage 2	-0.8	824.74	-212.31
Stage 2	-1	782.92	-209.1
Stage 2	-1.2	741.83	-205.47
Stage 2	-1.4	701.53	-201.47
Stage 2	-1.6	662.1	-197.14
Stage 2	-1.8	623.6	-192.54
Stage 2	-2	586.05	-187.71
Stage 2	-2.2	549.52	-182.68
Stage 2	-2.4	514.02	-177.5
Stage 2	-2.6	479.58	-172.2
Stage 2	-2.8	446.21	-166.82
Stage 2	-3	413.94	-161.38
Stage 2	-3.2	382.75	-155.92
Stage 2	-3.4	352.66	-150.46
Stage 2	-3.6	323.65	-145.04
Stage 2	-3.8	295.72	-139.66
Stage 2	-4	268.85	-134.36
Stage 2	-4.2	243.02	-129.15
Stage 2	-4.4	218.21	-124.05
Stage 2	-4.6	194.4	-119.07
Stage 2	-4.8	171.55	-114.24
Stage 2	-5	149.64	-109.56
Stage 2	-5.2	128.64	-104.97
Stage 2	-5.4	108.56	-100.41
Stage 2	-5.6	89.39	-95.89
Stage 2	-5.8	71.1	-91.42
Stage 2	-6	53.7	-86.99
Stage 2	-6.2	37.18	-82.63
Stage 2	-6.4	21.51	-78.33
Stage 2	-6.6	6.7	-74.08
Stage 2	-6.8	-7.29	-69.91
Stage 2	-7	-20.44	-65.79
Stage 2	-7.2	-32.79	-61.74
Stage 2	-7.4	-44.34	-57.76
Stage 2	-7.6	-55.11	-53.83
Stage 2	-7.8	-65.1	-49.96
Stage 2	-8	-74.33	-46.15
Stage 2	-8.2	-82.81	-42.39
Stage 2	-8.4	-90.54	-38.67
Stage 2	-8.6	-97.54	-34.99
Stage 2	-8.65	-99.18	-32.71
Stage 2	-8.85	-105.26	-30.43
Stage 2	-9.05	-110.63	-26.82
Stage 2	-9.25	-115.27	-23.23
Stage 2	-9.45	-119.2	-19.64
Stage 2	-9.65	-122.42	-16.06
Stage 2	-9.85	-124.66	-11.24
Stage 2	-10.05	-126.02	-6.79
Stage 2	-10.25	-126.58	-2.78
Stage 2	-10.45	-126.41	0.83
Stage 2	-10.65	-125.6	4.07
Stage 2	-10.85	-124.2	6.98
Stage 2	-11.05	-122.28	9.62
Stage 2	-11.25	-119.88	12.01

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	270 di 325

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	-11.45	-117.04	14.2
Stage 2	-11.65	-113.79	16.23
Stage 2	-11.85	-110.16	18.14
Stage 2	-12.05	-106.17	19.96
Stage 2	-12.25	-101.82	21.73
Stage 2	-12.45	-97.13	23.49
Stage 2	-12.65	-92.07	25.26
Stage 2	-12.85	-86.72	26.75
Stage 2	-13.05	-81.15	27.86
Stage 2	-13.25	-75.43	28.63
Stage 2	-13.45	-69.61	29.08
Stage 2	-13.65	-63.77	29.23
Stage 2	-13.85	-57.94	29.12
Stage 2	-14.05	-52.19	28.75
Stage 2	-14.25	-46.56	28.15
Stage 2	-14.45	-41.09	27.34
Stage 2	-14.65	-35.82	26.34
Stage 2	-14.85	-30.8	25.14
Stage 2	-15.05	-26.04	23.78
Stage 2	-15.25	-21.59	22.25
Stage 2	-15.45	-17.48	20.57
Stage 2	-15.65	-13.73	18.74
Stage 2	-15.85	-10.37	16.77
Stage 2	-16.05	-7.44	14.66
Stage 2	-16.25	-4.96	12.42
Stage 2	-16.45	-2.95	10.05
Stage 2	-16.65	-1.44	7.55
Stage 2	-16.85	-0.45	4.92
Stage 2	-17.05	-0.02	2.17
Stage 2	-17.1	0	0.36

**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	0	-1582.83	520.27
Stage 3	-0.2	-1478.78	520.27
Stage 3	-0.4	-1375.87	514.53
Stage 3	-0.6	-1274.34	507.66
Stage 3	-0.8	-1174.19	500.72
Stage 3	-1	-1075.58	493.05
Stage 3	-1.2	-978.63	484.78
Stage 3	-1.4	-883.36	476.32
Stage 3	-1.6	-789.9	467.33
Stage 3	-1.8	-698.27	458.14
Stage 3	-2	-608.57	448.49
Stage 3	-2.2	-520.89	438.4
Stage 3	-2.4	-435.26	428.13
Stage 3	-2.6	-351.77	417.47
Stage 3	-2.8	-270.45	406.62
Stage 3	-3	-191.36	395.42
Stage 3	-3.2	-114.59	383.88
Stage 3	-3.4	-40.15	372.17
Stage 3	-3.6	31.87	360.14
Stage 3	-3.8	101.46	347.94
Stage 3	-4	168.55	335.43
Stage 3	-4.2	233.08	322.64
Stage 3	-4.4	295.01	309.67
Stage 3	-4.6	354.29	296.41
Stage 3	-4.8	410.89	282.98
Stage 3	-5	464.74	269.25
Stage 3	-5.2	515.77	255.17
Stage 3	-5.4	563.92	240.75
Stage 3	-5.6	609.1	225.9
Stage 3	-5.8	651.24	210.69
Stage 3	-6	690.25	195.04
Stage 3	-6.2	726.04	178.95
Stage 3	-6.4	758.53	162.47
Stage 3	-6.6	787.64	145.54
Stage 3	-6.8	813.28	128.21
Stage 3	-7	835.36	110.4
Stage 3	-7.2	853.78	92.1
Stage 3	-7.4	868.45	73.37
Stage 3	-7.6	879.28	54.14
Stage 3	-7.8	886.16	34.4
Stage 3	-8	889	14.19
Stage 3	-8.2	887.69	-6.55
Stage 3	-8.4	882.13	-27.78
Stage 3	-8.6	872.22	-49.57
Stage 3	-8.65	869.04	-63.53
Stage 3	-8.85	853.53	-77.56
Stage 3	-9.05	833.43	-100.5
Stage 3	-9.25	808.63	-124.01
Stage 3	-9.45	779.01	-148.09
Stage 3	-9.65	744.47	-172.7
Stage 3	-9.85	707.53	-184.71
Stage 3	-10.05	669.6	-189.66
Stage 3	-10.25	632.08	-187.59
Stage 3	-10.45	595.66	-182.12
Stage 3	-10.65	560.35	-176.53
Stage 3	-10.85	526.17	-170.89
Stage 3	-11.05	493.13	-165.22
Stage 3	-11.25	461.21	-159.59

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	272 di 325

**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	-11.45	430.41	-154.03
Stage 3	-11.65	400.7	-148.52
Stage 3	-11.85	372.08	-143.13
Stage 3	-12.05	344.51	-137.84
Stage 3	-12.25	317.97	-132.7
Stage 3	-12.45	292.42	-127.74
Stage 3	-12.65	267.83	-122.93
Stage 3	-12.85	244.23	-118.02
Stage 3	-13.05	221.65	-112.89
Stage 3	-13.25	200.11	-107.7
Stage 3	-13.45	179.62	-102.44
Stage 3	-13.65	160.21	-97.1
Stage 3	-13.85	141.86	-91.71
Stage 3	-14.05	124.61	-86.26
Stage 3	-14.25	108.46	-80.78
Stage 3	-14.45	93.4	-75.27
Stage 3	-14.65	79.46	-69.71
Stage 3	-14.85	66.64	-64.13
Stage 3	-15.05	54.93	-58.51
Stage 3	-15.25	44.36	-52.89
Stage 3	-15.45	34.91	-47.25
Stage 3	-15.65	26.59	-41.58
Stage 3	-15.85	19.41	-35.91
Stage 3	-16.05	13.36	-30.23
Stage 3	-16.25	8.46	-24.52
Stage 3	-16.45	4.7	-18.81
Stage 3	-16.65	2.08	-13.08
Stage 3	-16.85	0.58	-7.48
Stage 3	-17.05	0.02	-2.8
Stage 3	-17.05	0.02	-2.8
Stage 3	-17.1	0	-0.44

**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	0	1724.13	-520.58
Stage 3	-0.2	1620.02	-520.58
Stage 3	-0.4	1516.83	-515.97
Stage 3	-0.6	1414.69	-510.7
Stage 3	-0.8	1313.72	-504.81
Stage 3	-1	1214.06	-498.33
Stage 3	-1.2	1115.8	-491.29
Stage 3	-1.4	1019.05	-483.71
Stage 3	-1.6	923.93	-475.62
Stage 3	-1.8	830.52	-467.04
Stage 3	-2	738.93	-457.99
Stage 3	-2.2	649.22	-448.53
Stage 3	-2.4	561.48	-438.71
Stage 3	-2.6	475.77	-428.54
Stage 3	-2.8	392.16	-418.04
Stage 3	-3	310.72	-407.22
Stage 3	-3.2	231.5	-396.09
Stage 3	-3.4	154.56	-384.67
Stage 3	-3.6	79.97	-372.97
Stage 3	-3.8	7.77	-360.98
Stage 3	-4	-61.97	-348.73
Stage 3	-4.2	-129.22	-336.22
Stage 3	-4.4	-193.91	-323.44
Stage 3	-4.6	-255.99	-310.42
Stage 3	-4.8	-315.42	-297.14
Stage 3	-5	-372.14	-283.61
Stage 3	-5.2	-426.09	-269.75
Stage 3	-5.4	-477.19	-255.51
Stage 3	-5.6	-525.36	-240.86
Stage 3	-5.8	-570.53	-225.82
Stage 3	-6	-612.6	-210.38
Stage 3	-6.2	-651.51	-194.53
Stage 3	-6.4	-687.17	-178.28
Stage 3	-6.6	-719.49	-161.6
Stage 3	-6.8	-748.39	-144.5
Stage 3	-7	-773.78	-126.98
Stage 3	-7.2	-795.59	-109.02
Stage 3	-7.4	-813.71	-90.61
Stage 3	-7.6	-828.06	-71.75
Stage 3	-7.8	-838.55	-52.43
Stage 3	-8	-845.08	-32.64
Stage 3	-8.2	-847.55	-12.38
Stage 3	-8.4	-845.87	8.38
Stage 3	-8.6	-839.95	29.64
Stage 3	-8.65	-837.78	43.25
Stage 3	-8.85	-826.4	56.93
Stage 3	-9.05	-810.53	79.35
Stage 3	-9.25	-790.07	102.3
Stage 3	-9.45	-764.91	125.79
Stage 3	-9.65	-734.94	149.83
Stage 3	-9.85	-702.92	160.13
Stage 3	-10.05	-670.24	163.39
Stage 3	-10.25	-637.95	161.46
Stage 3	-10.45	-606.13	159.1
Stage 3	-10.65	-574.85	156.39
Stage 3	-10.85	-544.16	153.43
Stage 3	-11.05	-514.11	150.26
Stage 3	-11.25	-484.72	146.97

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	274 di 325

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	-11.45	-456	143.59
Stage 3	-11.65	-427.97	140.15
Stage 3	-11.85	-400.63	136.69
Stage 3	-12.05	-373.98	133.24
Stage 3	-12.25	-348.02	129.84
Stage 3	-12.45	-322.71	126.51
Stage 3	-12.65	-298.06	123.27
Stage 3	-12.85	-274.09	119.87
Stage 3	-13.05	-250.84	116.21
Stage 3	-13.25	-228.38	112.31
Stage 3	-13.45	-206.74	108.2
Stage 3	-13.65	-185.97	103.87
Stage 3	-13.85	-166.1	99.33
Stage 3	-14.05	-147.18	94.59
Stage 3	-14.25	-129.25	89.67
Stage 3	-14.45	-112.33	84.57
Stage 3	-14.65	-96.48	79.29
Stage 3	-14.85	-81.71	73.84
Stage 3	-15.05	-68.06	68.22
Stage 3	-15.25	-55.57	62.45
Stage 3	-15.45	-44.27	56.52
Stage 3	-15.65	-34.18	50.43
Stage 3	-15.85	-25.35	44.19
Stage 3	-16.05	-17.79	37.8
Stage 3	-16.25	-11.53	31.26
Stage 3	-16.45	-6.62	24.57
Stage 3	-16.65	-3.07	17.73
Stage 3	-16.85	-0.91	10.8
Stage 3	-17.05	-0.04	4.39
Stage 3	-17.1	0	0.72

**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	0	-1582.9	520.32
Stage 4	-0.2	-1478.84	520.32
Stage 4	-0.4	-1375.93	514.57
Stage 4	-0.6	-1274.38	507.71
Stage 4	-0.8	-1174.23	500.77
Stage 4	-1	-1075.61	493.1
Stage 4	-1.2	-978.64	484.83
Stage 4	-1.4	-883.37	476.37
Stage 4	-1.6	-789.89	467.38
Stage 4	-1.8	-698.25	458.19
Stage 4	-2	-608.55	448.54
Stage 4	-2.2	-520.86	438.45
Stage 4	-2.4	-435.22	428.18
Stage 4	-2.6	-351.72	417.52
Stage 4	-2.8	-270.38	406.67
Stage 4	-3	-191.29	395.47
Stage 4	-3.2	-114.5	383.93
Stage 4	-3.4	-40.06	372.22
Stage 4	-3.6	31.98	360.19
Stage 4	-3.8	101.58	347.99
Stage 4	-4	168.67	335.49
Stage 4	-4.2	233.21	322.69
Stage 4	-4.4	295.15	309.72
Stage 4	-4.6	354.45	296.47
Stage 4	-4.8	411.05	283.03
Stage 4	-5	464.91	269.3
Stage 4	-5.2	515.96	255.22
Stage 4	-5.4	564.12	240.81
Stage 4	-5.6	609.31	225.95
Stage 4	-5.8	651.46	210.75
Stage 4	-6	690.48	195.1
Stage 4	-6.2	726.28	179
Stage 4	-6.4	758.79	162.53
Stage 4	-6.6	787.9	145.59
Stage 4	-6.8	813.56	128.26
Stage 4	-7	835.65	110.45
Stage 4	-7.2	854.08	92.16
Stage 4	-7.4	868.76	73.43
Stage 4	-7.6	879.6	54.2
Stage 4	-7.8	886.5	34.46
Stage 4	-8	889.35	14.25
Stage 4	-8.2	888.05	-6.49
Stage 4	-8.4	882.5	-27.72
Stage 4	-8.6	872.6	-49.51
Stage 4	-8.65	869.43	-63.47
Stage 4	-8.65	868.63	-63.47
Stage 4	-8.85	853.14	-77.47
Stage 4	-9.05	833.05	-100.41
Stage 4	-9.25	808.27	-123.92
Stage 4	-9.45	778.67	-148
Stage 4	-9.65	744.15	-172.61
Stage 4	-9.85	707.23	-184.62
Stage 4	-10.05	669.31	-189.57
Stage 4	-10.25	631.81	-187.51
Stage 4	-10.45	595.4	-182.04
Stage 4	-10.65	560.11	-176.45
Stage 4	-10.85	525.95	-170.81
Stage 4	-11.05	492.92	-165.15



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	276 di 325

**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	-11.25	461.02	-159.52
Stage 4	-11.45	430.23	-153.96
Stage 4	-11.65	400.54	-148.45
Stage 4	-11.85	371.92	-143.06
Stage 4	-12.05	344.37	-137.78
Stage 4	-12.25	317.84	-132.64
Stage 4	-12.45	292.3	-127.68
Stage 4	-12.65	267.73	-122.88
Stage 4	-12.85	244.13	-117.97
Stage 4	-13.05	221.56	-112.85
Stage 4	-13.25	200.03	-107.65
Stage 4	-13.45	179.55	-102.39
Stage 4	-13.65	160.14	-97.06
Stage 4	-13.85	141.81	-91.67
Stage 4	-14.05	124.56	-86.23
Stage 4	-14.25	108.42	-80.74
Stage 4	-14.45	93.37	-75.24
Stage 4	-14.65	79.43	-69.68
Stage 4	-14.85	66.61	-64.11
Stage 4	-15.05	54.91	-58.49
Stage 4	-15.25	44.34	-52.87
Stage 4	-15.45	34.89	-47.23
Stage 4	-15.65	26.58	-41.57
Stage 4	-15.85	19.4	-35.89
Stage 4	-16.05	13.36	-30.22
Stage 4	-16.25	8.46	-24.51
Stage 4	-16.45	4.69	-18.81
Stage 4	-16.65	2.08	-13.08
Stage 4	-16.85	0.58	-7.48
Stage 4	-17.05	0.02	-2.8
Stage 4	-17.1	0	-0.44

**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	0	1724.21	-520.63
Stage 4	-0.2	1620.08	-520.63
Stage 4	-0.4	1516.88	-516.01
Stage 4	-0.6	1414.73	-510.75
Stage 4	-0.8	1313.76	-504.86
Stage 4	-1	1214.08	-498.38
Stage 4	-1.2	1115.81	-491.34
Stage 4	-1.4	1019.06	-483.76
Stage 4	-1.6	923.93	-475.67
Stage 4	-1.8	830.51	-467.09
Stage 4	-2	738.9	-458.03
Stage 4	-2.2	649.19	-448.58
Stage 4	-2.4	561.43	-438.76
Stage 4	-2.6	475.72	-428.59
Stage 4	-2.8	392.1	-418.09
Stage 4	-3	310.64	-407.27
Stage 4	-3.2	231.41	-396.14
Stage 4	-3.4	154.47	-384.72
Stage 4	-3.6	79.87	-373.02
Stage 4	-3.8	7.66	-361.04
Stage 4	-4	-62.1	-348.78
Stage 4	-4.2	-129.35	-336.27
Stage 4	-4.4	-194.05	-323.5
Stage 4	-4.6	-256.14	-310.47
Stage 4	-4.8	-315.58	-297.19
Stage 4	-5	-372.31	-283.66
Stage 4	-5.2	-426.28	-269.81
Stage 4	-5.4	-477.39	-255.56
Stage 4	-5.6	-525.57	-240.92
Stage 4	-5.8	-570.75	-225.88
Stage 4	-6	-612.84	-210.44
Stage 4	-6.2	-651.75	-194.59
Stage 4	-6.4	-687.42	-178.33
Stage 4	-6.6	-719.75	-161.66
Stage 4	-6.8	-748.66	-144.56
Stage 4	-7	-774.07	-127.04
Stage 4	-7.2	-795.89	-109.07
Stage 4	-7.4	-814.02	-90.67
Stage 4	-7.6	-828.38	-71.81
Stage 4	-7.8	-838.88	-52.49
Stage 4	-8	-845.42	-32.7
Stage 4	-8.2	-847.91	-12.43
Stage 4	-8.4	-846.24	8.33
Stage 4	-8.6	-840.32	29.58
Stage 4	-8.65	-838.17	43.19
Stage 4	-8.65	-837.37	43.19
Stage 4	-8.85	-826	56.84
Stage 4	-9.05	-810.15	79.26
Stage 4	-9.25	-789.71	102.21
Stage 4	-9.45	-764.57	125.7
Stage 4	-9.65	-734.62	149.74
Stage 4	-9.85	-702.61	160.04
Stage 4	-10.05	-669.95	163.3
Stage 4	-10.25	-637.68	161.38
Stage 4	-10.45	-605.87	159.01
Stage 4	-10.65	-574.61	156.31
Stage 4	-10.85	-543.94	153.35
Stage 4	-11.05	-513.9	150.19

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	278 di 325

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	-11.25	-484.53	146.9
Stage 4	-11.45	-455.82	143.52
Stage 4	-11.65	-427.81	140.08
Stage 4	-11.85	-400.48	136.63
Stage 4	-12.05	-373.85	133.18
Stage 4	-12.25	-347.89	129.78
Stage 4	-12.45	-322.6	126.46
Stage 4	-12.65	-297.95	123.22
Stage 4	-12.85	-273.99	119.82
Stage 4	-13.05	-250.76	116.16
Stage 4	-13.25	-228.3	112.27
Stage 4	-13.45	-206.67	108.16
Stage 4	-13.65	-185.91	103.83
Stage 4	-13.85	-166.05	99.3
Stage 4	-14.05	-147.14	94.56
Stage 4	-14.25	-129.21	89.64
Stage 4	-14.45	-112.3	84.54
Stage 4	-14.65	-96.45	79.26
Stage 4	-14.85	-81.68	73.82
Stage 4	-15.05	-68.04	68.2
Stage 4	-15.25	-55.56	62.43
Stage 4	-15.45	-44.26	56.5
Stage 4	-15.65	-34.17	50.41
Stage 4	-15.85	-25.34	44.17
Stage 4	-16.05	-17.78	37.79
Stage 4	-16.25	-11.53	31.25
Stage 4	-16.45	-6.62	24.56
Stage 4	-16.65	-3.07	17.72
Stage 4	-16.85	-0.91	10.8
Stage 4	-17.05	-0.04	4.39
Stage 4	-17.1	0	0.72

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	279 di 325

**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	0	-1366.26	463.02
Stage 5	-0.2	-1273.66	463.02
Stage 5	-0.4	-1181.99	458.34
Stage 5	-0.6	-1091.41	452.86
Stage 5	-0.8	-1002	447.06
Stage 5	-1	-913.86	440.69
Stage 5	-1.2	-827.1	433.82
Stage 5	-1.4	-741.77	426.63
Stage 5	-1.6	-657.98	418.99
Stage 5	-1.8	-575.77	411.05
Stage 5	-2	-495.23	402.71
Stage 5	-2.2	-416.43	393.99
Stage 5	-2.4	-339.42	385.02
Stage 5	-2.6	-264.28	375.7
Stage 5	-2.8	-191.06	366.14
Stage 5	-3	-119.8	356.27
Stage 5	-3.2	-50.58	346.1
Stage 5	-3.4	16.56	335.73
Stage 5	-3.6	81.58	325.07
Stage 5	-3.8	144.42	314.2
Stage 5	-4	205.03	303.06
Stage 5	-4.2	263.35	291.63
Stage 5	-4.4	319.35	279.99
Stage 5	-4.6	372.97	268.1
Stage 5	-4.8	424.17	255.99
Stage 5	-5	472.89	243.61
Stage 5	-5.2	519.07	230.91
Stage 5	-5.4	562.64	217.84
Stage 5	-5.6	603.51	204.35
Stage 5	-5.8	641.61	190.49
Stage 5	-6	676.85	176.21
Stage 5	-6.2	709.15	161.5
Stage 5	-6.4	738.43	146.39
Stage 5	-6.6	764.6	130.84
Stage 5	-6.8	787.57	114.87
Stage 5	-7	807.26	98.45
Stage 5	-7.2	823.57	81.56
Stage 5	-7.4	836.42	64.22
Stage 5	-7.6	845.7	46.4
Stage 5	-7.8	851.31	28.08
Stage 5	-8	853.17	9.29
Stage 5	-8.2	851.17	-10.02
Stage 5	-8.4	845.2	-29.84
Stage 5	-8.6	835.16	-50.18
Stage 5	-8.65	832	-63.23
Stage 5	-8.65	831.11	-63.23
Stage 5	-8.85	819	-60.56
Stage 5	-9.05	802.59	-82.06
Stage 5	-9.25	781.77	-104.09
Stage 5	-9.45	756.44	-126.68
Stage 5	-9.65	726.48	-149.81
Stage 5	-9.85	693.71	-163.83
Stage 5	-10.05	659.57	-170.72
Stage 5	-10.25	625.47	-170.5
Stage 5	-10.45	592.11	-166.79
Stage 5	-10.65	559.53	-162.89
Stage 5	-10.85	527.76	-158.87
Stage 5	-11.05	496.81	-154.74

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	280 di 325

**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	-11.25	466.7	-150.56
Stage 5	-11.45	437.43	-146.35
Stage 5	-11.65	409	-142.14
Stage 5	-11.85	381.41	-137.96
Stage 5	-12.05	354.65	-133.81
Stage 5	-12.25	328.7	-129.73
Stage 5	-12.45	303.55	-125.74
Stage 5	-12.65	279.19	-121.83
Stage 5	-12.85	255.64	-117.74
Stage 5	-13.05	232.96	-113.37
Stage 5	-13.25	211.19	-108.85
Stage 5	-13.45	190.35	-104.19
Stage 5	-13.65	170.48	-99.38
Stage 5	-13.85	151.59	-94.45
Stage 5	-14.05	133.71	-89.39
Stage 5	-14.25	116.87	-84.22
Stage 5	-14.45	101.08	-78.94
Stage 5	-14.65	86.37	-73.56
Stage 5	-14.85	72.75	-68.08
Stage 5	-15.05	60.25	-62.5
Stage 5	-15.25	48.88	-56.84
Stage 5	-15.45	38.66	-51.09
Stage 5	-15.65	29.61	-45.26
Stage 5	-15.85	21.75	-39.34
Stage 5	-16.05	15.08	-33.34
Stage 5	-16.25	9.62	-27.26
Stage 5	-16.45	5.4	-21.1
Stage 5	-16.65	2.43	-14.86
Stage 5	-16.85	0.7	-8.68
Stage 5	-17.05	0.03	-3.34
Stage 5	-17.05	0.03	-3.34
Stage 5	-17.1	0	-0.54

**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	0	1426.73	-463.27
Stage 5	-0.2	1334.07	-463.27
Stage 5	-0.4	1242.16	-459.58
Stage 5	-0.6	1151.1	-455.26
Stage 5	-0.8	1061.03	-450.34
Stage 5	-1	972.07	-444.84
Stage 5	-1.2	884.31	-438.79
Stage 5	-1.4	797.87	-432.21
Stage 5	-1.6	712.84	-425.12
Stage 5	-1.8	629.33	-417.55
Stage 5	-2	547.43	-409.52
Stage 5	-2.2	467.21	-401.08
Stage 5	-2.4	388.76	-392.27
Stage 5	-2.6	312.13	-383.12
Stage 5	-2.8	237.41	-373.63
Stage 5	-3	164.65	-363.81
Stage 5	-3.2	93.91	-353.68
Stage 5	-3.4	25.26	-343.25
Stage 5	-3.6	-41.24	-332.52
Stage 5	-3.8	-105.54	-321.51
Stage 5	-4	-167.59	-310.21
Stage 5	-4.2	-227.31	-298.64
Stage 5	-4.4	-284.67	-286.79
Stage 5	-4.6	-339.61	-274.68
Stage 5	-4.8	-392.07	-262.3
Stage 5	-5	-442	-249.65
Stage 5	-5.2	-489.33	-236.66
Stage 5	-5.4	-533.98	-223.26
Stage 5	-5.6	-575.87	-209.44
Stage 5	-5.8	-614.91	-195.21
Stage 5	-6	-651.02	-180.55
Stage 5	-6.2	-684.12	-165.47
Stage 5	-6.4	-714.11	-149.96
Stage 5	-6.6	-740.91	-134.01
Stage 5	-6.8	-764.44	-117.62
Stage 5	-7	-784.59	-100.78
Stage 5	-7.2	-801.29	-83.48
Stage 5	-7.4	-814.43	-65.71
Stage 5	-7.6	-823.93	-47.48
Stage 5	-7.8	-829.68	-28.75
Stage 5	-8	-831.58	-9.54
Stage 5	-8.2	-829.55	10.18
Stage 5	-8.4	-823.47	30.4
Stage 5	-8.6	-813.24	51.15
Stage 5	-8.65	-810.02	64.45
Stage 5	-8.65	-809.43	64.45
Stage 5	-8.85	-797.02	62.04
Stage 5	-9.05	-780.22	83.99
Stage 5	-9.25	-758.92	106.5
Stage 5	-9.45	-733.01	129.57
Stage 5	-9.65	-702.36	153.21
Stage 5	-9.85	-669.66	163.51
Stage 5	-10.05	-636.31	166.76
Stage 5	-10.25	-603.55	163.82
Stage 5	-10.45	-571.45	160.49
Stage 5	-10.65	-540.08	156.86
Stage 5	-10.85	-509.47	153.04
Stage 5	-11.05	-479.65	149.07

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	282 di 325

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	-11.25	-450.65	145.02
Stage 5	-11.45	-422.46	140.94
Stage 5	-11.65	-395.1	136.84
Stage 5	-11.85	-368.54	132.77
Stage 5	-12.05	-342.79	128.76
Stage 5	-12.25	-317.82	124.84
Stage 5	-12.45	-293.61	121.05
Stage 5	-12.65	-270.14	117.38
Stage 5	-12.85	-247.42	113.59
Stage 5	-13.05	-225.5	109.59
Stage 5	-13.25	-204.42	105.4
Stage 5	-13.45	-184.22	101.03
Stage 5	-13.65	-164.92	96.48
Stage 5	-13.85	-146.57	91.77
Stage 5	-14.05	-129.19	86.89
Stage 5	-14.25	-112.85	81.7
Stage 5	-14.45	-97.56	76.43
Stage 5	-14.65	-83.34	71.09
Stage 5	-14.85	-70.2	65.69
Stage 5	-15.05	-58.16	60.22
Stage 5	-15.25	-47.22	54.7
Stage 5	-15.45	-37.4	49.12
Stage 5	-15.65	-28.7	43.49
Stage 5	-15.85	-21.14	37.8
Stage 5	-16.05	-14.72	32.07
Stage 5	-16.25	-9.46	26.29
Stage 5	-16.45	-5.37	20.46
Stage 5	-16.65	-2.46	14.57
Stage 5	-16.85	-0.72	8.7
Stage 5	-17.05	-0.03	3.45
Stage 5	-17.1	0	0.56

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	283 di 325

**Risultati Elementi strutturali - NTC2018: A1+M1+R1 (R3 per tiranti)**

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)		Tipo Risultato: Soletta		Slab			
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	646.54733	648.56467	983.30414	-997.42526	-219.05416	62.504	
Stage 3	637.4628	657.6492	1582.8306	-1724.1341	-521.24722	62.504	
Stage 4	637.4628	657.6492	1582.9047	-1724.2095	-521.29584	62.504	
Stage 5	475.20551	483.84349	1366.2597	-1426.7266	-463.4838	38.4995	

Design Assumption: NTC2018: A1+M1+R1 (R3 per tiranti)		Tipo Risultato: Soletta		Slab_New			
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	0	0	0	0	0	0	
Stage 4	227.5	227.5	0.7953998	-0.7953998	-	32.5	
Stage 5	227.52106	227.47894	0.88530286	-0.58990373	0.0320937357 -15.78902	32.5	



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	284 di 325

## Risultati NTC2018: A2+M2+R1

### 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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	285 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	286 di 325

### 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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	287 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	288 di 325

**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	0	-818.19	182.35
Stage 2	-0.2	-781.72	182.35
Stage 2	-0.4	-745.45	181.34
Stage 2	-0.6	-709.56	179.45
Stage 2	-0.8	-674.07	177.47
Stage 2	-1	-639.09	174.87
Stage 2	-1.2	-604.74	171.77
Stage 2	-1.4	-571.03	168.55
Stage 2	-1.6	-538.04	164.93
Stage 2	-1.8	-505.8	161.23
Stage 2	-2	-474.35	157.22
Stage 2	-2.2	-443.76	152.96
Stage 2	-2.4	-414.03	148.67
Stage 2	-2.6	-385.19	144.2
Stage 2	-2.8	-357.24	139.73
Stage 2	-3	-330.21	135.15
Stage 2	-3.2	-304.12	130.47
Stage 2	-3.4	-278.94	125.86
Stage 2	-3.6	-254.7	121.21
Stage 2	-3.8	-231.37	116.65
Stage 2	-4	-208.96	112.08
Stage 2	-4.2	-187.45	107.53
Stage 2	-4.4	-166.83	103.11
Stage 2	-4.6	-147.08	98.73
Stage 2	-4.8	-128.18	94.5
Stage 2	-5	-110.12	90.34
Stage 2	-5.2	-92.88	86.2
Stage 2	-5.4	-76.45	82.12
Stage 2	-5.6	-60.85	78.02
Stage 2	-5.8	-46.05	73.99
Stage 2	-6	-32.06	69.95
Stage 2	-6.2	-18.88	65.91
Stage 2	-6.4	-6.49	61.93
Stage 2	-6.6	5.1	57.97
Stage 2	-6.8	15.91	54.07
Stage 2	-7	25.95	50.18
Stage 2	-7.2	35.21	46.29
Stage 2	-7.4	43.7	42.46
Stage 2	-7.6	51.43	38.64
Stage 2	-7.8	58.39	34.82
Stage 2	-8	64.6	31.04
Stage 2	-8.2	70.05	27.27
Stage 2	-8.4	74.76	23.53
Stage 2	-8.6	78.71	19.78
Stage 2	-8.65	79.59	17.43
Stage 2	-8.85	82.6	15.08
Stage 2	-9.05	84.87	11.35
Stage 2	-9.25	86.39	7.59
Stage 2	-9.45	87.15	3.79
Stage 2	-9.65	87.15	0.01
Stage 2	-9.85	86.77	-1.87
Stage 2	-10.05	86.07	-3.5
Stage 2	-10.25	85.08	-4.95
Stage 2	-10.45	83.83	-6.24
Stage 2	-10.65	82.36	-7.37
Stage 2	-10.85	80.68	-8.39
Stage 2	-11.05	78.82	-9.3
Stage 2	-11.25	76.79	-10.16

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	289 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	74.6	-10.98
Stage 2	-11.65	72.24	-11.76
Stage 2	-11.85	69.73	-12.56
Stage 2	-12.05	67.06	-13.37
Stage 2	-12.25	64.21	-14.23
Stage 2	-12.45	61.17	-15.18
Stage 2	-12.65	57.94	-16.19
Stage 2	-12.85	54.52	-17.07
Stage 2	-13.05	50.98	-17.7
Stage 2	-13.25	47.36	-18.13
Stage 2	-13.45	43.68	-18.38
Stage 2	-13.65	39.99	-18.44
Stage 2	-13.85	36.32	-18.34
Stage 2	-14.05	32.71	-18.08
Stage 2	-14.25	29.17	-17.69
Stage 2	-14.45	25.74	-17.17
Stage 2	-14.65	22.43	-16.52
Stage 2	-14.85	19.28	-15.77
Stage 2	-15.05	16.3	-14.9
Stage 2	-15.25	13.51	-13.93
Stage 2	-15.45	10.93	-12.88
Stage 2	-15.65	8.59	-11.73
Stage 2	-15.85	6.49	-10.49
Stage 2	-16.05	4.66	-9.18
Stage 2	-16.25	3.1	-7.77
Stage 2	-16.45	1.84	-6.29
Stage 2	-16.65	0.9	-4.72
Stage 2	-16.85	0.28	-3.08
Stage 2	-17.05	0.01	-1.36
Stage 2	-17.1	0	-0.23

**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	0	831.26	-183.57
Stage 2	-0.2	794.54	-183.57
Stage 2	-0.4	758.11	-182.17
Stage 2	-0.6	722.05	-180.28
Stage 2	-0.8	686.47	-177.93
Stage 2	-1	651.43	-175.19
Stage 2	-1.2	617.01	-172.09
Stage 2	-1.4	583.28	-168.67
Stage 2	-1.6	550.28	-164.99
Stage 2	-1.8	518.07	-161.07
Stage 2	-2	486.67	-156.96
Stage 2	-2.2	456.14	-152.69
Stage 2	-2.4	426.48	-148.28
Stage 2	-2.6	397.72	-143.78
Stage 2	-2.8	369.88	-139.21
Stage 2	-3	342.96	-134.59
Stage 2	-3.2	316.97	-129.95
Stage 2	-3.4	291.91	-125.32
Stage 2	-3.6	267.77	-120.71
Stage 2	-3.8	244.54	-116.14
Stage 2	-4	222.21	-111.64
Stage 2	-4.2	200.77	-107.21
Stage 2	-4.4	180.19	-102.88
Stage 2	-4.6	160.46	-98.65
Stage 2	-4.8	141.55	-94.54
Stage 2	-5	123.44	-90.56
Stage 2	-5.2	106.11	-86.66
Stage 2	-5.4	89.55	-82.79
Stage 2	-5.6	73.76	-78.97
Stage 2	-5.8	58.72	-75.2
Stage 2	-6	44.42	-71.48
Stage 2	-6.2	30.86	-67.81
Stage 2	-6.4	18.02	-64.21
Stage 2	-6.6	5.88	-60.67
Stage 2	-6.8	-5.56	-57.2
Stage 2	-7	-16.31	-53.78
Stage 2	-7.2	-26.4	-50.44
Stage 2	-7.4	-35.83	-47.15
Stage 2	-7.6	-44.61	-43.92
Stage 2	-7.8	-52.77	-40.76
Stage 2	-8	-60.29	-37.65
Stage 2	-8.2	-67.21	-34.59
Stage 2	-8.4	-73.53	-31.58
Stage 2	-8.6	-79.25	-28.61
Stage 2	-8.65	-80.59	-26.78
Stage 2	-8.85	-85.58	-24.95
Stage 2	-9.05	-89.99	-22.06
Stage 2	-9.25	-93.83	-19.2
Stage 2	-9.45	-97.1	-16.36
Stage 2	-9.65	-99.81	-13.53
Stage 2	-9.85	-101.73	-9.57
Stage 2	-10.05	-102.91	-5.94
Stage 2	-10.25	-103.44	-2.64
Stage 2	-10.45	-103.37	0.35
Stage 2	-10.65	-102.76	3.04
Stage 2	-10.85	-101.67	5.46
Stage 2	-11.05	-100.14	7.66
Stage 2	-11.25	-98.21	9.66

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	291 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	-95.91	11.5
Stage 2	-11.65	-93.27	13.19
Stage 2	-11.85	-90.31	14.79
Stage 2	-12.05	-87.05	16.3
Stage 2	-12.25	-83.5	17.76
Stage 2	-12.45	-79.66	19.2
Stage 2	-12.65	-75.53	20.64
Stage 2	-12.85	-71.16	21.85
Stage 2	-13.05	-66.61	22.76
Stage 2	-13.25	-61.93	23.39
Stage 2	-13.45	-57.18	23.77
Stage 2	-13.65	-52.4	23.9
Stage 2	-13.85	-47.63	23.82
Stage 2	-14.05	-42.93	23.54
Stage 2	-14.25	-38.31	23.07
Stage 2	-14.45	-33.83	22.42
Stage 2	-14.65	-29.5	21.61
Stage 2	-14.85	-25.37	20.65
Stage 2	-15.05	-21.47	19.54
Stage 2	-15.25	-17.81	18.3
Stage 2	-15.45	-14.42	16.93
Stage 2	-15.65	-11.33	15.44
Stage 2	-15.85	-8.57	13.82
Stage 2	-16.05	-6.15	12.1
Stage 2	-16.25	-4.1	10.25
Stage 2	-16.45	-2.44	8.3
Stage 2	-16.65	-1.19	6.24
Stage 2	-16.85	-0.37	4.07
Stage 2	-17.05	-0.02	1.79
Stage 2	-17.1	0	0.3



**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	292 di 325

**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	0	-1315.82	418.99
Stage 3	-0.2	-1232.02	418.99
Stage 3	-0.4	-1149.15	414.37
Stage 3	-0.6	-1067.38	408.86
Stage 3	-0.8	-986.71	403.34
Stage 3	-1	-907.26	397.23
Stage 3	-1.2	-829.13	390.65
Stage 3	-1.4	-752.34	383.96
Stage 3	-1.6	-676.97	376.86
Stage 3	-1.8	-603.04	369.63
Stage 3	-2	-530.63	362.04
Stage 3	-2.2	-459.81	354.11
Stage 3	-2.4	-390.6	346.06
Stage 3	-2.6	-323.06	337.71
Stage 3	-2.8	-257.21	329.24
Stage 3	-3	-193.11	320.49
Stage 3	-3.2	-130.81	311.49
Stage 3	-3.4	-70.34	302.37
Stage 3	-3.6	-11.74	293
Stage 3	-3.8	44.97	283.52
Stage 3	-4	99.73	273.81
Stage 3	-4.2	152.5	263.87
Stage 3	-4.4	203.27	253.82
Stage 3	-4.6	251.97	243.55
Stage 3	-4.8	298.6	233.15
Stage 3	-5	343.11	222.54
Stage 3	-5.2	385.44	211.65
Stage 3	-5.4	425.55	200.52
Stage 3	-5.6	463.36	189.07
Stage 3	-5.8	498.83	177.35
Stage 3	-6	531.89	165.3
Stage 3	-6.2	562.47	152.91
Stage 3	-6.4	590.52	140.25
Stage 3	-6.6	615.97	127.23
Stage 3	-6.8	638.76	113.93
Stage 3	-7	658.81	100.27
Stage 3	-7.2	676.06	86.24
Stage 3	-7.4	690.44	71.9
Stage 3	-7.6	701.87	57.18
Stage 3	-7.8	710.29	42.07
Stage 3	-8	715.61	26.62
Stage 3	-8.2	717.76	10.77
Stage 3	-8.4	716.68	-5.44
Stage 3	-8.6	712.26	-22.07
Stage 3	-8.65	710.63	-32.72
Stage 3	-8.85	701.94	-43.42
Stage 3	-9.05	689.76	-60.91
Stage 3	-9.25	674	-78.82
Stage 3	-9.45	654.57	-97.15
Stage 3	-9.65	631.39	-115.88
Stage 3	-9.85	605.52	-129.33
Stage 3	-10.05	577.66	-139.34
Stage 3	-10.25	548.47	-145.94
Stage 3	-10.45	518.64	-149.12
Stage 3	-10.65	488.87	-148.86
Stage 3	-10.85	459.84	-145.18
Stage 3	-11.05	431.76	-140.4
Stage 3	-11.25	404.62	-135.68

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	293 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.45	378.41	-131.04
Stage 3	-11.65	353.12	-126.47
Stage 3	-11.85	328.71	-122.03
Stage 3	-12.05	305.17	-117.7
Stage 3	-12.25	282.47	-113.53
Stage 3	-12.45	260.56	-109.53
Stage 3	-12.65	239.42	-105.69
Stage 3	-12.85	219.06	-101.82
Stage 3	-13.05	199.5	-97.82
Stage 3	-13.25	180.75	-93.72
Stage 3	-13.45	162.85	-89.54
Stage 3	-13.65	145.8	-85.24
Stage 3	-13.85	129.62	-80.88
Stage 3	-14.05	114.34	-76.41
Stage 3	-14.25	99.96	-71.89
Stage 3	-14.45	86.5	-67.3
Stage 3	-14.65	73.98	-62.63
Stage 3	-14.85	62.39	-57.91
Stage 3	-15.05	51.77	-53.11
Stage 3	-15.25	42.12	-48.27
Stage 3	-15.45	33.44	-43.38
Stage 3	-15.65	25.76	-38.43
Stage 3	-15.85	19.07	-33.43
Stage 3	-16.05	13.39	-28.39
Stage 3	-16.25	8.73	-23.29
Stage 3	-16.45	5.08	-18.26
Stage 3	-16.65	2.42	-13.29
Stage 3	-16.85	0.74	-8.39
Stage 3	-17.05	0.03	-3.57
Stage 3	-17.05	0.03	-3.57
Stage 3	-17.1	0	-0.59

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	294 di 325

**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	0	1439.1	-420
Stage 3	-0.2	1355.1	-420
Stage 3	-0.4	1271.84	-416.28
Stage 3	-0.6	1189.42	-412.07
Stage 3	-0.8	1107.95	-407.38
Stage 3	-1	1027.5	-402.24
Stage 3	-1.2	948.16	-396.67
Stage 3	-1.4	870.03	-390.69
Stage 3	-1.6	793.17	-384.31
Stage 3	-1.8	717.65	-377.55
Stage 3	-2	643.57	-370.44
Stage 3	-2.2	570.97	-362.98
Stage 3	-2.4	499.93	-355.19
Stage 3	-2.6	430.51	-347.13
Stage 3	-2.8	362.74	-338.81
Stage 3	-3	296.69	-330.25
Stage 3	-3.2	232.4	-321.45
Stage 3	-3.4	169.92	-312.43
Stage 3	-3.6	109.28	-303.19
Stage 3	-3.8	50.53	-293.74
Stage 3	-4	-6.28	-284.08
Stage 3	-4.2	-61.13	-274.23
Stage 3	-4.4	-113.96	-264.18
Stage 3	-4.6	-164.75	-253.94
Stage 3	-4.8	-213.45	-243.5
Stage 3	-5	-260.03	-232.88
Stage 3	-5.2	-304.43	-222.02
Stage 3	-5.4	-346.6	-210.85
Stage 3	-5.6	-386.48	-199.39
Stage 3	-5.8	-424.01	-187.63
Stage 3	-6	-459.12	-175.56
Stage 3	-6.2	-491.76	-163.19
Stage 3	-6.4	-521.86	-150.51
Stage 3	-6.6	-549.36	-137.52
Stage 3	-6.8	-574.2	-124.21
Stage 3	-7	-596.32	-110.58
Stage 3	-7.2	-615.64	-96.62
Stage 3	-7.4	-632.11	-82.33
Stage 3	-7.6	-645.65	-67.71
Stage 3	-7.8	-656.2	-52.74
Stage 3	-8	-663.68	-37.42
Stage 3	-8.2	-668.03	-21.74
Stage 3	-8.4	-669.17	-5.7
Stage 3	-8.6	-667.03	10.72
Stage 3	-8.65	-665.97	21.21
Stage 3	-8.85	-659.61	31.77
Stage 3	-9.05	-649.8	49.04
Stage 3	-9.25	-636.46	66.72
Stage 3	-9.45	-619.5	84.79
Stage 3	-9.65	-598.85	103.27
Stage 3	-9.85	-575.89	114.79
Stage 3	-10.05	-551.31	122.88
Stage 3	-10.25	-525.8	127.56
Stage 3	-10.45	-500.04	128.83
Stage 3	-10.65	-474.7	126.7
Stage 3	-10.85	-449.81	124.42
Stage 3	-11.05	-425.41	122.01
Stage 3	-11.25	-401.51	119.52

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	295 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.45	-378.11	116.98
Stage 3	-11.65	-355.23	114.39
Stage 3	-11.85	-332.87	111.8
Stage 3	-12.05	-311.03	109.2
Stage 3	-12.25	-289.71	106.64
Stage 3	-12.45	-268.88	104.12
Stage 3	-12.65	-248.55	101.65
Stage 3	-12.85	-228.75	99.03
Stage 3	-13.05	-209.51	96.17
Stage 3	-13.25	-190.89	93.09
Stage 3	-13.45	-172.93	89.81
Stage 3	-13.65	-155.67	86.32
Stage 3	-13.85	-139.14	82.64
Stage 3	-14.05	-123.39	78.77
Stage 3	-14.25	-108.44	74.71
Stage 3	-14.45	-94.34	70.49
Stage 3	-14.65	-81.13	66.08
Stage 3	-14.85	-68.83	61.51
Stage 3	-15.05	-57.47	56.8
Stage 3	-15.25	-47.07	51.98
Stage 3	-15.45	-37.66	47.07
Stage 3	-15.65	-29.24	42.05
Stage 3	-15.85	-21.86	36.94
Stage 3	-16.05	-15.51	31.74
Stage 3	-16.25	-10.22	26.44
Stage 3	-16.45	-6.01	21.05
Stage 3	-16.65	-2.9	15.56
Stage 3	-16.85	-0.9	9.99
Stage 3	-17.05	-0.04	4.32
Stage 3	-17.05	-0.04	4.32
Stage 3	-17.1	0	0.72

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	296 di 325

**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	0	-1315.87	419.03
Stage 4	-0.2	-1232.06	419.03
Stage 4	-0.4	-1149.18	414.41
Stage 4	-0.6	-1067.4	408.9
Stage 4	-0.8	-986.73	403.37
Stage 4	-1	-907.28	397.26
Stage 4	-1.2	-829.14	390.69
Stage 4	-1.4	-752.34	384
Stage 4	-1.6	-676.96	376.9
Stage 4	-1.8	-603.03	369.67
Stage 4	-2	-530.61	362.07
Stage 4	-2.2	-459.78	354.15
Stage 4	-2.4	-390.56	346.1
Stage 4	-2.6	-323.01	337.75
Stage 4	-2.8	-257.15	329.28
Stage 4	-3	-193.05	320.53
Stage 4	-3.2	-130.74	311.53
Stage 4	-3.4	-70.26	302.4
Stage 4	-3.6	-11.65	293.04
Stage 4	-3.8	45.06	283.56
Stage 4	-4	99.83	273.85
Stage 4	-4.2	152.61	263.91
Stage 4	-4.4	203.38	253.86
Stage 4	-4.6	252.1	243.59
Stage 4	-4.8	298.73	233.19
Stage 4	-5	343.25	222.58
Stage 4	-5.2	385.59	211.69
Stage 4	-5.4	425.7	200.57
Stage 4	-5.6	463.52	189.11
Stage 4	-5.8	499	177.39
Stage 4	-6	532.07	165.34
Stage 4	-6.2	562.66	152.95
Stage 4	-6.4	590.72	140.29
Stage 4	-6.6	616.17	127.28
Stage 4	-6.8	638.97	113.97
Stage 4	-7	659.03	100.31
Stage 4	-7.2	676.29	86.28
Stage 4	-7.4	690.68	71.94
Stage 4	-7.6	702.12	57.22
Stage 4	-7.8	710.54	42.11
Stage 4	-8	715.88	26.66
Stage 4	-8.2	718.04	10.81
Stage 4	-8.4	716.96	-5.4
Stage 4	-8.6	712.55	-22.03
Stage 4	-8.65	710.92	-32.68
Stage 4	-8.65	710.31	-32.68
Stage 4	-8.85	701.64	-43.35
Stage 4	-9.05	689.47	-60.84
Stage 4	-9.25	673.72	-78.75
Stage 4	-9.45	654.3	-97.09
Stage 4	-9.65	631.14	-115.82
Stage 4	-9.85	605.28	-129.26
Stage 4	-10.05	577.43	-139.27
Stage 4	-10.25	548.26	-145.87
Stage 4	-10.45	518.44	-149.06
Stage 4	-10.65	488.69	-148.79
Stage 4	-10.85	459.66	-145.12
Stage 4	-11.05	431.59	-140.34

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	297 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-11.25	404.47	-135.62
Stage 4	-11.45	378.27	-130.99
Stage 4	-11.65	352.99	-126.42
Stage 4	-11.85	328.59	-121.98
Stage 4	-12.05	305.06	-117.65
Stage 4	-12.25	282.37	-113.48
Stage 4	-12.45	260.47	-109.49
Stage 4	-12.65	239.34	-105.65
Stage 4	-12.85	218.98	-101.78
Stage 4	-13.05	199.43	-97.78
Stage 4	-13.25	180.69	-93.68
Stage 4	-13.45	162.79	-89.5
Stage 4	-13.65	145.75	-85.21
Stage 4	-13.85	129.58	-80.85
Stage 4	-14.05	114.3	-76.39
Stage 4	-14.25	99.93	-71.86
Stage 4	-14.45	86.47	-67.28
Stage 4	-14.65	73.95	-62.61
Stage 4	-14.85	62.37	-57.89
Stage 4	-15.05	51.75	-53.1
Stage 4	-15.25	42.1	-48.25
Stage 4	-15.45	33.43	-43.37
Stage 4	-15.65	25.75	-38.41
Stage 4	-15.85	19.06	-33.42
Stage 4	-16.05	13.39	-28.38
Stage 4	-16.25	8.73	-23.28
Stage 4	-16.45	5.08	-18.26
Stage 4	-16.65	2.42	-13.29
Stage 4	-16.85	0.74	-8.39
Stage 4	-17.05	0.03	-3.57
Stage 4	-17.05	0.03	-3.57
Stage 4	-17.1	0	-0.59

**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	0	1439.16	-420.03
Stage 4	-0.2	1355.16	-420.03
Stage 4	-0.4	1271.89	-416.32
Stage 4	-0.6	1189.47	-412.11
Stage 4	-0.8	1107.98	-407.42
Stage 4	-1	1027.53	-402.28
Stage 4	-1.2	948.19	-396.71
Stage 4	-1.4	870.04	-390.73
Stage 4	-1.6	793.17	-384.35
Stage 4	-1.8	717.65	-377.59
Stage 4	-2	643.56	-370.48
Stage 4	-2.2	570.95	-363.02
Stage 4	-2.4	499.91	-355.24
Stage 4	-2.6	430.47	-347.17
Stage 4	-2.8	362.7	-338.85
Stage 4	-3	296.64	-330.29
Stage 4	-3.2	232.34	-321.49
Stage 4	-3.4	169.85	-312.47
Stage 4	-3.6	109.2	-303.23
Stage 4	-3.8	50.45	-293.78
Stage 4	-4	-6.38	-284.13
Stage 4	-4.2	-61.23	-274.27
Stage 4	-4.4	-114.07	-264.22
Stage 4	-4.6	-164.87	-253.98
Stage 4	-4.8	-213.58	-243.55
Stage 4	-5	-260.16	-232.92
Stage 4	-5.2	-304.58	-222.06
Stage 4	-5.4	-346.76	-210.9
Stage 4	-5.6	-386.64	-199.43
Stage 4	-5.8	-424.18	-187.67
Stage 4	-6	-459.3	-175.6
Stage 4	-6.2	-491.94	-163.23
Stage 4	-6.4	-522.05	-150.55
Stage 4	-6.6	-549.57	-137.56
Stage 4	-6.8	-574.42	-124.25
Stage 4	-7	-596.54	-110.62
Stage 4	-7.2	-615.88	-96.67
Stage 4	-7.4	-632.35	-82.38
Stage 4	-7.6	-645.9	-67.75
Stage 4	-7.8	-656.46	-52.78
Stage 4	-8	-663.95	-37.46
Stage 4	-8.2	-668.31	-21.78
Stage 4	-8.4	-669.46	-5.74
Stage 4	-8.6	-667.32	10.67
Stage 4	-8.65	-666.26	21.17
Stage 4	-8.65	-665.65	21.17
Stage 4	-8.85	-659.31	31.7
Stage 4	-9.05	-649.52	48.97
Stage 4	-9.25	-636.19	66.65
Stage 4	-9.45	-619.24	84.72
Stage 4	-9.65	-598.6	103.2
Stage 4	-9.85	-575.66	114.72
Stage 4	-10.05	-551.1	122.81
Stage 4	-10.25	-525.6	127.49
Stage 4	-10.45	-499.85	128.77
Stage 4	-10.65	-474.52	126.64
Stage 4	-10.85	-449.65	124.36
Stage 4	-11.05	-425.26	121.95

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	299 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-11.25	-401.36	119.46
Stage 4	-11.45	-377.98	116.92
Stage 4	-11.65	-355.11	114.34
Stage 4	-11.85	-332.76	111.75
Stage 4	-12.05	-310.93	109.15
Stage 4	-12.25	-289.61	106.59
Stage 4	-12.45	-268.8	104.08
Stage 4	-12.65	-248.47	101.61
Stage 4	-12.85	-228.68	98.99
Stage 4	-13.05	-209.45	96.13
Stage 4	-13.25	-190.84	93.06
Stage 4	-13.45	-172.88	89.78
Stage 4	-13.65	-155.62	86.29
Stage 4	-13.85	-139.1	82.62
Stage 4	-14.05	-123.35	78.74
Stage 4	-14.25	-108.41	74.69
Stage 4	-14.45	-94.32	70.47
Stage 4	-14.65	-81.11	66.06
Stage 4	-14.85	-68.81	61.5
Stage 4	-15.05	-57.45	56.78
Stage 4	-15.25	-47.06	51.97
Stage 4	-15.45	-37.65	47.06
Stage 4	-15.65	-29.24	42.04
Stage 4	-15.85	-21.85	36.93
Stage 4	-16.05	-15.5	31.73
Stage 4	-16.25	-10.22	26.43
Stage 4	-16.45	-6.01	21.04
Stage 4	-16.65	-2.9	15.56
Stage 4	-16.85	-0.9	9.98
Stage 4	-17.05	-0.04	4.32
Stage 4	-17.1	0	0.72



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	300 di 325

### 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	0	-1131.44	369.42
Stage 5	-0.2	-1057.55	369.42
Stage 5	-0.4	-984.4	365.73
Stage 5	-0.6	-912.12	361.43
Stage 5	-0.8	-840.74	356.89
Stage 5	-1	-770.35	351.92
Stage 5	-1.2	-701.04	346.56
Stage 5	-1.4	-632.85	340.96
Stage 5	-1.6	-565.84	335.03
Stage 5	-1.8	-500.07	328.88
Stage 5	-2	-435.59	322.42
Stage 5	-2.2	-372.45	315.68
Stage 5	-2.4	-310.7	308.74
Stage 5	-2.6	-250.39	301.55
Stage 5	-2.8	-191.56	294.18
Stage 5	-3	-134.24	286.58
Stage 5	-3.2	-78.49	278.75
Stage 5	-3.4	-24.33	270.78
Stage 5	-3.6	28.18	262.59
Stage 5	-3.8	79.03	254.25
Stage 5	-4	128.17	245.7
Stage 5	-4.2	175.56	236.94
Stage 5	-4.4	221.17	228.03
Stage 5	-4.6	264.95	218.93
Stage 5	-4.8	306.89	209.67
Stage 5	-5	346.93	200.21
Stage 5	-5.2	385.03	190.51
Stage 5	-5.4	421.14	180.53
Stage 5	-5.6	455.19	170.25
Stage 5	-5.8	487.12	159.69
Stage 5	-6	516.89	148.81
Stage 5	-6.2	544.41	137.62
Stage 5	-6.4	569.64	126.12
Stage 5	-6.6	592.5	114.3
Stage 5	-6.8	612.93	102.18
Stage 5	-7	630.87	89.71
Stage 5	-7.2	646.25	76.89
Stage 5	-7.4	659	63.74
Stage 5	-7.6	669.04	50.23
Stage 5	-7.8	676.32	36.35
Stage 5	-8	680.74	22.12
Stage 5	-8.2	682.24	7.51
Stage 5	-8.4	680.75	-7.48
Stage 5	-8.6	676.17	-22.86
Stage 5	-8.65	674.54	-32.72
Stage 5	-8.65	673.83	-32.72
Stage 5	-8.85	668.63	-25.99
Stage 5	-9.05	660.19	-42.23
Stage 5	-9.25	648.41	-58.86
Stage 5	-9.45	633.23	-75.91
Stage 5	-9.65	614.56	-93.36
Stage 5	-9.85	592.8	-108.8
Stage 5	-10.05	568.65	-120.73
Stage 5	-10.25	542.82	-129.17
Stage 5	-10.45	516	-134.1
Stage 5	-10.65	488.9	-135.52
Stage 5	-10.85	462.21	-133.43
Stage 5	-11.05	436.17	-130.18

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	301 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	410.79	-126.9
Stage 5	-11.45	386.07	-123.62
Stage 5	-11.65	362	-120.33
Stage 5	-11.85	338.59	-117.09
Stage 5	-12.05	315.81	-113.89
Stage 5	-12.25	293.66	-110.76
Stage 5	-12.45	272.11	-107.73
Stage 5	-12.65	251.16	-104.78
Stage 5	-12.85	230.81	-101.72
Stage 5	-13.05	211.12	-98.47
Stage 5	-13.25	192.11	-95.04
Stage 5	-13.45	173.82	-91.44
Stage 5	-13.65	156.29	-87.67
Stage 5	-13.85	139.54	-83.75
Stage 5	-14.05	123.61	-79.66
Stage 5	-14.25	108.52	-75.44
Stage 5	-14.45	94.3	-71.08
Stage 5	-14.65	80.99	-66.58
Stage 5	-14.85	68.6	-61.95
Stage 5	-15.05	57.16	-57.18
Stage 5	-15.25	46.7	-52.3
Stage 5	-15.45	37.24	-47.29
Stage 5	-15.65	28.81	-42.16
Stage 5	-15.85	21.43	-36.91
Stage 5	-16.05	15.12	-31.54
Stage 5	-16.25	9.91	-26.06
Stage 5	-16.45	5.8	-20.58
Stage 5	-16.65	2.78	-15.09
Stage 5	-16.85	0.86	-9.6
Stage 5	-17.05	0.03	-4.12
Stage 5	-17.1	0	-0.69

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	302 di 325

**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	0	1177.36	-369.77
Stage 5	-0.2	1103.41	-369.77
Stage 5	-0.4	1030.03	-366.87
Stage 5	-0.6	957.33	-363.49
Stage 5	-0.8	885.41	-359.64
Stage 5	-1	814.34	-355.35
Stage 5	-1.2	744.21	-350.64
Stage 5	-1.4	675.1	-345.52
Stage 5	-1.6	607.1	-340.02
Stage 5	-1.8	540.27	-334.14
Stage 5	-2	474.69	-327.91
Stage 5	-2.2	410.42	-321.33
Stage 5	-2.4	347.54	-314.42
Stage 5	-2.6	286.09	-307.23
Stage 5	-2.8	226.14	-299.78
Stage 5	-3	167.72	-292.08
Stage 5	-3.2	110.89	-284.15
Stage 5	-3.4	55.7	-275.98
Stage 5	-3.6	2.18	-267.58
Stage 5	-3.8	-49.61	-258.97
Stage 5	-4	-99.64	-250.14
Stage 5	-4.2	-147.86	-241.1
Stage 5	-4.4	-194.23	-231.85
Stage 5	-4.6	-238.71	-222.39
Stage 5	-4.8	-281.26	-212.74
Stage 5	-5	-321.83	-202.88
Stage 5	-5.2	-360.38	-192.76
Stage 5	-5.4	-396.85	-182.33
Stage 5	-5.6	-431.17	-171.58
Stage 5	-5.8	-463.27	-160.52
Stage 5	-6	-493.1	-149.13
Stage 5	-6.2	-520.58	-137.43
Stage 5	-6.4	-545.66	-125.4
Stage 5	-6.6	-568.27	-113.04
Stage 5	-6.8	-588.34	-100.35
Stage 5	-7	-605.8	-87.31
Stage 5	-7.2	-620.59	-73.93
Stage 5	-7.4	-632.63	-60.21
Stage 5	-7.6	-641.85	-46.12
Stage 5	-7.8	-648.19	-31.68
Stage 5	-8	-651.56	-16.86
Stage 5	-8.2	-651.9	-1.67
Stage 5	-8.4	-649.12	13.9
Stage 5	-8.6	-643.14	29.86
Stage 5	-8.65	-641.14	40.08
Stage 5	-8.65	-640.72	40.08
Stage 5	-8.85	-633.97	33.73
Stage 5	-9.05	-623.85	50.59
Stage 5	-9.25	-610.28	67.86
Stage 5	-9.45	-593.17	85.55
Stage 5	-9.65	-572.44	103.68
Stage 5	-9.85	-549.4	115.19
Stage 5	-10.05	-524.74	123.28
Stage 5	-10.25	-499.15	127.96
Stage 5	-10.45	-473.3	129.23
Stage 5	-10.65	-447.89	127.08
Stage 5	-10.85	-423.05	124.18
Stage 5	-11.05	-398.81	121.19

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	303 di 325

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	-375.18	118.15
Stage 5	-11.45	-352.16	115.1
Stage 5	-11.65	-329.76	112.03
Stage 5	-11.85	-307.96	108.98
Stage 5	-12.05	-286.77	105.97
Stage 5	-12.25	-266.16	103.02
Stage 5	-12.45	-246.14	100.14
Stage 5	-12.65	-226.67	97.35
Stage 5	-12.85	-207.78	94.43
Stage 5	-13.05	-189.52	91.3
Stage 5	-13.25	-171.92	87.99
Stage 5	-13.45	-155.02	84.5
Stage 5	-13.65	-138.86	80.82
Stage 5	-13.85	-123.46	76.99
Stage 5	-14.05	-108.87	72.98
Stage 5	-14.25	-95.1	68.83
Stage 5	-14.45	-82.24	64.32
Stage 5	-14.65	-70.29	59.74
Stage 5	-14.85	-59.27	55.09
Stage 5	-15.05	-49.19	50.4
Stage 5	-15.25	-40.05	45.7
Stage 5	-15.45	-31.85	41
Stage 5	-15.65	-24.59	36.3
Stage 5	-15.85	-18.27	31.61
Stage 5	-16.05	-12.89	26.92
Stage 5	-16.25	-8.44	22.22
Stage 5	-16.45	-4.93	17.54
Stage 5	-16.65	-2.36	12.85
Stage 5	-16.85	-0.73	8.17
Stage 5	-17.05	-0.03	3.5
Stage 5	-17.05	-0.03	3.5
Stage 5	-17.1	0	0.58

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	304 di 325

### Risultati Elementi strutturali - NTC2018: A2+M2+R1

Design Assumption: NTC2018: A2+M2+R1		Tipo Risultato: Soletta		Slab		
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	538.0666	539.9334	818.1882	-831.256	-183.7399	51
Stage 3	530.1948	547.8052	1315.822	-1439.095	-420.5954	51
Stage 4	530.1934	547.8066	1315.869	-1439.162	-420.6304	51
Stage 5	390.1196	396.6805	1131.435	-1177.361	-369.97	30.2

Design Assumption: NTC2018: A2+M2+R1		Tipo Risultato: Soletta		Slab_New		
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	0	0	0	0	0	0
Stage 4	175	175	0.6118274	-0.6118624	-0.023849653	25
Stage 5	175.0201	174.9799	0.7049541	-0.4240292	-16.6419	25

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	305 di 325

## Risultati NTC2018: SISMICA STR

### 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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	306 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: LEFT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	307 di 325

**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	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.65	0	0
Stage 1	-8.85	0	0
Stage 1	-9.05	0	0
Stage 1	-9.25	0	0
Stage 1	-9.45	0	0
Stage 1	-9.65	0	0
Stage 1	-9.85	0	0
Stage 1	-10.05	0	0
Stage 1	-10.25	0	0
Stage 1	-10.45	0	0
Stage 1	-10.65	0	0
Stage 1	-10.85	0	0
Stage 1	-11.05	0	0
Stage 1	-11.25	0	0



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	308 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-11.45	0	0
Stage 1	-11.65	0	0
Stage 1	-11.85	0	0
Stage 1	-12.05	0	0
Stage 1	-12.25	0	0
Stage 1	-12.45	0	0
Stage 1	-12.65	0	0
Stage 1	-12.85	0	0
Stage 1	-13.05	0	0
Stage 1	-13.25	0	0
Stage 1	-13.45	0	0
Stage 1	-13.65	0	0
Stage 1	-13.85	0	0
Stage 1	-14.05	0	0
Stage 1	-14.25	0	0
Stage 1	-14.45	0	0
Stage 1	-14.65	0	0
Stage 1	-14.85	0	0
Stage 1	-15.05	0	0
Stage 1	-15.25	0	0
Stage 1	-15.45	0	0
Stage 1	-15.65	0	0
Stage 1	-15.85	0	0
Stage 1	-16.05	0	0
Stage 1	-16.25	0	0
Stage 1	-16.45	0	0
Stage 1	-16.65	0	0
Stage 1	-16.85	0	0
Stage 1	-17.05	0	0
Stage 1	-17.1	0	0

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	309 di 325

**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	0	-691.41	152.78
Stage 2	-0.2	-660.86	152.78
Stage 2	-0.4	-630.46	151.98
Stage 2	-0.6	-600.37	150.45
Stage 2	-0.8	-570.61	148.83
Stage 2	-1	-541.27	146.69
Stage 2	-1.2	-512.44	144.15
Stage 2	-1.4	-484.14	141.51
Stage 2	-1.6	-456.43	138.54
Stage 2	-1.8	-429.33	135.48
Stage 2	-2	-402.9	132.18
Stage 2	-2.2	-377.16	128.68
Stage 2	-2.4	-352.13	125.14
Stage 2	-2.6	-327.84	121.46
Stage 2	-2.8	-304.29	117.79
Stage 2	-3	-281.48	114.01
Stage 2	-3.2	-259.45	110.17
Stage 2	-3.4	-238.17	106.38
Stage 2	-3.6	-217.66	102.56
Stage 2	-3.8	-197.9	98.81
Stage 2	-4	-178.89	95.07
Stage 2	-4.2	-160.62	91.34
Stage 2	-4.4	-143.07	87.72
Stage 2	-4.6	-126.25	84.14
Stage 2	-4.8	-110.11	80.69
Stage 2	-5	-94.65	77.3
Stage 2	-5.2	-79.86	73.92
Stage 2	-5.4	-65.75	70.58
Stage 2	-5.6	-52.31	67.21
Stage 2	-5.8	-39.53	63.87
Stage 2	-6	-27.43	60.52
Stage 2	-6.2	-16	57.15
Stage 2	-6.4	-5.23	53.83
Stage 2	-6.6	4.87	50.5
Stage 2	-6.8	14.31	47.2
Stage 2	-7	23.09	43.9
Stage 2	-7.2	31.21	40.59
Stage 2	-7.4	38.67	37.32
Stage 2	-7.6	45.48	34.03
Stage 2	-7.8	51.62	30.73
Stage 2	-8	57.12	27.46
Stage 2	-8.2	61.95	24.17
Stage 2	-8.4	66.13	20.89
Stage 2	-8.6	69.65	17.6
Stage 2	-8.65	70.43	15.52
Stage 2	-8.85	73.12	13.45
Stage 2	-9.05	75.14	10.14
Stage 2	-9.25	76.5	6.79
Stage 2	-9.45	77.18	3.41
Stage 2	-9.65	77.19	0.02
Stage 2	-9.85	76.87	-1.57
Stage 2	-10.05	76.29	-2.94
Stage 2	-10.25	75.46	-4.15
Stage 2	-10.45	74.41	-5.23
Stage 2	-10.65	73.17	-6.18
Stage 2	-10.85	71.77	-7.03
Stage 2	-11.05	70.21	-7.81
Stage 2	-11.25	68.5	-8.54

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	310 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: LEFT	
		Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	66.65	-9.26
Stage 2	-11.65	64.65	-9.96
Stage 2	-11.85	62.52	-10.69
Stage 2	-12.05	60.22	-11.45
Stage 2	-12.25	57.77	-12.28
Stage 2	-12.45	55.13	-13.2
Stage 2	-12.65	52.28	-14.21
Stage 2	-12.85	49.27	-15.08
Stage 2	-13.05	46.12	-15.73
Stage 2	-13.25	42.89	-16.18
Stage 2	-13.45	39.59	-16.46
Stage 2	-13.65	36.28	-16.57
Stage 2	-13.85	32.98	-16.52
Stage 2	-14.05	29.71	-16.32
Stage 2	-14.25	26.52	-15.99
Stage 2	-14.45	23.41	-15.54
Stage 2	-14.65	20.41	-14.98
Stage 2	-14.85	17.55	-14.31
Stage 2	-15.05	14.84	-13.53
Stage 2	-15.25	12.31	-12.67
Stage 2	-15.45	9.97	-11.72
Stage 2	-15.65	7.83	-10.67
Stage 2	-15.85	5.92	-9.56
Stage 2	-16.05	4.25	-8.37
Stage 2	-16.25	2.83	-7.09
Stage 2	-16.45	1.68	-5.74
Stage 2	-16.65	0.82	-4.31
Stage 2	-16.85	0.26	-2.81
Stage 2	-17.05	0.01	-1.24
Stage 2	-17.1	0	-0.21

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	311 di 325

**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	0	700.85	-153.17
Stage 2	-0.2	670.21	-153.17
Stage 2	-0.4	639.8	-152.08
Stage 2	-0.6	609.68	-150.58
Stage 2	-0.8	579.94	-148.7
Stage 2	-1	550.64	-146.48
Stage 2	-1.2	521.85	-143.98
Stage 2	-1.4	493.61	-141.21
Stage 2	-1.6	465.97	-138.21
Stage 2	-1.8	438.96	-135.02
Stage 2	-2	412.63	-131.66
Stage 2	-2.2	387	-128.18
Stage 2	-2.4	362.08	-124.58
Stage 2	-2.6	337.9	-120.9
Stage 2	-2.8	314.47	-117.16
Stage 2	-3	291.79	-113.39
Stage 2	-3.2	269.87	-109.6
Stage 2	-3.4	248.71	-105.81
Stage 2	-3.6	228.3	-102.05
Stage 2	-3.8	208.63	-98.32
Stage 2	-4	189.7	-94.65
Stage 2	-4.2	171.49	-91.04
Stage 2	-4.4	153.99	-87.51
Stage 2	-4.6	137.18	-84.07
Stage 2	-4.8	121.04	-80.72
Stage 2	-5	105.54	-77.49
Stage 2	-5.2	90.67	-74.32
Stage 2	-5.4	76.44	-71.16
Stage 2	-5.6	62.84	-68.03
Stage 2	-5.8	49.85	-64.91
Stage 2	-6	37.49	-61.83
Stage 2	-6.2	25.73	-58.77
Stage 2	-6.4	14.58	-55.75
Stage 2	-6.6	4.03	-52.77
Stage 2	-6.8	-5.93	-49.82
Stage 2	-7	-15.32	-46.91
Stage 2	-7.2	-24.12	-44.04
Stage 2	-7.4	-32.36	-41.2
Stage 2	-7.6	-40.04	-38.39
Stage 2	-7.8	-47.17	-35.62
Stage 2	-8	-53.74	-32.88
Stage 2	-8.2	-59.77	-30.16
Stage 2	-8.4	-65.27	-27.47
Stage 2	-8.6	-70.23	-24.8
Stage 2	-8.65	-71.38	-23.13
Stage 2	-8.85	-75.68	-21.47
Stage 2	-9.05	-79.44	-18.82
Stage 2	-9.25	-82.68	-16.18
Stage 2	-9.45	-85.39	-13.53
Stage 2	-9.65	-87.56	-10.88
Stage 2	-9.85	-89.07	-7.53
Stage 2	-10.05	-89.97	-4.51
Stage 2	-10.25	-90.33	-1.8
Stage 2	-10.45	-90.2	0.64
Stage 2	-10.65	-89.63	2.84
Stage 2	-10.85	-88.67	4.83
Stage 2	-11.05	-87.34	6.64
Stage 2	-11.25	-85.68	8.28

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	312 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-11.45	-83.72	9.81
Stage 2	-11.65	-81.47	11.23
Stage 2	-11.85	-78.96	12.59
Stage 2	-12.05	-76.18	13.9
Stage 2	-12.25	-73.14	15.2
Stage 2	-12.45	-69.84	16.5
Stage 2	-12.65	-66.27	17.84
Stage 2	-12.85	-62.47	18.97
Stage 2	-13.05	-58.51	19.82
Stage 2	-13.25	-54.43	20.42
Stage 2	-13.45	-50.27	20.79
Stage 2	-13.65	-46.08	20.94
Stage 2	-13.85	-41.9	20.9
Stage 2	-14.05	-37.77	20.67
Stage 2	-14.25	-33.71	20.27
Stage 2	-14.45	-29.77	19.71
Stage 2	-14.65	-25.97	19.01
Stage 2	-14.85	-22.33	18.17
Stage 2	-15.05	-18.9	17.2
Stage 2	-15.25	-15.67	16.11
Stage 2	-15.45	-12.69	14.9
Stage 2	-15.65	-9.98	13.59
Stage 2	-15.85	-7.54	12.17
Stage 2	-16.05	-5.41	10.65
Stage 2	-16.25	-3.61	9.03
Stage 2	-16.45	-2.14	7.31
Stage 2	-16.65	-1.05	5.49
Stage 2	-16.85	-0.33	3.58
Stage 2	-17.05	-0.01	1.58
Stage 2	-17.1	0	0.27

**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	0	-1161.57	386.23
Stage 3	-0.2	-1084.33	386.23
Stage 3	-0.4	-1007.91	382.08
Stage 3	-0.6	-932.48	377.14
Stage 3	-0.8	-858.06	372.12
Stage 3	-1	-784.74	366.57
Stage 3	-1.2	-712.63	360.58
Stage 3	-1.4	-641.74	354.43
Stage 3	-1.6	-572.16	347.89
Stage 3	-1.8	-503.93	341.18
Stage 3	-2	-437.1	334.12
Stage 3	-2.2	-371.75	326.75
Stage 3	-2.4	-307.91	319.21
Stage 3	-2.6	-245.64	311.38
Stage 3	-2.8	-184.95	303.4
Stage 3	-3	-125.92	295.15
Stage 3	-3.2	-68.6	286.64
Stage 3	-3.4	-13	277.99
Stage 3	-3.6	40.82	269.1
Stage 3	-3.8	92.83	260.06
Stage 3	-4	142.99	250.79
Stage 3	-4.2	191.25	241.29
Stage 3	-4.4	237.58	231.65
Stage 3	-4.6	281.93	221.78
Stage 3	-4.8	324.29	211.77
Stage 3	-5	364.59	201.53
Stage 3	-5.2	402.8	191.01
Stage 3	-5.4	438.84	180.22
Stage 3	-5.6	472.66	169.1
Stage 3	-5.8	504.2	157.69
Stage 3	-6	533.39	145.94
Stage 3	-6.2	560.16	133.85
Stage 3	-6.4	584.45	121.45
Stage 3	-6.6	606.18	108.69
Stage 3	-6.8	625.31	95.62
Stage 3	-7	641.74	82.18
Stage 3	-7.2	655.42	68.36
Stage 3	-7.4	666.26	54.2
Stage 3	-7.6	674.19	39.65
Stage 3	-7.8	679.13	24.7
Stage 3	-8	681.01	9.39
Stage 3	-8.2	679.74	-6.33
Stage 3	-8.4	675.25	-22.44
Stage 3	-8.6	667.45	-38.98
Stage 3	-8.65	664.97	-49.57
Stage 3	-8.85	652.93	-60.23
Stage 3	-9.05	637.4	-77.66
Stage 3	-9.25	618.29	-95.53
Stage 3	-9.45	595.52	-113.84
Stage 3	-9.65	569.01	-132.56
Stage 3	-9.85	540.69	-141.63
Stage 3	-10.05	511.63	-145.26
Stage 3	-10.25	482.93	-143.5
Stage 3	-10.45	455.07	-139.3
Stage 3	-10.65	428.07	-135.02
Stage 3	-10.85	401.93	-130.7
Stage 3	-11.05	376.66	-126.36
Stage 3	-11.25	352.25	-122.04

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	314 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: LEFT Momento (kN*m/m)	Taglio (kN/m)
Stage 3	-11.45	328.7	-117.77
Stage 3	-11.65	305.99	-113.55
Stage 3	-11.85	284.1	-109.42
Stage 3	-12.05	263.03	-105.37
Stage 3	-12.25	242.74	-101.43
Stage 3	-12.45	223.22	-97.62
Stage 3	-12.65	204.43	-93.93
Stage 3	-12.85	186.4	-90.16
Stage 3	-13.05	169.15	-86.27
Stage 3	-13.25	152.69	-82.32
Stage 3	-13.45	137.02	-78.31
Stage 3	-13.65	122.17	-74.25
Stage 3	-13.85	108.15	-70.14
Stage 3	-14.05	94.95	-65.98
Stage 3	-14.25	82.59	-61.79
Stage 3	-14.45	71.08	-57.57
Stage 3	-14.65	60.42	-53.31
Stage 3	-14.85	50.61	-49.03
Stage 3	-15.05	41.67	-44.72
Stage 3	-15.25	33.59	-40.4
Stage 3	-15.45	26.38	-36.06
Stage 3	-15.65	20.04	-31.69
Stage 3	-15.85	14.57	-27.32
Stage 3	-16.05	9.99	-22.93
Stage 3	-16.25	6.28	-18.52
Stage 3	-16.45	3.46	-14.1
Stage 3	-16.65	1.53	-9.66
Stage 3	-16.85	0.43	-5.51
Stage 3	-17.05	0.02	-2.06
Stage 3	-17.1	0	-0.33

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	315 di 325

**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	0	1254.97	-386.34
Stage 3	-0.2	1177.7	-386.34
Stage 3	-0.4	1101.11	-382.95
Stage 3	-0.6	1025.29	-379.09
Stage 3	-0.8	950.34	-374.76
Stage 3	-1	876.34	-369.99
Stage 3	-1.2	803.38	-364.8
Stage 3	-1.4	731.54	-359.2
Stage 3	-1.6	660.9	-353.22
Stage 3	-1.8	591.52	-346.88
Stage 3	-2	523.48	-340.22
Stage 3	-2.2	456.82	-333.27
Stage 3	-2.4	391.61	-326.05
Stage 3	-2.6	327.9	-318.56
Stage 3	-2.8	265.74	-310.82
Stage 3	-3	205.17	-302.83
Stage 3	-3.2	146.25	-294.61
Stage 3	-3.4	89.02	-286.16
Stage 3	-3.6	33.52	-277.49
Stage 3	-3.8	-20.2	-268.6
Stage 3	-4	-72.1	-259.5
Stage 3	-4.2	-122.14	-250.2
Stage 3	-4.4	-170.28	-240.7
Stage 3	-4.6	-216.48	-230.99
Stage 3	-4.8	-260.7	-221.09
Stage 3	-5	-302.9	-210.99
Stage 3	-5.2	-343.02	-200.63
Stage 3	-5.4	-381.01	-189.97
Stage 3	-5.6	-416.81	-178.99
Stage 3	-5.8	-450.35	-167.7
Stage 3	-6	-481.57	-156.09
Stage 3	-6.2	-510.41	-144.17
Stage 3	-6.4	-536.79	-131.92
Stage 3	-6.6	-560.66	-119.34
Stage 3	-6.8	-581.95	-106.44
Stage 3	-7	-600.58	-93.19
Stage 3	-7.2	-616.5	-79.6
Stage 3	-7.4	-629.64	-65.66
Stage 3	-7.6	-639.91	-51.36
Stage 3	-7.8	-647.25	-36.71
Stage 3	-8	-651.58	-21.68
Stage 3	-8.2	-652.84	-6.27
Stage 3	-8.4	-650.94	9.52
Stage 3	-8.6	-645.8	25.7
Stage 3	-8.65	-643.99	36.06
Stage 3	-8.85	-634.69	46.49
Stage 3	-9.05	-621.98	63.58
Stage 3	-9.25	-605.76	81.09
Stage 3	-9.45	-585.96	99.02
Stage 3	-9.65	-562.48	117.38
Stage 3	-9.85	-537.42	125.3
Stage 3	-10.05	-511.86	127.81
Stage 3	-10.25	-486.66	126.01
Stage 3	-10.45	-461.88	123.9
Stage 3	-10.65	-437.57	121.53
Stage 3	-10.85	-413.77	118.99
Stage 3	-11.05	-390.51	116.31
Stage 3	-11.25	-367.8	113.55



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	316 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: RIGHT	Momento (kN*m/m) Taglio (kN/m)
Stage 3	-11.45	-345.65	110.74
Stage 3	-11.65	-324.07	107.89
Stage 3	-11.85	-303.06	105.05
Stage 3	-12.05	-282.62	102.23
Stage 3	-12.25	-262.73	99.46
Stage 3	-12.45	-243.37	96.76
Stage 3	-12.65	-224.55	94.14
Stage 3	-12.85	-206.26	91.41
Stage 3	-13.05	-188.57	88.49
Stage 3	-13.25	-171.49	85.4
Stage 3	-13.45	-155.05	82.16
Stage 3	-13.65	-139.3	78.76
Stage 3	-13.85	-124.26	75.22
Stage 3	-14.05	-109.95	71.53
Stage 3	-14.25	-96.41	67.71
Stage 3	-14.45	-83.66	63.76
Stage 3	-14.65	-71.72	59.69
Stage 3	-14.85	-60.62	55.49
Stage 3	-15.05	-50.39	51.18
Stage 3	-15.25	-41.04	46.75
Stage 3	-15.45	-32.59	42.22
Stage 3	-15.65	-25.08	37.57
Stage 3	-15.85	-18.52	32.82
Stage 3	-16.05	-12.92	27.96
Stage 3	-16.25	-8.32	22.99
Stage 3	-16.45	-4.74	17.92
Stage 3	-16.65	-2.19	12.74
Stage 3	-16.85	-0.65	7.71
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.05	-0.03	3.11
Stage 3	-17.1	0	0.51

**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	0	-1161.63	386.26
Stage 4	-0.2	-1084.38	386.26
Stage 4	-0.4	-1007.96	382.12
Stage 4	-0.6	-932.52	377.18
Stage 4	-0.8	-858.09	372.16
Stage 4	-1	-784.76	366.61
Stage 4	-1.2	-712.64	360.62
Stage 4	-1.4	-641.75	354.47
Stage 4	-1.6	-572.16	347.93
Stage 4	-1.8	-503.92	341.22
Stage 4	-2	-437.09	334.16
Stage 4	-2.2	-371.73	326.79
Stage 4	-2.4	-307.88	319.25
Stage 4	-2.6	-245.59	311.42
Stage 4	-2.8	-184.91	303.44
Stage 4	-3	-125.87	295.19
Stage 4	-3.2	-68.53	286.68
Stage 4	-3.4	-12.93	278.03
Stage 4	-3.6	40.9	269.14
Stage 4	-3.8	92.92	260.1
Stage 4	-4	143.09	250.83
Stage 4	-4.2	191.35	241.33
Stage 4	-4.4	237.69	231.69
Stage 4	-4.6	282.05	221.82
Stage 4	-4.8	324.42	211.81
Stage 4	-5	364.73	201.57
Stage 4	-5.2	402.94	191.05
Stage 4	-5.4	438.99	180.27
Stage 4	-5.6	472.82	169.14
Stage 4	-5.8	504.37	157.74
Stage 4	-6	533.57	145.99
Stage 4	-6.2	560.34	133.89
Stage 4	-6.4	584.64	121.49
Stage 4	-6.6	606.39	108.73
Stage 4	-6.8	625.52	95.66
Stage 4	-7	641.96	82.22
Stage 4	-7.2	655.65	68.4
Stage 4	-7.4	666.49	54.24
Stage 4	-7.6	674.43	39.7
Stage 4	-7.8	679.38	24.75
Stage 4	-8	681.27	9.44
Stage 4	-8.2	680.01	-6.29
Stage 4	-8.4	675.53	-22.4
Stage 4	-8.6	667.75	-38.94
Stage 4	-8.65	665.27	-49.53
Stage 4	-8.65	664.66	-49.53
Stage 4	-8.85	652.63	-60.16
Stage 4	-9.05	637.11	-77.59
Stage 4	-9.25	618.02	-95.46
Stage 4	-9.45	595.26	-113.77
Stage 4	-9.65	568.76	-132.5
Stage 4	-9.85	540.45	-141.56
Stage 4	-10.05	511.41	-145.2
Stage 4	-10.25	482.73	-143.43
Stage 4	-10.45	454.88	-139.24
Stage 4	-10.65	427.89	-134.96
Stage 4	-10.85	401.76	-130.64
Stage 4	-11.05	376.5	-126.3

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	318 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: LEFT Momento (kN*m/m)	Taglio (kN/m)
Stage 4	-11.25	352.1	-121.98
Stage 4	-11.45	328.56	-117.72
Stage 4	-11.65	305.86	-113.5
Stage 4	-11.85	283.98	-109.37
Stage 4	-12.05	262.92	-105.32
Stage 4	-12.25	242.64	-101.38
Stage 4	-12.45	223.13	-97.58
Stage 4	-12.65	204.35	-93.89
Stage 4	-12.85	186.33	-90.12
Stage 4	-13.05	169.08	-86.23
Stage 4	-13.25	152.63	-82.28
Stage 4	-13.45	136.97	-78.28
Stage 4	-13.65	122.13	-74.22
Stage 4	-13.85	108.11	-70.11
Stage 4	-14.05	94.92	-65.95
Stage 4	-14.25	82.56	-61.76
Stage 4	-14.45	71.05	-57.55
Stage 4	-14.65	60.4	-53.29
Stage 4	-14.85	50.59	-49.02
Stage 4	-15.05	41.65	-44.71
Stage 4	-15.25	33.57	-40.38
Stage 4	-15.45	26.37	-36.04
Stage 4	-15.65	20.03	-31.68
Stage 4	-15.85	14.57	-27.31
Stage 4	-16.05	9.98	-22.92
Stage 4	-16.25	6.28	-18.51
Stage 4	-16.45	3.46	-14.1
Stage 4	-16.65	1.53	-9.66
Stage 4	-16.85	0.43	-5.51
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.05	0.02	-2.06
Stage 4	-17.1	0	-0.33

**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	0	1255.02	-386.38
Stage 4	-0.2	1177.75	-386.38
Stage 4	-0.4	1101.15	-382.99
Stage 4	-0.6	1025.33	-379.12
Stage 4	-0.8	950.37	-374.79
Stage 4	-1	876.36	-370.02
Stage 4	-1.2	803.4	-364.83
Stage 4	-1.4	731.55	-359.24
Stage 4	-1.6	660.89	-353.26
Stage 4	-1.8	591.51	-346.92
Stage 4	-2	523.46	-340.26
Stage 4	-2.2	456.8	-333.31
Stage 4	-2.4	391.58	-326.09
Stage 4	-2.6	327.86	-318.6
Stage 4	-2.8	265.69	-310.86
Stage 4	-3	205.11	-302.87
Stage 4	-3.2	146.18	-294.65
Stage 4	-3.4	88.95	-286.2
Stage 4	-3.6	33.44	-277.53
Stage 4	-3.8	-20.29	-268.64
Stage 4	-4	-72.2	-259.54
Stage 4	-4.2	-122.24	-250.24
Stage 4	-4.4	-170.39	-240.74
Stage 4	-4.6	-216.6	-231.03
Stage 4	-4.8	-260.83	-221.13
Stage 4	-5	-303.03	-211.03
Stage 4	-5.2	-343.17	-200.67
Stage 4	-5.4	-381.17	-190.01
Stage 4	-5.6	-416.97	-179.03
Stage 4	-5.8	-450.52	-167.74
Stage 4	-6	-481.75	-156.14
Stage 4	-6.2	-510.59	-144.21
Stage 4	-6.4	-536.98	-131.96
Stage 4	-6.6	-560.86	-119.39
Stage 4	-6.8	-582.16	-106.48
Stage 4	-7	-600.8	-93.23
Stage 4	-7.2	-616.73	-79.64
Stage 4	-7.4	-629.87	-65.7
Stage 4	-7.6	-640.16	-51.41
Stage 4	-7.8	-647.51	-36.75
Stage 4	-8	-651.85	-21.72
Stage 4	-8.2	-653.11	-6.32
Stage 4	-8.4	-651.22	9.47
Stage 4	-8.6	-646.09	25.65
Stage 4	-8.65	-644.29	36.02
Stage 4	-8.65	-643.68	36.02
Stage 4	-8.85	-634.39	46.42
Stage 4	-9.05	-621.69	63.51
Stage 4	-9.25	-605.49	81.02
Stage 4	-9.45	-585.7	98.95
Stage 4	-9.65	-562.23	117.31
Stage 4	-9.85	-537.19	125.24
Stage 4	-10.05	-511.64	127.74
Stage 4	-10.25	-486.45	125.95
Stage 4	-10.45	-461.68	123.83
Stage 4	-10.65	-437.39	121.47
Stage 4	-10.85	-413.6	118.93
Stage 4	-11.05	-390.35	116.26

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	320 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: RIGHT	Momento (kN*m/m) Taglio (kN/m)
Stage 4	-11.25	-367.65	113.5
Stage 4	-11.45	-345.51	110.68
Stage 4	-11.65	-323.95	107.84
Stage 4	-11.85	-302.95	105
Stage 4	-12.05	-282.51	102.18
Stage 4	-12.25	-262.63	99.41
Stage 4	-12.45	-243.28	96.72
Stage 4	-12.65	-224.46	94.1
Stage 4	-12.85	-206.19	91.37
Stage 4	-13.05	-188.5	88.45
Stage 4	-13.25	-171.43	85.37
Stage 4	-13.45	-155	82.13
Stage 4	-13.65	-139.26	78.73
Stage 4	-13.85	-124.22	75.19
Stage 4	-14.05	-109.92	71.5
Stage 4	-14.25	-96.38	67.68
Stage 4	-14.45	-83.63	63.74
Stage 4	-14.65	-71.7	59.67
Stage 4	-14.85	-60.6	55.48
Stage 4	-15.05	-50.37	51.16
Stage 4	-15.25	-41.02	46.74
Stage 4	-15.45	-32.58	42.21
Stage 4	-15.65	-25.07	37.56
Stage 4	-15.85	-18.51	32.81
Stage 4	-16.05	-12.92	27.95
Stage 4	-16.25	-8.32	22.99
Stage 4	-16.45	-4.74	17.92
Stage 4	-16.65	-2.19	12.74
Stage 4	-16.85	-0.65	7.71
Stage 4	-17.05	-0.03	3.11
Stage 4	-17.1	0	0.51

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	321 di 325

**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	0	-1176.37	564.03
Stage 5	-0.2	-1063.57	564.03
Stage 5	-0.4	-953.63	549.71
Stage 5	-0.6	-846.66	534.84
Stage 5	-0.8	-742.7	519.77
Stage 5	-1	-641.84	504.3
Stage 5	-1.2	-544.14	488.5
Stage 5	-1.4	-449.65	472.48
Stage 5	-1.6	-358.42	456.15
Stage 5	-1.8	-270.49	439.62
Stage 5	-2	-185.93	422.83
Stage 5	-2.2	-104.77	405.78
Stage 5	-2.4	-27.06	388.54
Stage 5	-2.6	47.15	371.08
Stage 5	-2.8	117.84	353.44
Stage 5	-3	184.96	335.59
Stage 5	-3.2	248.46	317.53
Stage 5	-3.4	308.33	299.31
Stage 5	-3.6	364.51	280.89
Stage 5	-3.8	416.97	262.31
Stage 5	-4	465.67	243.52
Stage 5	-4.2	510.58	224.53
Stage 5	-4.4	551.65	205.36
Stage 5	-4.6	588.85	185.99
Stage 5	-4.8	622.13	166.44
Stage 5	-5	651.47	146.68
Stage 5	-5.2	676.8	126.65
Stage 5	-5.4	698.07	106.32
Stage 5	-5.6	715.2	85.66
Stage 5	-5.8	728.13	64.67
Stage 5	-6	736.8	43.34
Stage 5	-6.2	741.13	21.66
Stage 5	-6.4	741.06	-0.36
Stage 5	-6.6	736.51	-22.75
Stage 5	-6.8	727.41	-45.5
Stage 5	-7	713.68	-68.63
Stage 5	-7.2	695.25	-92.16
Stage 5	-7.4	672.04	-116.06
Stage 5	-7.6	643.96	-140.37
Stage 5	-7.8	610.94	-165.1
Stage 5	-8	572.9	-190.24
Stage 5	-8.2	529.74	-215.8
Stage 5	-8.4	481.38	-241.79
Stage 5	-8.6	427.73	-268.22
Stage 5	-8.65	413.48	-285.01
Stage 5	-8.65	413.06	-285.01
Stage 5	-8.85	421.45	41.98
Stage 5	-9.05	424.38	14.61
Stage 5	-9.25	421.73	-13.21
Stage 5	-9.45	413.44	-41.48
Stage 5	-9.65	400.22	-66.07
Stage 5	-9.85	384.62	-78.03
Stage 5	-10.05	367.32	-86.46
Stage 5	-10.25	349.05	-91.35
Stage 5	-10.45	330.52	-92.7
Stage 5	-10.65	312.42	-90.48
Stage 5	-10.85	294.83	-87.95
Stage 5	-11.05	277.74	-85.43

**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	322 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia			
Stage	Z (m)	Muro: LEFT	
		Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	261.15	-82.95
Stage 5	-11.45	245.05	-80.52
Stage 5	-11.65	229.42	-78.15
Stage 5	-11.85	214.25	-75.84
Stage 5	-12.05	199.53	-73.61
Stage 5	-12.25	185.23	-71.48
Stage 5	-12.45	171.34	-69.44
Stage 5	-12.65	157.84	-67.5
Stage 5	-12.85	144.76	-65.44
Stage 5	-13.05	132.11	-63.23
Stage 5	-13.25	119.93	-60.92
Stage 5	-13.45	108.22	-58.51
Stage 5	-13.65	97.03	-55.99
Stage 5	-13.85	86.35	-53.38
Stage 5	-14.05	76.21	-50.68
Stage 5	-14.25	66.64	-47.88
Stage 5	-14.45	57.64	-45.01
Stage 5	-14.65	49.23	-42.04
Stage 5	-14.85	41.43	-38.99
Stage 5	-15.05	34.26	-35.86
Stage 5	-15.25	27.73	-32.65
Stage 5	-15.45	21.85	-29.37
Stage 5	-15.65	16.65	-26.01
Stage 5	-15.85	12.14	-22.57
Stage 5	-16.05	8.33	-19.06
Stage 5	-16.25	5.23	-15.47
Stage 5	-16.45	2.87	-11.81
Stage 5	-16.65	1.26	-8.07
Stage 5	-16.85	0.35	-4.55
Stage 5	-17.05	0.01	-1.67
Stage 5	-17.1	0	-0.26

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	323 di 325

**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	0	1213.48	-564.16
Stage 5	-0.2	1100.65	-564.16
Stage 5	-0.4	990.56	-550.46
Stage 5	-0.6	883.29	-536.32
Stage 5	-0.8	778.94	-521.76
Stage 5	-1	677.58	-506.81
Stage 5	-1.2	579.28	-491.47
Stage 5	-1.4	484.13	-475.78
Stage 5	-1.6	392.18	-459.73
Stage 5	-1.8	303.51	-443.35
Stage 5	-2	218.18	-426.69
Stage 5	-2.2	136.22	-409.77
Stage 5	-2.4	57.7	-392.61
Stage 5	-2.6	-17.34	-375.19
Stage 5	-2.8	-88.85	-357.55
Stage 5	-3	-156.78	-339.68
Stage 5	-3.2	-221.1	-321.58
Stage 5	-3.4	-281.76	-303.27
Stage 5	-3.6	-338.71	-284.75
Stage 5	-3.8	-391.91	-266.01
Stage 5	-4	-441.32	-247.06
Stage 5	-4.2	-486.9	-227.91
Stage 5	-4.4	-528.61	-208.54
Stage 5	-4.6	-566.4	-188.96
Stage 5	-4.8	-600.24	-169.17
Stage 5	-5	-630.07	-149.16
Stage 5	-5.2	-655.85	-128.88
Stage 5	-5.4	-677.5	-108.26
Stage 5	-5.6	-694.96	-87.31
Stage 5	-5.8	-708.16	-66.01
Stage 5	-6	-717.03	-44.36
Stage 5	-6.2	-721.51	-22.36
Stage 5	-6.4	-721.51	0
Stage 5	-6.6	-716.96	22.73
Stage 5	-6.8	-707.8	45.83
Stage 5	-7	-693.93	69.31
Stage 5	-7.2	-675.3	93.18
Stage 5	-7.4	-651.81	117.44
Stage 5	-7.6	-623.39	142.11
Stage 5	-7.8	-589.95	167.18
Stage 5	-8	-551.42	192.66
Stage 5	-8.2	-507.71	218.57
Stage 5	-8.4	-458.72	244.91
Stage 5	-8.6	-404.39	271.68
Stage 5	-8.65	-389.95	288.7
Stage 5	-8.65	-389.72	288.7
Stage 5	-8.85	-397.34	-38.07
Stage 5	-9.05	-399.4	-10.3
Stage 5	-9.25	-395.81	17.92
Stage 5	-9.45	-386.49	46.6
Stage 5	-9.65	-372.17	71.63
Stage 5	-9.85	-355.98	80.91
Stage 5	-10.05	-338.67	86.59
Stage 5	-10.25	-320.93	88.68
Stage 5	-10.45	-303.5	87.18
Stage 5	-10.65	-286.56	84.66
Stage 5	-10.85	-270.16	82.04
Stage 5	-11.05	-254.29	79.33



**PROGETTO DEFINITIVO**

**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	324 di 325

Design Assumption: NTC2018: SISMICA STR Risultati Paratia		Muro: RIGHT	
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 5	-11.25	-238.96	76.64
Stage 5	-11.45	-224.15	74.03
Stage 5	-11.65	-209.85	71.53
Stage 5	-11.85	-196.02	69.14
Stage 5	-12.05	-182.64	66.89
Stage 5	-12.25	-169.69	64.79
Stage 5	-12.45	-157.12	62.85
Stage 5	-12.65	-144.9	61.08
Stage 5	-12.85	-133.05	59.27
Stage 5	-13.05	-121.58	57.36
Stage 5	-13.25	-110.51	55.34
Stage 5	-13.45	-99.86	53.23
Stage 5	-13.65	-89.66	51.02
Stage 5	-13.85	-79.91	48.72
Stage 5	-14.05	-70.65	46.33
Stage 5	-14.25	-61.88	43.85
Stage 5	-14.45	-53.62	41.29
Stage 5	-14.65	-45.89	38.64
Stage 5	-14.85	-38.71	35.91
Stage 5	-15.05	-32.09	33.09
Stage 5	-15.25	-26.05	30.2
Stage 5	-15.45	-20.6	27.23
Stage 5	-15.65	-15.77	24.18
Stage 5	-15.85	-11.56	21.05
Stage 5	-16.05	-7.99	17.86
Stage 5	-16.25	-5.07	14.58
Stage 5	-16.45	-2.83	11.22
Stage 5	-16.65	-1.27	7.79
Stage 5	-16.85	-0.36	4.54
Stage 5	-17.05	-0.01	1.74
Stage 5	-17.05	-0.01	1.74
Stage 5	-17.1	0	0.28

**PROGETTO DEFINITIVO**
**GA07 - RELAZIONE DESCRITTIVA E DI CALCOLO  
 METODO MILANO**

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV	FOGLIO
IP00	00	D26CL	GA0700001	B	325 di 325

**Risultati Elementi strutturali - NTC2018: SISMICA STR**

Design Assumption: NTC2018: SISMICA STR		Tipo Risultato: Soletta	Slab			
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	454.3263	455.6737	691.4135	-700.8451	-153.3073	45
Stage 3	448.329	461.671	1161.574	-1254.967	-386.7803	45
Stage 4	448.329	461.671	1161.631	-1255.024	-386.8177	45
Stage 5	340.3495	345.6505	1176.373	-1213.48	-569.7808	29

Design Assumption: NTC2018: SISMICA STR		Tipo Risultato: Soletta	Slab_New			
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	0	0	0	0	0	0
Stage 4	175	175	0.611846	-0.611846	-0.024687493	25
Stage 5	175.0139	174.9861	0.4235848	-0.2292692	-343.8513	25