

S.S. 398 "Via Val di Cornia"
Bretella di collegamento tra l'Autostrada Tirrenica A12
e il Porto di Piombino
LOTTO 1 - Svincolo di Geodetica-Gagno

PROGETTO ESECUTIVO

COD. **FI2**

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RELAZIONE GEOTECNICA E DI CALCOLO**

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1. PREMESSA

Nella presente relazione vengono presentati i calcoli di verifica delle vasche di prima pioggia in c.a., da realizzarsi nell'ambito dell'intervento denominato "SS. 398 Via Val di Cornia - Bretella di collegamento tra l'Autostrada Tirrenica A12 e il Porto di Piombino - LOTTO 1 - Svincolo di Geodetica-Gagno".

Lungo il tratto in progetto sono previste n. 8 vasche di prima pioggia. Le vasche possono essere raggruppate in due tipologie in base alla geometria:

- TIPO 1- VPP2, VPP3, VPP6, VPP7, di dimensioni 4.60x8.80 m ed altezza 3.70 m;
- TIPO 2- VPP1, VPP4, VPP5, VPP8, di dimensioni 5.60x11.30m ed altezza 3.70 m.

Pertanto, ai fini dei calcoli si analizzano le due tipologie descritte, rappresentative di tutti i casi in progetto.

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

2. NORMATIVA DI RIFERIMENTO

L. 05.11.1971, n. 1086. Norme per la disciplina delle opere in conglomerato cementizio armato, normale e precompresso ed a struttura metallica

D.M. del 09.01.1996. Norme Tecniche per il calcolo, l'esecuzione ed il collaudo delle strutture in cemento armato, normale e precompresso e per le strutture metalliche.

D.M. del 16.01.1996. Norme Tecniche relative ai "Criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi".

D.M. del 16.01.1996. Norme Tecniche per le costruzioni in zone sismiche.

Circolare Ministeriale del 04.07.1996 n. 156AA.GG./STC. Istruzioni per l'applicazione delle "Norme tecniche relative ai criteri generali per la verifica di sicurezza delle costruzioni e dei carichi e sovraccarichi" di cui al Decreto Ministeriale 16.01.1996.

L. 02.02.1974, n. 64. Provvedimenti per costruzioni con particolari prescrizioni per zone sismiche.

D.M. LL. PP. 11.03.1988. Norme Tecniche riguardanti le indagini sui terreni e sulle rocce, la stabilità dei pendii naturali e delle scarpate, i criteri generali e le prescrizioni per la progettazione, l'esecuzione ed il collaudo delle opere di sostegno delle terre e delle opere di fondazione.

Circolare Ministeriale del 24.07.1988, n. 30483/STC.

Legge 2 Febbraio 1974 n. 64, art. 1 - D.M. 11 Marzo 1988. Norme Tecniche riguardanti le indagini sui terreni e sulle rocce, la stabilità dei pendii naturali e delle scarpate, i criteri generali e le prescrizioni per la progettazione, l'esecuzione ed il collaudo delle opere di sostegno delle terre e delle opere di fondazione.

Circolare Ministeriale del 15.10.1996 N°252. Istruzioni per l'applicazione delle "Norme Tecniche per il calcolo, l'esecuzione ed il collaudo delle opere in cemento armato normale e precompresso e per le strutture metalliche" di cui al D.M.09.01.1996

Circolare Ministeriale del 10.04.1997 N°65/AA.GG. Istruzioni per l'applicazione delle "Norme Tecniche per le costruzioni in zone sismiche" di cui al D.M.16.01.1996

Ordinanza del Presidente del Consiglio dei Ministri N°3274 del 20.03.2003. Primi elementi in materia di criteri generali per la classificazione sismica del territorio nazionale e di normative tecniche per le costruzioni in zona sismica.

Ordinanza del Presidente del Consiglio dei Ministri N°3431 del 10.05.2005. Ulteriori modifiche ed integrazioni all'ordinanza N°3274.

Norme Tecniche per le Costruzioni - D.M. 14.09.2005 (TU 2005)

Norme Tecniche per le Costruzioni - D.M. 14.01.2008 (NTC 2008)

Norme Tecniche per le Costruzioni - D.M. 17.01.2018 (NTC 2018).

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

3. INQUADRAMENTO STRATIGRAFICO E GEOTECNICO DEL SITO

La campagna di indagini effettuata ha permesso il riconoscimento dei litotipi, la successione stratigrafica e la caratterizzazione meccanica dei terreni lungo tutto lo sviluppo del tracciato di progetto. I risultati di dette indagini sono descritti nella relazione geotecnica alla quale si rimanda per ulteriori approfondimenti.

3.1 STRATIGRAFIE DI CALCOLO

Facendo riferimento a quanto riportato nella relazione geotecnica, nella tabella che segue sono riportati i valori dei parametri meccanici degli strati interessati dal calcolo delle strutture in esame:

Litotipi		Parametri geotecnici				
Cod.	Descrizione	γ (KN/m ³)	c' (KPa)	ϕ' (deg)	C_u (KPa)	E' (MPa)
UG0	Riporti, coperture antropiche, colmate	18.5	-	35	-	15
UG1	Argille e limi lacustri organici	17.0	10	24	30	-
UG2	Argille e limi molto poco consistenti	19.5	30	25	100	-
UG3	Sabbie limose mediamente addensate	20.0	0	32	-	25
UG4b	Limi sabbioso ghiaiosi molto consistenti	20.0	20	32	-	50
UG4a	Substrato roccioso	26.0	50	40	-	100

La falda risulta ubicata a circa 4.00-5.00 m di profondità dal piano di campagna.

Per quanto riguarda il materiale con cui si effettua il riempimento a tergo delle opere (RILEVATO), si assumono le seguenti caratteristiche:

Cod.	Descrizione	γ (KN/m ³)	c' (KPa)	ϕ' (deg)
R	Riempimento	18	0	35

Per maggiori dettagli sulle caratteristiche dei terreni si faccia riferimento agli elaborati di carattere geotecnico (relazione geotecnica, profili geotecnici).

La stratigrafia assunta nei calcoli per ciascuna vasca di prima pioggia è specificata di seguito:

VASCA DI PRIMA PIOGGIA VPP1

Da 0.00 a -2.40	UG0 – Riporti, coperture antropiche, colmate
Da -2.40 a -6.90	UG2 – Argille e limi molto poco consistenti
Da -6.90 a -8.12	UG3 – Sabbie limose mediamente addensate

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "C"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

VASCA DI PRIMA PIOGGIA VPP2 e VPP3

Da 0.00 a -3.60	UG0 – Riporti, coperture antropiche, colmate
Da -3.60 a -6.20	UG2 – Argille e limi molto poco consistenti
Da -6.20 a -13.30	UG3 – Sabbie limose mediamente addensate

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "C"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCA DI PRIMA PIOGGIA VPP4

Da 0.00 a -3.20	UG0 – Riporti, coperture antropiche, colmate
Da -3.20 a -5.50	UG2 – Argille e limi molto poco consistenti
Da -5.50 a -6.15	UG3 – Sabbie limose mediamente addensate
Da -6.15 a -11.40	UG2 – Argille e limi molto poco consistenti

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "C"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCA DI PRIMA PIOGGIA VPP5

Da 0.00 a -7.40	UG0 – Riporti, coperture antropiche, colmate
Da -7.40 a -9.70	UG1 – Argille e limi lacustri organici
Da -9.70 a -11.10	UG3 – Sabbie limose mediamente addensate
Da -11.10 a -18.30	UG1 – Argille e limi lacustri organici

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "C"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCA DI PRIMA PIOGGIA VPP6

Da 0.00 a -5.60	UG0 – Riporti, coperture antropiche, colmate
Da -5.60 a -7.20	UG2 – Argille e limi molto poco consistenti

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

Da -7.20 a -16.20	UG3 – Sabbie limose mediamente addensate
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Dal punto di vista sismico il sottosuolo è individuato nella **categoria "E"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCA DI PRIMA PIOGGIA VPP7

Da 0.00 a -6.20	UG0 – Riporti, coperture antropiche, colmate
Da -6.20 a -7.10	UG2 – Argille e limi molto poco consistenti
Da -7.10 a -19.20	UG3 – Sabbie limose mediamente addensate

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "E"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

VASCA DI PRIMA PIOGGIA VPP8

Da 0.00 a -5.40	UG0 – Riporti, coperture antropiche, colmate
Da -5.40 a -35.60	UG3 – Sabbie limose mediamente addensate

Dal punto di vista sismico il sottosuolo è individuato nella **categoria "C"**, come riportato nella Relazione sismica allegata al progetto esecutivo.

Per le vasche **TIPO 1** (VPP2, VPP3, VPP6, VPP7), si impiega, a vantaggio di sicurezza, per il sottosuolo la **categoria "E"**, dal momento che alcune vasche di questo gruppo ricadono in zone con questa categoria. Per le vasche **TIPO 2**, invece, si impiega la **categoria "C"**, essendo tutte le vasche di questo gruppo ubicate nella stessa zona.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

4. MATERIALI

4.1 CALCESTRUZZO

Il calcestruzzo può essere preconfezionato in centrale di betonaggio o impastato in cantiere con inerti di caratteristiche meccaniche appropriate, granulometria e rapporto acqua-cemento controllati.

Gli impasti devono essere preparati e trasportati in modo da escludere pericoli di segregazione dei componenti e di prematuro inizio della presa al momento del getto.

I componenti dovranno soddisfare i seguenti requisiti normativi:

Leganti	-	L. 26/05/1965 n. 595
	-	Norme serie EN 197 armonizzata
Aggregati	-	UNI EN 12620 armonizzata
	-	UNI EN 13055-1 armonizzata
	-	UNI 8520-1 : 2005
	-	UNI 8520-2: 2005
Aggiunte	-	EN 450-1
	-	UNI EN 206-1 :2006
	-	UNI 11104:2004
Additivi	-	EN 934-2 armonizzata
Acqua di impasto	-	UNI EN 1008: 2003

Le miscele di calcestruzzo da utilizzare nel confezionamento degli elementi saranno progettate in funzione della resistenza caratteristica richiesta, della carpenteria, delle armature e del tipo di getto.

CALCESTRUZZO TIPO 1 (fondazione ed elevazione)

Classe di resistenza	C32/40 ($R_{ck} = 40 \text{ N/mm}^2$)
Classe di esposizione (UNI EN 206-1)	XA2
Classe di consistenza	S4
Rapporto acqua – cemento (a/c)	0.50
Contenuto minimo di cemento	340 kg/m ³
Resistenza cilindrica caratteristica a compressione	$f_{ck} = 0.83 \cdot R_{ck} = 33.2 \text{ N/mm}^2$
Resistenza media a compressione	$f_{cm} = f_{ck} + 8 = 41.2 \text{ N/mm}^2$
Resistenza media a trazione semplice	$f_{ctm} = 0.30 \cdot f_{cm}^{2/3} = 3.1 \text{ N/mm}^2$
Resistenza caratteristica a trazione semplice	$f_{ctk} = 0.7 \cdot f_{ctm} = 2.17 \text{ N/mm}^2$
Fattore parz. di sicurezza resistenza	$\gamma_c = 1.5$
Coeff. Riduttivo per resistenze di lunga durata	$\alpha_{cc} = 0.85$
Resistenza di calcolo a compressione	$f_{cd} = \frac{\alpha_{cc} \cdot f_{ck}}{\gamma_c} = 18.81 \text{ N/mm}^2$

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Resistenza di calcolo a trazione

$$f_{ctd} = \frac{f_{ctk}}{\gamma_c} = 1.44 \text{ N/mm}^2$$

Modulo di elasticità

$$E_{cm} = 22000 \cdot \left[\frac{f_{cm}}{10} \right]^{0.3} = 33642.8 \text{ N/mm}^2$$

Copriferro di calcolo

5 cm

Calcestruzzo magro per fondazione:

Si prevede un calcestruzzo di classe C 12/15.

4.2 ACCIAIO PER CALCESTRUZZO ARMATO

Si prevede l'impiego di acciaio del tipo B450C saldabile controllato in stabilimento.

L'accertamento delle proprietà meccaniche dovrà essere conforme alle seguenti normative sull'acciaio: EN 10002/1° (marzo 1990)-UNI 564 (febbraio 1960)-UNI 6407 (marzo 1969).

Acciaio	B450C
Tensione di rottura nominale	$f_{tk} = 540 \text{ N/mm}^2$
Tensione di snervamento nominale	$f_{yk} = 450 \text{ N/mm}^2$
Allungamento a rottura caratteristico	$(A_{gt})_k \geq 7.5 \%$
Coefficiente parziale di sicurezza:	$\phi_s = 1.15$
Tensione di snervamento di calcolo:	$f_{yd} = \frac{f_{yk}}{\gamma_s} = 391 \text{ N/mm}^2$

Le caratteristiche degli acciai impiegati saranno comprovate mediante prove su campioni da prelevare in cantiere in fase di esecuzione dell'opera con le modalità prescritte nel D.M. 14.01.08.

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO****5. VASCHE TIPO 1 (VPP2, VPP34, VPP6, VPP7)****5.1 GEOMETRIA DELL'OPERA**

Le vasche di prima pioggia TIPO 1 sono realizzate in c.a. gettato in opera, con forma in pianta rettangolare di lati 4.60 x 8.80 m, ed altezza di 3.70 m.

Le pareti presentano uno spessore di 30 cm. La copertura è costituita da lastre in c.a. amovibili di spessore pari a 30 cm.

La fondazione è di tipo diretto a platea di spessore pari a 40 cm.

Per ulteriori dettagli si vedano gli elaborati grafici di progetto.

5.2 ANALISI DEI CARICHI

I valori dei carichi sono riepilogati di seguito.

5.2.1 Copertura

CARICHI PERMANENTI STRUTTURALI

Copertura plotte in c.a. (sp=30 cm).....	7.50 kN/m ²
Carico permanente non strutturale totale G_{1k}	7.50 kN/m²

CARICHI PERMANENTI NON STRUTTURALI

Terreno di copertura e pacchetto stradale.....	14.4 kN/m ²
Carico permanente non strutturale totale G_{2k}	14.40 kN/m²

CARICHI VARIABILI

Copertura carrabile.....	20.00 kN/m ²
Carico variabile totale Q_{1k}	20.00 kN/m²

5.2.2 Platea

CARICHI PERMANENTI STRUTTURALI

Peso dell'acqua (H _{max} = 2.00 m).....	20.00 kN/m ²
Carico permanente non strutturale totale G_{1k}	20.00 kN/m²

CARICHI PERMANENTI NON STRUTTURALI

Massetto (sp = 15 cm).....	3.75 kN/m ²
Carico permanente non strutturale totale G_{2k}	3.75 kN/m²

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.3 Spinta dell'acqua di invaso

La spinta statica dell'acqua presente all'interno della vasca è valutata di seguito, tenendo conto dell'altezza massima dell'invaso pari a 2.00 m:

$$p_w(H_w) = \gamma_w \cdot H_w = 20.00 \text{ kN/m}^2$$

dove:

γ_w , peso specifico dell'acqua;
 H_w , altezza massima dell'invaso.

L'azione sismica dell'acqua invasata è, inoltre, caratterizzata dalla relazione in seguito riportata, e risulta pari a 1.29 kN/m²:

$$\Delta\sigma_a(z) = \frac{7}{8} \cdot a_g \cdot S \cdot \gamma_w \cdot \sqrt{H_w \cdot z'}$$

dove:

$\gamma_w = 10 \text{ kN/m}^3$, peso specifico dell'acqua;
 $H_w = 2.00 \text{ m}$, altezza massima dell'invaso;
 $z' = 2.00 \text{ m}$, quota a cui viene calcolata la pressione;
 $a_g = 0.046 \text{ g}$, coefficiente sismico orizzontale;
 $S = 1.60$, coefficiente amplificativo del suolo.

5.2.4 Spinta del terreno sulle pareti

Si riportano di seguito i grafici delle spinte del terreno sulle pareti tenendo conto della presenza di materiale di riporto a tergo, per il quale si considerano le seguenti caratteristiche geomeccaniche:

$\gamma_k = 19,0 \text{ kN/m}^3$ peso di volume caratteristico;
 $\varphi'_k = 35^\circ$ angolo di operativo attrito caratteristico.

Considerando che le strutture in esame non sono in grado di subire spostamenti sufficienti alla mobilitazione della spinta attiva le azioni agenti sulle stesse verranno calcolate per mezzo del coefficiente di spinta in quiete.

Nel calcolo delle spinte si è tenuto conto di un sovraccarico accidentale sul terreno di 20 kN/m².

I risultati e gli andamenti delle pressioni di progetto (comprehensive dei fattori parziali di sicurezza), sono riportati nelle tabelle seguenti.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Tutti i valori sono riferiti a una striscia di larghezza unitaria.

GEOMETRIA MURO E RINTERRO

γ_{MF}	25	kN/m ³	Peso per unità di volume
s_1	0,3	m	Spessore alla base
s_2	0,3	m	Spessore in testa
h_1	0,4	m	Altezza suola fondazione
h	3,3	m	Altezza paramento
β	0	°	Ang. terrapieno sull'orizzontale (>0 antiorario)
ν	90	°	Ang. par. interna sull'orizzontale (>0 orario)
H	3,7	m	Altezza totale muro

MODALITA' DI SPINTA

Spinta in quiete

PARAMETRI SISMICI

E	▼	Categoria suolo
T1 - Superficie pianeggiante, pendii e rilievi isolati con inclinazione media $i < 15^\circ$		
Muro non in grado di subire spostamenti relativi rispetto al terreno		
Caratteristiche pendio		

a_g	0,046	g	Accelerazione orizzontale massima su sito di riferimento rigido orizzontale (riferita all'accel. di gravità g)
F_0	2,817		Fattore di amplificazione spettrale massima su sito di riferimento rigido orizzontale
T_c	0,273	s	Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale
C_d	1,933		Coefficiente che modifica il valore del periodo T_c
S_z	1,600		Coefficiente di amplificazione stratigrafica
S_T	1,000		Coefficiente di amplificazione topografica
S	1,600		Coefficiente che tiene conto della categoria di sottosuolo
a_{max}	0,074	g	Accelerazione massima attesa al sito (riferita all'accelerazione di gravità g)
β_m	1,00		Coefficiente di riduzione dell'accelerazione massima attesa al sito
k_h	0,074		Coefficiente sismico orizzontale
k_v	0,037		Coefficiente sismico verticale con accelerazione diretta verso l'alto
k_v	-0,037		Coefficiente sismico verticale con accelerazione diretta verso il basso
θ_A	4,06	°	Rotazione addizionale terreno-muro per accelerazione sismica verticale verso l'alto
θ_B	4,37	°	Rotazione addizionale terreno-muro per accelerazione sismica verticale verso il basso

SOVRACCARICHI SUL RINTERRO

q_{1k}	q_{2k}	q_{3k}	Carico uniformemente distribuito a tergo del paramento
0	0	20	
s_{q1k}	s_{q2k}	s_{q3k}	Coefficiente di riduzione della massa del sovraccarico
1	1	0,3	

Coefficiente parziali di sicurezza dei carichi

γ_{G1}	γ_{G2}	γ_{G3}	γ_E	
1	1	1	1	-
1,3	1,5	1,5	-	-
1	1,3	1,3	-	-
1	1	1	1	1

Coefficiente parziali di sicurezza dei carichi SLE
Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 1 (A1) E APPROCCIO 2
Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 2 (A2)
Coefficiente parziali di sicurezza dei carichi in combinazione sismica SLV

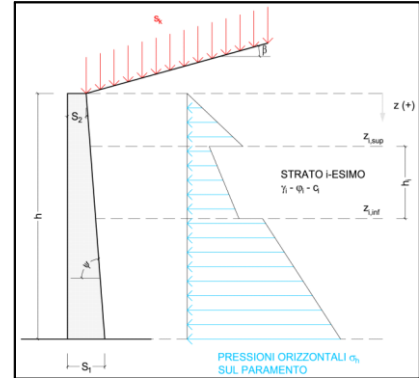
Coefficiente parziali di sicurezza per i parametri geotecnici del terreno

γ_s	γ_b	γ_c	
1	1	1	-
1	1,25	1,25	-

Coefficiente parziali di sicurezza dei parametri geotecnici SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV
Coefficiente parziali di sicurezza dei parametri geotecnici - SLU - APPROCCIO 1 - COMB 2 (M2)

CARATTERISTICHE STRATI TERRENO

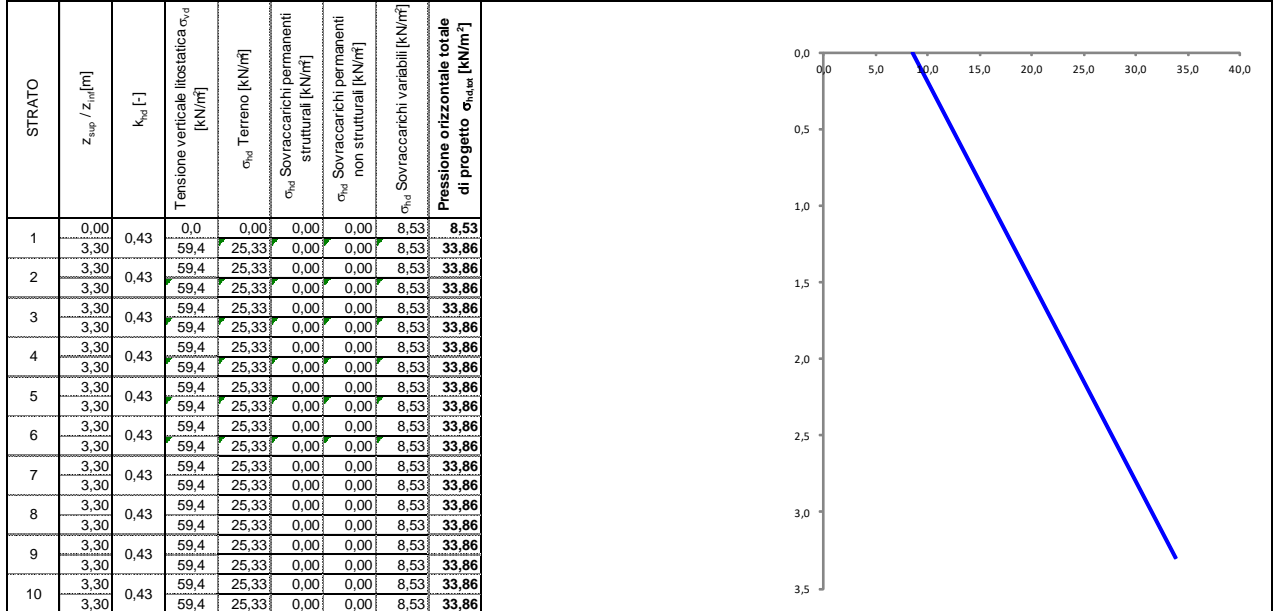
Strato	z_{sup} [m]	z_{inf} [m]	h [m]	PARAMETRI GEOTECNICI CARATTERISTICHI				PARAMETRI GEOTECNICI DI PROGETTO SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV				COEFF. DI SPINTA DI PROGETTO SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV				PARAMETRI GEOTECNICI DI PROGETTO SLU - APPROCCIO 1 - COMB 2 (M2)				COEFF. DI SPINTA DI PROGETTO SLU - APPROCCIO 1 - COMB 2 (M2)			
				γ_k [kN/m ³]	ϕ_k [°]	δ_k [°]	c_k [kN/m ²]	γ_d [kN/m ³]	ϕ_d [°]	δ_d [°]	c_d [kN/m ²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ss,d}$ [-]	$k_{sb,d}$ [-]	γ_d [kN/m ³]	ϕ_d [°]	δ_d [°]	c_d [kN/m ²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ss,d}$ [-]	$k_{sb,d}$ [-]
1	0,00	3,30	3,30	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
2	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
3	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
4	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
5	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
6	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
7	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
8	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
9	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391
10	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,310	0,313	18,00	29,26	0,00	0,00	0,511	0,343	0,388	0,391



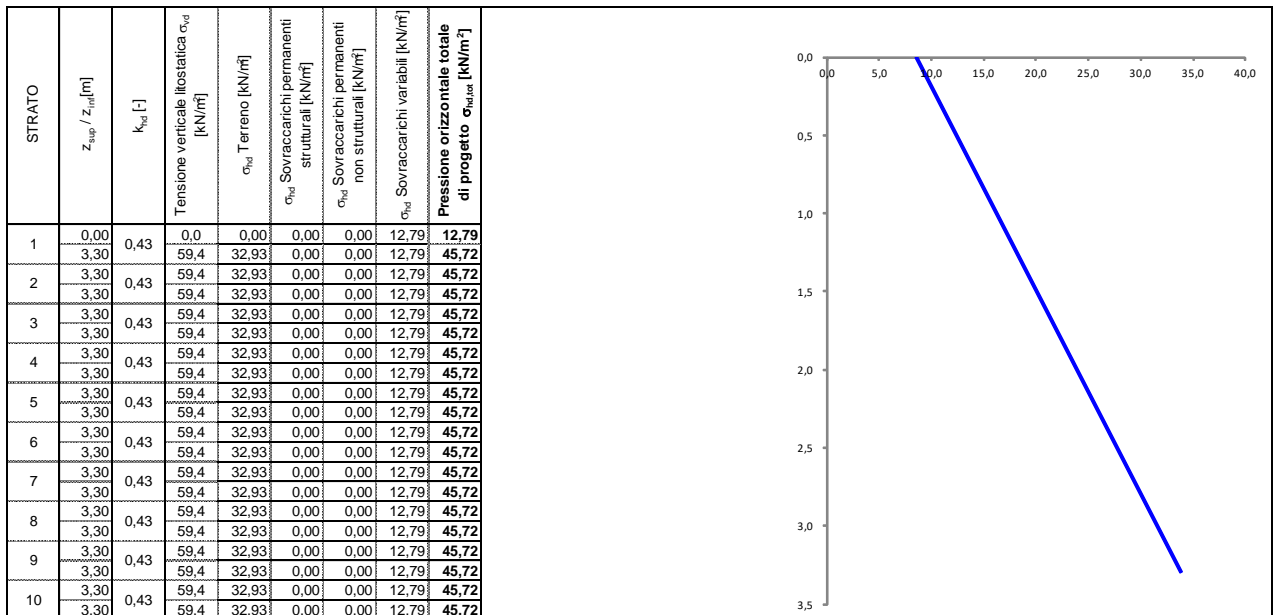
VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PRESSIONI DI PROGETTO SUL PARAMENTO (INCLUDONO I FATTORI DI SICUREZZA PARZIALI DELLE AZIONI)

PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLE

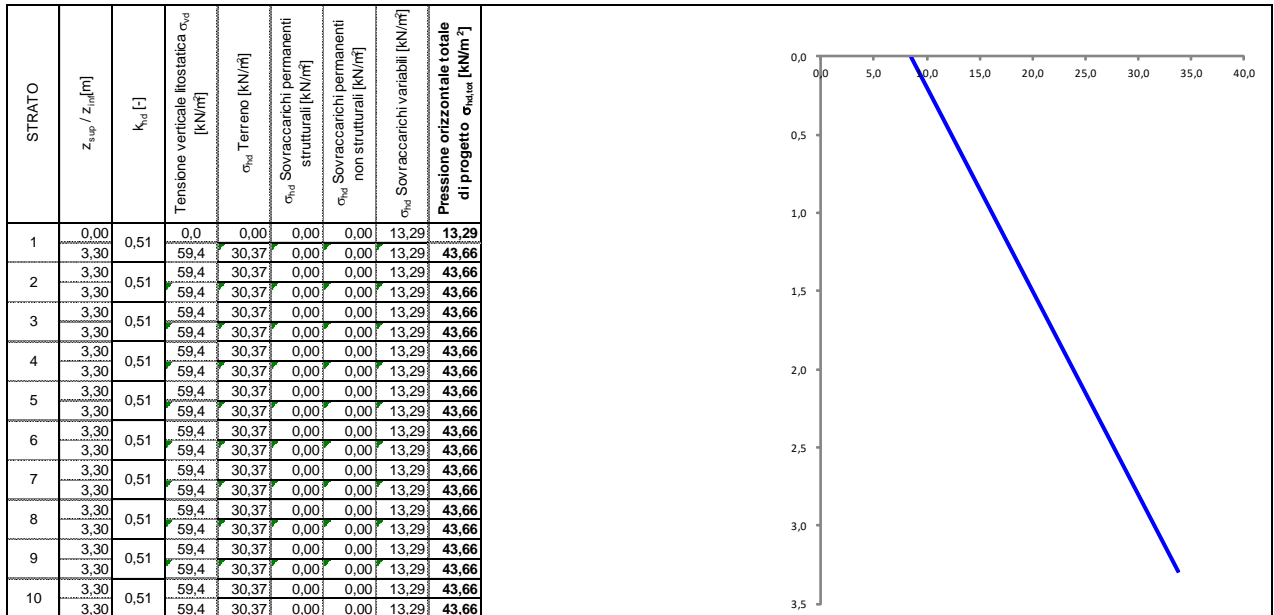


PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLU APPROCCIO 1 - COMBINAZIONE 1 E APPROCCIO 2

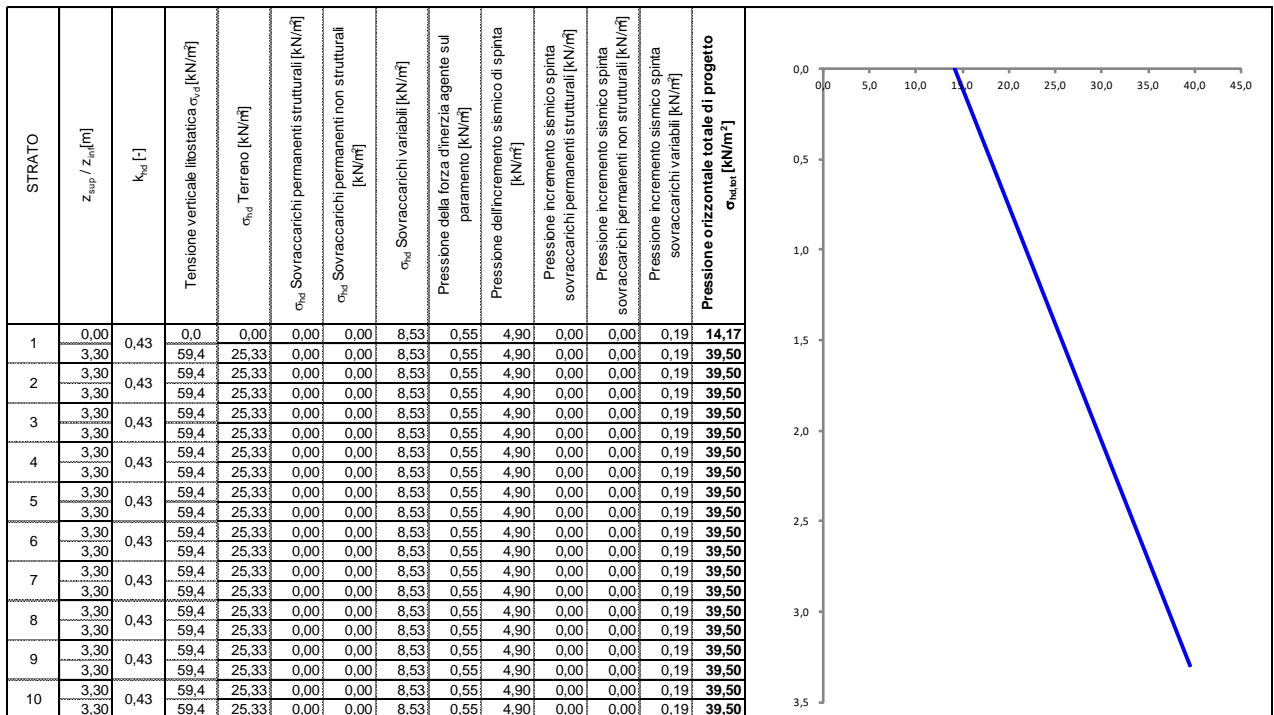


VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLU APPROCCIO 1 - COMBINAZIONE 2



PRESSIONI DI PROGETTO CONDIZIONI SISMICHE SLV



5.2.5 Criteri di calcolo delle azioni sismiche

Le azioni sismiche di progetto, in base alle quali valutare i diversi stati limite considerati, si definiscono a partire dalla "pericolosità sismica di base" del sito di costruzione.

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

Tutti i parametri che definiscono tale caratterizzazione dipendono dalla probabilità di superamento PVR dell'evento sismico nel periodo di riferimento VR.

Per il progetto in essere, in accordo con la committenza, sono stati scelti i seguenti valori dei parametri di progetto relativi alla tipologia e all'uso a cui le strutture sono destinate:

Vita nominale $V_N = 50$ anni

Classe d'uso II (coefficiente d'uso $C_U = 1$)

Periodo di riferimento per l'azione sismica $V_R = V_N \times C_U = 50 \times 1 = 50$ anni

Gli stati limite rispetto ai quali effettuare le verifiche sono:

STATI LIMITE DI ESERCIZIO (SLE)

SLO – Stato limite di operatività

SLD – Stato limite di danno

STATI LIMITE ULTIMI (SLU)

SLV – Stato limite di salvaguardia della vita

SLC – Stato limite di collasso

Per costruzioni di classe d'uso II le verifiche possono essere limitate ai soli SLD e SLV.

Per gli scopi progettuali l'azione sismica viene definita mediante forme spettrali dipendenti da tre parametri a loro volta funzione della localizzazione geografica del sito e del periodo di ritorno considerato:

a_g – Accelerazione massima orizzontale al sito

F_0 – Valore massimo del fattore di amplificazione dello spettro in accelerazione orizzontale

T^*_c – Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale

Nel caso in esame, per un periodo di ritorno pari a 475 anni (relativo allo stato SLV) risulta:

$a_g = 0.0463$ g

$F_0 = 2.817$

$T^*_c = 0.273$ s

Dal punto di vista sismico il suolo di fondazione è classificabile come di tipo "E".

L'amplificazione stratigrafica è descritta mediante i coefficienti S_S e S_T che assumono i seguenti valori:

$S_S = 1.432$

$S_T = 1.0$ (categoria T1 - superfici piane, pendii e rilievi isolati con pendenza < 15%)

Pertanto risulta:

$S = S_S \times S_T = 1.432 \times 1.0 = 1.432$

Lo spettro di progetto coincide con quello elastico dal momento che le strutture vengono considerate non dissipative. Tuttavia trattandosi di strutture a pareti accoppiate con $kh=0.70$, il fattore di comportamento impiegato nelle analisi risulta:

$q = 1.23$, fattore di comportamento.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.3 CONDIZIONI DI CARICO

Con riferimento al D.M. 17 gennaio 2018 le condizioni di carico prese in considerazione saranno le seguenti:

Descrizione	Nome breve	Durata	Psi0	Psi1	Psi2
Pesi strutturali	Pesi	Permanente			
Permanenti portati	Port.	Permanente			
Variabile traffico	Variabile traffico	Media	0.7	0.5	0.3
Spinta sismica terreno	spinta sismica terreno	Media	0	0	0
Spinta sismica acqua	spinta sismica acqua	Media	0	0	1
Spinta acqua	spinta acqua	Permanente	1	1	1
ΔT	ΔT	Media	0.6	0.5	0
Sisma X SLV	X SLV				
Sisma Y SLV	Y SLV				
Sisma Z SLV	Z SLV				
Eccentricità Y per sisma X SLV	EY SLV				
Eccentricità X per sisma Y SLV	EX SLV				
Sisma X SLD	X SLD				
Sisma Y SLD	Y SLD				
Sisma Z SLD	Z SLD				
Eccentricità Y per sisma X SLD	EY SLD				
Eccentricità X per sisma Y SLD	EX SLD				
Terreno sisma X SLV	Tr x SLV				
Terreno sisma Y SLV	Tr y SLV				
Terreno sisma Z SLV	Tr z SLV				
Terreno sisma X SLD	Tr x SLD				
Terreno sisma Y SLD	Tr y SLD				
Terreno sisma Z SLD	Tr z SLD				
Rig. Ux	R Ux				
Rig. Uy	R Uy				
Rig. Rz	R Rz				

5.4 COMBINAZIONI DI CARICO

Le combinazioni di carico da considerare ai fini delle verifiche sono state elaborate tenendo conto di quanto riportato nel D.M.17 gennaio 2018.

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

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

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

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

- Combinazione quasi permanente (SLE), generalmente impiegata per gli effetti a lungo termine:

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

γ_{G1} coefficiente parziale del peso proprio della struttura, del terreno e dell'acqua, quando pertinente;

γ_{G2} coefficiente parziale dei pesi propri degli elementi non strutturali;

γ_Q coefficiente parziale delle azioni variabili da traffico;

γ_{Qi} coefficiente parziale delle azioni variabili.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Il coefficiente parziale della precompressione si assume pari a $\gamma_P=1$

I valori dei coefficienti parziali di sicurezza sono riportati nelle tabelle seguenti.

Famiglia SLU

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLU 1	1	0.8	0	0	0	0	0
2	SLU 2	1	0.8	0	0	0	1.5	0
3	SLU 3	1	0.8	0	0	1.5	0	0
4	SLU 4	1	0.8	0	0	1.5	1.5	0
5	SLU 5	1	0.8	1.05	1.5	0	0	0
6	SLU 6	1	0.8	1.05	1.5	0	1.5	0
7	SLU 7	1	1.5	0	0	0	0	0
8	SLU 8	1	1.5	0	0	0	1.5	0
9	SLU 9	1	1.5	0	0	1.5	0	0
10	SLU 10	1	1.5	0	0	1.5	1.5	0
11	SLU 11	1	1.5	1.05	1.5	0	0	0
12	SLU 12	1	1.5	1.05	1.5	0	1.5	0
13	SLU 13	1.3	0.8	0	0	0	0	0
14	SLU 14	1.3	0.8	0	0	0	1.5	0
15	SLU 15	1.3	0.8	0	0	1.5	0	0
16	SLU 16	1.3	0.8	0	0	1.5	1.5	0
17	SLU 17	1.3	0.8	1.05	1.5	0	0	0
18	SLU 18	1.3	0.8	1.05	1.5	0	1.5	0
19	SLU 19	1.3	1.5	0	0	0	0	0
20	SLU 20	1.3	1.5	0	0	0	1.5	0
21	SLU 21	1.3	1.5	0	0	1.5	0	0
22	SLU 22	1.3	1.5	0	0	1.5	1.5	0
23	SLU 23	1.3	1.5	1.05	1.5	0	0	0
24	SLU 24	1.3	1.5	1.05	1.5	0	1.5	0

Famiglia SLE rara

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE RA 1	1	1	0	0	0	0	0
2	SLE RA 2	1	1	0	0	0	1	0
3	SLE RA 3	1	1	0	0	1	0	0
4	SLE RA 4	1	1	0	0	1	1	0
5	SLE RA 5	1	1	0.7	1	0	0	0
6	SLE RA 6	1	1	0.7	1	0	1	0

Famiglia SLE frequente

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE FR 1	1	1	0	0	0	0	0
2	SLE FR 2	1	1	0	0	0	1	0
3	SLE FR 3	1	1	0	0	1	0	0
4	SLE FR 4	1	1	0.3	0	0	1	0
5	SLE FR 5	1	1	0.5	0	0	0	0

Famiglia SLE quasi permanente

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE QP 1	1	1	0	0	0	0	0
2	SLE QP 2	1	1	0	0	0	1	0
3	SLE QP 3	1	1	0	0	1	0	0
4	SLE QP 4	1	1	0	0	1	1	0
5	SLE QP 5	1	1	0.3	0	0	0	0
6	SLE QP 6	1	1	0.3	0	0	1	0

Famiglia SLD

Poiché il numero di condizioni elementari previste per le combinazioni di questa famiglia è cospicuo, la tabella verrà spezzata in più parti.

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLD
1	SLD 1	1	1	0	0	1	1	0	-1
2	SLD 2	1	1	0	0	1	1	0	-1
3	SLD 3	1	1	0	0	1	1	0	-1
4	SLD 4	1	1	0	0	1	1	0	-1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLD
5	SLD 5	1	1	0	0	1	1	0	-0.3
6	SLD 6	1	1	0	0	1	1	0	-0.3
7	SLD 7	1	1	0	0	1	1	0	-0.3
8	SLD 8	1	1	0	0	1	1	0	-0.3
9	SLD 9	1	1	0	0	1	1	0	0.3
10	SLD 10	1	1	0	0	1	1	0	0.3
11	SLD 11	1	1	0	0	1	1	0	0.3
12	SLD 12	1	1	0	0	1	1	0	0.3
13	SLD 13	1	1	0	0	1	1	0	1
14	SLD 14	1	1	0	0	1	1	0	1
15	SLD 15	1	1	0	0	1	1	0	1
16	SLD 16	1	1	0	0	1	1	0	1
17	SLD 17	1	1	0.3	0	0	1	0	-1
18	SLD 18	1	1	0.3	0	0	1	0	-1
19	SLD 19	1	1	0.3	0	0	1	0	-1
20	SLD 20	1	1	0.3	0	0	1	0	-1
21	SLD 21	1	1	0.3	0	0	1	0	-0.3
22	SLD 22	1	1	0.3	0	0	1	0	-0.3
23	SLD 23	1	1	0.3	0	0	1	0	-0.3
24	SLD 24	1	1	0.3	0	0	1	0	-0.3
25	SLD 25	1	1	0.3	0	0	1	0	0.3
26	SLD 26	1	1	0.3	0	0	1	0	0.3
27	SLD 27	1	1	0.3	0	0	1	0	0.3
28	SLD 28	1	1	0.3	0	0	1	0	0.3
29	SLD 29	1	1	0.3	0	0	1	0	1
30	SLD 30	1	1	0.3	0	0	1	0	1
31	SLD 31	1	1	0.3	0	0	1	0	1
32	SLD 32	1	1	0.3	0	0	1	0	1

Nome	Nome breve	Y SLD	Z SLD	EY SLD	EX SLD	Tr x SLD	Try SLD	Tr z SLD
1	SLD 1	-0.3	0	-1	0.3	-1	-0.3	0
2	SLD 2	-0.3	0	1	-0.3	-1	-0.3	0
3	SLD 3	0.3	0	-1	0.3	-1	0.3	0
4	SLD 4	0.3	0	1	-0.3	-1	0.3	0
5	SLD 5	-1	0	-0.3	1	-0.3	-1	0
6	SLD 6	-1	0	0.3	-1	-0.3	-1	0
7	SLD 7	1	0	-0.3	1	-0.3	1	0
8	SLD 8	1	0	0.3	-1	-0.3	1	0
9	SLD 9	-1	0	-0.3	1	0.3	-1	0
10	SLD 10	-1	0	0.3	-1	0.3	-1	0
11	SLD 11	1	0	-0.3	1	0.3	1	0
12	SLD 12	1	0	0.3	-1	0.3	1	0
13	SLD 13	-0.3	0	-1	0.3	1	-0.3	0
14	SLD 14	-0.3	0	1	-0.3	1	-0.3	0
15	SLD 15	0.3	0	-1	0.3	1	0.3	0
16	SLD 16	0.3	0	1	-0.3	1	0.3	0
17	SLD 17	-0.3	0	-1	0.3	-1	-0.3	0
18	SLD 18	-0.3	0	1	-0.3	-1	-0.3	0
19	SLD 19	0.3	0	-1	0.3	-1	0.3	0
20	SLD 20	0.3	0	1	-0.3	-1	0.3	0
21	SLD 21	-1	0	-0.3	1	-0.3	-1	0
22	SLD 22	-1	0	0.3	-1	-0.3	-1	0
23	SLD 23	1	0	-0.3	1	-0.3	1	0
24	SLD 24	1	0	0.3	-1	-0.3	1	0
25	SLD 25	-1	0	-0.3	1	0.3	-1	0
26	SLD 26	-1	0	0.3	-1	0.3	-1	0
27	SLD 27	1	0	-0.3	1	0.3	1	0
28	SLD 28	1	0	0.3	-1	0.3	1	0
29	SLD 29	-0.3	0	-1	0.3	1	-0.3	0
30	SLD 30	-0.3	0	1	-0.3	1	-0.3	0
31	SLD 31	0.3	0	-1	0.3	1	0.3	0
32	SLD 32	0.3	0	1	-0.3	1	0.3	0

Famiglia SLV

Poiché il numero di condizioni elementari previste per le combinazioni di questa famiglia è cospicuo, la tabella verrà spezzata in più parti.

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLV
1	SLV 1	1	1	0	0	1	1	0	-1
2	SLV 2	1	1	0	1	1	1	0	-1
3	SLV 3	1	1	0	1	1	1	0	-1
4	SLV 4	1	1	0	1	1	1	0	-1
5	SLV 5	1	1	0	1	1	1	0	-0.3

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Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLV
6	SLV 6	1	1	0	1	1	1	0	-0.3
7	SLV 7	1	1	0	1	1	1	0	-0.3
8	SLV 8	1	1	0	1	1	1	0	-0.3
9	SLV 9	1	1	0	1	1	1	0	0.3
10	SLV 10	1	1	0	1	1	1	0	0.3
11	SLV 11	1	1	0	1	1	1	0	0.3
12	SLV 12	1	1	0	1	1	1	0	0.3
13	SLV 13	1	1	0	1	1	1	0	1
14	SLV 14	1	1	0	1	1	1	0	1
15	SLV 15	1	1	0	1	1	1	0	1
16	SLV 16	1	1	0	1	1	1	0	1

Nome	Nome breve	Y SLV	Z SLV	EY SLV	EX SLV	Trx SLV	Try SLV	Trz SLV
1	SLV 1	-0.3	0	-1	0.3	-1	-0.3	0
2	SLV 2	-0.3	0	1	-0.3	-1	-0.3	0
3	SLV 3	0.3	0	-1	0.3	-1	0.3	0
4	SLV 4	0.3	0	1	-0.3	-1	0.3	0
5	SLV 5	-1	0	-0.3	1	-0.3	-1	0
6	SLV 6	-1	0	0.3	-1	-0.3	-1	0
7	SLV 7	1	0	-0.3	1	-0.3	1	0
8	SLV 8	1	0	0.3	-1	-0.3	1	0
9	SLV 9	-1	0	-0.3	1	0.3	-1	0
10	SLV 10	-1	0	0.3	-1	0.3	-1	0
11	SLV 11	1	0	-0.3	1	0.3	1	0
12	SLV 12	1	0	0.3	-1	0.3	1	0
13	SLV 13	-0.3	0	-1	0.3	1	-0.3	0
14	SLV 14	-0.3	0	1	-0.3	1	-0.3	0
15	SLV 15	0.3	0	-1	0.3	1	0.3	0
16	SLV 16	0.3	0	1	-0.3	1	0.3	0

5.5 MODELLAZIONE: INPUT

Le opere strutturali in oggetto sono state modellate con analisi agli elementi finiti (FEM), mediante codice di calcolo, di cui si riportano di seguito le principali caratteristiche e le convenzioni adottate. I risultati delle verifiche degli elementi strutturali sono riportati nei tabulati di calcolo e verifica nei successivi paragrafi.

5.5.1 Origine e caratteristiche del codice di calcolo

Parte delle analisi e delle verifiche delle strutture analizzate sono state eseguite mediante l'ausilio di codici di calcolo di comprovata validità. Si riportano di seguito le informazioni relative al codice impiegato e gli estremi della licenza d'uso.

Nominativo	SismiCAD 12.13
Produttore	Concrete s.r.l , Padova
Nome utente finale	ICARIA s.r.l
Numero licenza	5622053

L'analisi preliminare della documentazione a corredo del software impiegato ha consentito di accertarne l'affidabilità e l'idoneità al caso in oggetto. Il produttore del software fornisce, infatti, un'esauriente documentazione, atta a testimoniare la validità, all'interno della quale sono descritte le basi teoriche e gli algoritmi impiegati, campi di impiego ed esempi risolti.

I risultati dell'elaborazione sono presentati in modo tale da costituire una sintesi completa ed efficace del comportamento della struttura, sia mediante l'ausilio di schemi grafici riportanti le parti più sollecitate della struttura, le configurazioni deformate e l'entità delle azioni, sia esplicitando i tabulati numerici con l'esito delle principali verifiche, i dati di input, le combinazioni di carico.

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5.5.2 Risultati della modellazione

Si riportano di seguito i dati di input del modello di calcolo.

1 Dati generali

1.1 Materiali

1.1.1 Materiali c.a.

Descrizione: descrizione o nome assegnato all'elemento.

Rck: resistenza caratteristica cubica; valore medio nel caso di edificio esistente. [kN/m²]

E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m²]

G: modulo di elasticità tangenziale del materiale, viene impiegato nella modellazione di aste e di elementi guscio a comportamento ortotropo. [kN/m²]

Poisson: coefficiente di Poisson. Il valore è adimensionale.

γ: peso specifico del materiale. [kN/m³]

α: coefficiente longitudinale di dilatazione termica. [°C⁻¹]

Descrizione	Rck	E	G	Poisson	γ	α
C32/40	40000	33642778	Default (15292172)	0.1	25	0.00001

1.1.2 Curve di materiali c.a.

Descrizione: descrizione o nome assegnato all'elemento.

Curva: curva caratteristica.

Reaz.traz.: reagisce a trazione.

Comp.frag.: ha comportamento fragile.

E.compr.: modulo di elasticità a compressione. [kN/m²]

Incr.compr.: incrudimento di compressione. Il valore è adimensionale.

EpsEc: ε elastico a compressione. Il valore è adimensionale.

EpsUc: ε ultimo a compressione. Il valore è adimensionale.

E.traz.: modulo di elasticità a trazione. [kN/m²]

Incr.traz.: incrudimento di trazione. Il valore è adimensionale.

EpsEt: ε elastico a trazione. Il valore è adimensionale.

EpsUt: ε ultimo a trazione. Il valore è adimensionale.

Descrizione	Curva									
	Reaz.traz.	Comp.frag.	E.compr.	Incr.compr.	EpsEc	EpsUc	E.traz.	Incr.traz.	EpsEt	EpsUt
C32/40	No	Si	33642778	0.001	-0.002	-0.0035	33642778	0.001	0.0000645	0.0000709

1.1.3 Armature

Descrizione: descrizione o nome assegnato all'elemento.

f_{yk}: resistenza caratteristica. [kN/m²]

σ_{amm.}: tensione ammissibile. [kN/m²]

Tipo: tipo di barra.

E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m²]

γ: peso specifico del materiale. [kN/m³]

Poisson: coefficiente di Poisson. Il valore è adimensionale.

α: coefficiente longitudinale di dilatazione termica. [°C⁻¹]

Livello di conoscenza: indica se il materiale è nuovo o esistente, e in tal caso il livello di conoscenza secondo Circ. 02/02/09 n. 617 §C8A. Informazione impiegata solo in analisi D.M. 14-01-08 (N.T.C.).

Descrizione	f _{yk}	σ _{amm.}	Tipo	E	γ	Poisson	α	Livello di conoscenza
B450C	450000	255000	Aderenza migliorata	206000000	78.5	0.3	0.000012	Nuovo

2 Preferenze commessa

2.1 Preferenze di analisi

Metodo di analisi

Tipo di costruzione

V_n

Classe d'uso

V_r

Tipo di analisi

Località

Categoria del suolo

D.M. 17-01-18 (N.T.C.)

2 - Costruzioni con livelli di prestazioni ordinari

50

II

50

Lineare dinamica

Livorno, Piombino, Colmata; Latitudine ED50 42,9604° (42° 57' 37");

Longitudine ED50 10,5508° (10° 33' 3"); Altitudine s.l.m. 165,06 m.

E - Terreni con caratteristiche e valori di velocità equivalente

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Categoria topografica	riconducibili a quelle definite per le categorie C o D, con profondità del substrato non superiore a 30 m	
	T1 - Superficie pianeggiante, pendii e rilievi isolati con inclinazione media $i \leq 15^\circ$	
Ss orizzontale SLD	1.6	
Tb orizzontale SLD	0.142	[s]
Tc orizzontale SLD	0.425	[s]
Td orizzontale SLD	1.702	[s]
Ss orizzontale SLV	1.6	
Tb orizzontale SLV	0.176	[s]
Tc orizzontale SLV	0.528	[s]
Td orizzontale SLV	1.785	[s]
St	1	
PVr SLD (%)	63	
Tr SLD	50	
Ag/g SLD	0.0254	
Fo SLD	2.668	
Tc* SLD	0.19	[s]
PVr SLV (%)	10	
Tr SLV	475	
Ag/g SLV	0.0463	
Fo SLV	2.817	
Tc* SLV	0.273	[s]
Smorzamento viscoso (%)	5	
Classe di duttilità	Non dissipativa	
Rotazione del sisma	0	[deg]
Quota dello '0' sismico	0	[m]
Regolarità in pianta	No	
Regolarità in elevazione	No	
Edificio C.A.	Si	
Edificio esistente	No	
T1,x	0.06064	[s]
T1,y	0.11223	[s]
λ SLD,x	1	
λ SLD,y	1	
λ SLV,x	1	
λ SLV,y	1	
Numero modi	4	
Metodo di Ritz	non applicato	
Limite spostamenti interpiano	0.005	
Fattore di comportamento per sisma SLD X	1.23	
Fattore di comportamento per sisma SLD Y	1.23	
Fattore di comportamento per sisma SLV X	1.23	
Fattore di comportamento per sisma SLV Y	1.23	
Coefficiente di sicurezza per carico limite (fondazioni superficiali)	2.3	
Coefficiente di sicurezza per scorrimento (fondazioni superficiali)	1.1	
Coefficiente di sicurezza portanza verticale pali infissi, punta	1.15	
Coefficiente di sicurezza portanza verticale pali infissi, laterale compressione	1.15	
Coefficiente di sicurezza portanza verticale pali infissi, laterale trazione	1.25	
Coefficiente di sicurezza portanza verticale pali trivellati, punta	1.35	
Coefficiente di sicurezza portanza verticale pali trivellati, laterale compressione	1.15	
Coefficiente di sicurezza portanza verticale pali trivellati, laterale trazione	1.25	
Coefficiente di sicurezza portanza verticale micropali, punta	1.35	
Coefficiente di sicurezza portanza verticale micropali, laterale compressione	1.15	
Coefficiente di sicurezza portanza verticale micropali, laterale trazione	1.25	
Coefficiente di sicurezza portanza trasversale pali	1.3	
Fattore di correlazione resistenza caratteristica dei pali in base alle verticali indagate	1.7	
Coefficiente di sicurezza per ribaltamento (plinti superficiali)	1.15	

2.3 Preferenze di verifica

2.3.1 Normativa di verifica in uso

Norma di verifica
Cemento armato
Legno
Acciaio

D.M. 17-01-18 (N.T.C.)
Preferenze analisi di verifica in stato limite
Preferenze di verifica legno D.M. 17-01-18 (N.T.C.)
Preferenze di verifica acciaio D.M. 17-01-18 (N.T.C.)

2.3.2 Normativa di verifica C.A.

Coefficiente di omogeneizzazione 15
ys (fattore di sicurezza parziale per l'acciaio) 1.15
yc (fattore di sicurezza parziale per il calcestruzzo) 1.5
Limite σ_c/f_{ck} in combinazione rara 0.6
Limite σ_c/f_{ck} in combinazione quasi permanente 0.45
Limite σ_s/f_{yk} in combinazione rara 0.8
Coefficiente di riduzione della τ per cattiva aderenza 0.7
Dimensione limite fessure w1 §4.1.2.2.4 0.0002 [m]
Dimensione limite fessure w2 §4.1.2.2.4 0.0003 [m]
Dimensione limite fessure w3 §4.1.2.2.4 0.0004 [m]
Fattori parziali di sicurezza unitari per meccanismi duttili di strutture esistenti con fattore q No
Copriferro secondo EC2 No

VASCHE DI PRIMA PIOGGIA
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2.4 Preferenze FEM

Dimensione massima ottimale mesh pareti (default)	0.8 [m]
Dimensione massima ottimale mesh piastre (default)	0.8 [m]
Tipo di mesh dei gusci (default)	Quadrilateri o triangoli
Tipo di mesh imposta ai gusci	Specifico dell'elemento
Metodo P-Delta	non utilizzato
Analisi buckling	non utilizzata
Rapporto spessore flessionale/membranale gusci muratura verticali	0.2
Spessori membranale e flessionale pareti XLAM da sole tavole verticali	No
Moltiplicatore rigidità connettori pannelli pareti legno a diaframma	1
Tolleranza di parallelismo	4.99[deg]
Tolleranza di unicità punti	0.1[m]
Tolleranza generazione nodi di aste	0.01[m]
Tolleranza di parallelismo in suddivisione aste	4.99[deg]
Tolleranza generazione nodi di gusci	0.04[m]
Tolleranza eccentricità carichi concentrati	1 [m]
Considera deformazione a taglio delle piastre	No
Modello elastico pareti in muratura	Gusci
Concentra masse pareti nei vertici	No
Segno risultati analisi spettrale	Analisi statica
Memoria utilizzabile dal solutore	8000000
Metodo di risoluzione della matrice	Intel MKL PARDISO
Scrivi commenti nel file di input	No
Scrivi file di output in formato testo	No
Solidi colle e corpi ruvidi (default)	Solidi reali
Moltiplicatore rigidità molla torsionale applicata ad aste di fondazione	1
Modello trave su suolo alla Winkler nel caso di modellazione lineare	Equilibrio elastico

2.5 Moltiplicatori inerziali

Tipologia: tipo di entità a cui si riferiscono i moltiplicatori inerziali.

J2: moltiplicatore inerziale di J2. Il valore è adimensionale.

J3: moltiplicatore inerziale di J3. Il valore è adimensionale.

Jt: moltiplicatore inerziale di Jt. Il valore è adimensionale.

A: moltiplicatore dell'area della sezione. Il valore è adimensionale.

A2: moltiplicatore dell'area a taglio in direzione 2. Il valore è adimensionale.

A3: moltiplicatore dell'area a taglio in direzione 3. Il valore è adimensionale.

Conci rigidi: fattore di riduzione dei tronchi rigidi. Il valore è adimensionale.

Tipologia	J2	J3	Jt	A	A2	A3	Conci rigidi
Trave C.A.	1	1	0.01	1	1	1	0.5
Pilastro C.A.	1	1	0.01	1	1	1	0.5
Trave di fondazione	1	1	0.01	1	1	1	0.5
Palo	1	1	0.01	1	1	1	0
Trave in legno	1	1	1	1	1	1	1
Colonna in legno	1	1	1	1	1	1	1
Trave in acciaio	1	1	1	1	1	1	1
Colonna in acciaio	1	1	1	1	1	1	1
Trave di reticolare in acciaio	1	1	1	1	1	1	1
Maschio in muratura	0	1	0	1	1	1	1
Trave di accoppiamento in muratura	0	1	0	1	1	1	1
Trave di scala C.A. nervata	1	1	1	1	1	1	0.5
Trave tralicciata	1	1	0.01	1	1	1	0.5

3 Quote

3.1 Livelli

Descrizione breve: nome sintetico assegnato al livello.

Descrizione: nome assegnato al livello.

Quota: quota superiore espressa nel sistema di riferimento assoluto. [m]

Spessore: spessore del livello. [m]

Descrizione breve	Descrizione	Quota	Spessore
L1	Fondazione	0	0.4
L2	Sfioro	2	0
L3	Copertura	3.3	0.3

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RELAZIONE GEOTECNICA E DI CALCOLO

3.2 Tronchi

Descrizione breve: nome sintetico assegnato al tronco.

Descrizione: nome assegnato al tronco.

Quota 1: riferimento della prima quota di definizione del tronco. esprimibile come livello, falda, piano orizzontale alla Z specificata. [m]

Quota 2: riferimento della seconda quota di definizione del tronco. esprimibile come livello, falda, piano orizzontale alla Z specificata. [m]

Descrizione breve	Descrizione	Quota 1	Quota 2
T1	Fondazione - Copertura	Fondazione	Copertura
T2	Fondazione - Sfiore	Fondazione	Sfiore

1.5 Definizioni di carichi superficiali

Nome: nome identificativo della definizione di carico.

Valori: valori associati alle condizioni di carico.

Condizione: condizione di carico a cui sono associati i valori.

Descrizione: nome assegnato alla condizione elementare.

Valore: modulo del carico superficiale applicato alla superficie. [kN/m²]

Applicazione: modalità con cui il carico è applicato alla superficie.

Nome	Valori		
	Condizione	Valore	Applicazione
	Descrizione		
COPERTURA	Pesi strutturali	0	Verticale
	Permanenti portati	14.4	Verticale
	Variabile traffico	20	Verticale
	Spinta sismica terreno	0	Verticale
	Spinta sismica acqua	0	Verticale
	Spinta acqua	0	Verticale
PLATEA	Pesi strutturali	20	Verticale
	Permanenti portati	3.75	Verticale
	Variabile traffico	0	Verticale
	Spinta sismica terreno	0	Verticale
	Spinta sismica acqua	0	Verticale
	Spinta acqua	0	Verticale

1.6 Definizioni di carichi potenziali

Nome: nome identificativo della definizione di carico.

Valori: valori associati alle condizioni di carico.

Condizione: condizione di carico a cui sono associati i valori.

Descrizione: nome assegnato alla condizione elementare.

Valore i.: valore del carico pressorio alla quota iniziale. [kN/m²]

Quota i.: quota assoluta in cui il carico pressorio assume il valore iniziale. [m]

Valore f.: valore del carico pressorio alla quota finale. [kN/m²]

Quota f.: quota assoluta in cui il carico pressorio assume il valore finale. [m]

Nome	Valori				
	Condizione	Valore i.	Quota i.	Valore f.	Quota f.
	Descrizione				
SPINTA PARETI	Pesi strutturali	0	3.3	25.33	0
	Permanenti portati	0	3.3	0	0
	Variabile traffico	0	3.3	8.53	0
	Spinta sismica terreno	0	3.3	4.9	0
	Spinta sismica acqua	0	3.3	-1.3	0
	Spinta acqua	0	3.3	-20	0
SPINTA PARETI INTERNE	Pesi strutturali	0	2	0	0
	Permanenti portati	0	2	0	0
	Variabile traffico	0	2	0	0
	Spinta sismica terreno	0	2	0	0
	Spinta sismica acqua	0	2	1.3	0

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Nome	Valori				
	Condizione Descrizione	Valore i.	Quota i.	Valore f.	Quota f.
	Spinta acqua	0	2	20	0

Rappresentazione grafica modello input

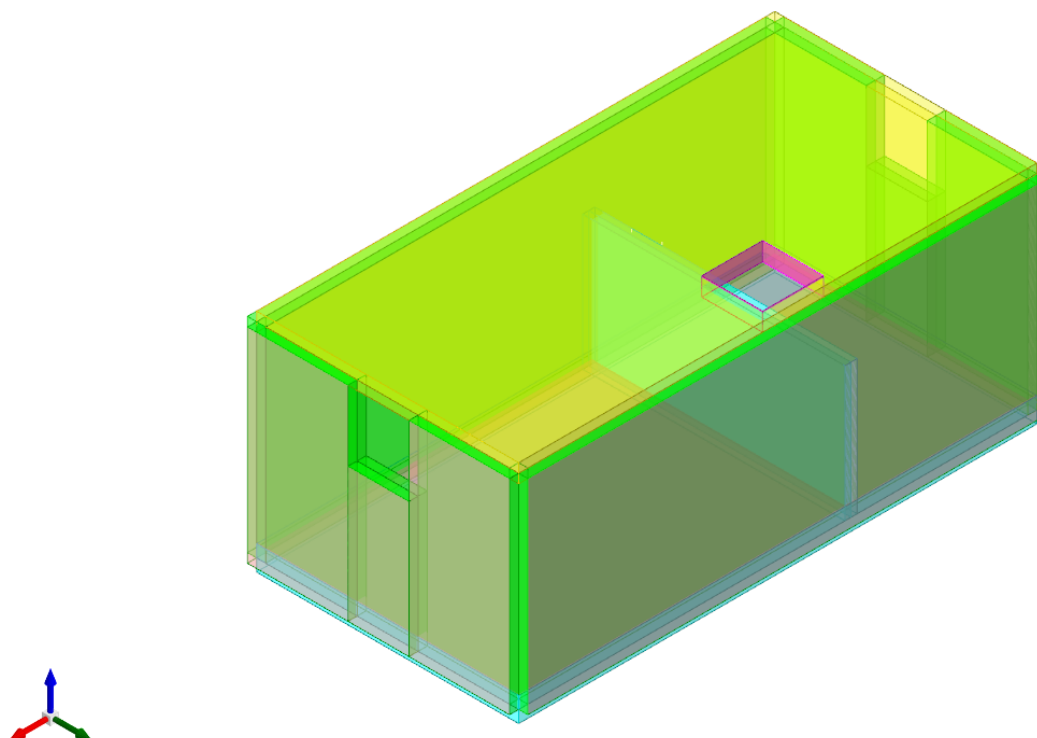


Figura 1 - Rappresentazione Grafica del Modello di Calcolo

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

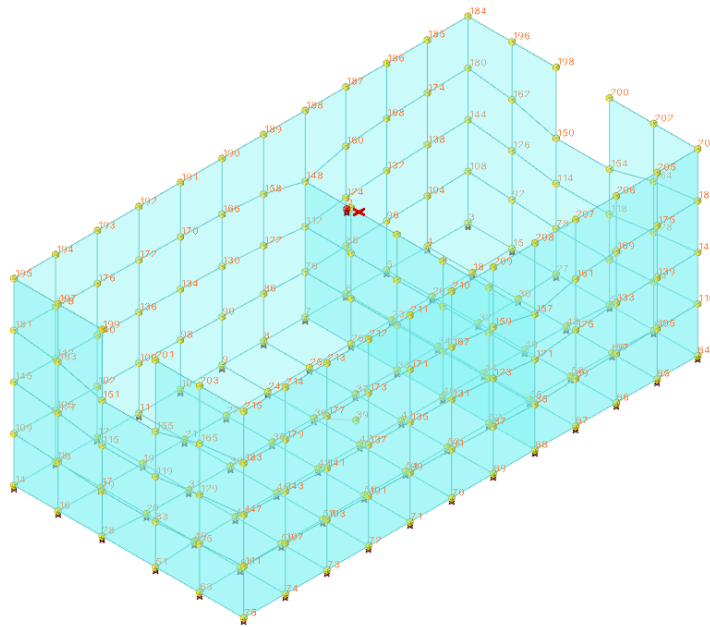


Figura 2 - Rappresentazione Grafica del Modello di Calcolo – Numerazione NODI

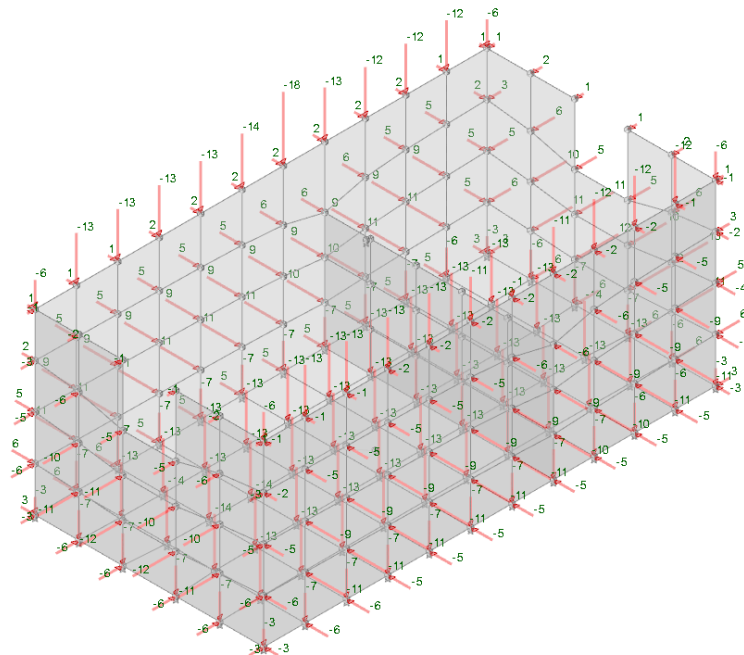


Figura 3 - Condizione carichi permanenti strutturali

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

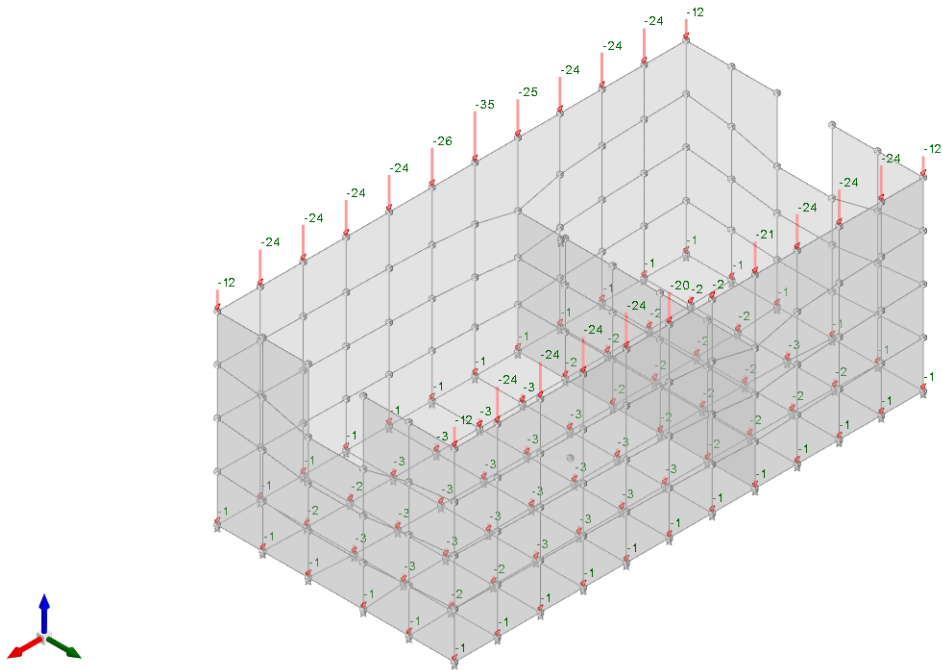


Figura 4 - Condizione carichi permanenti non strutturali

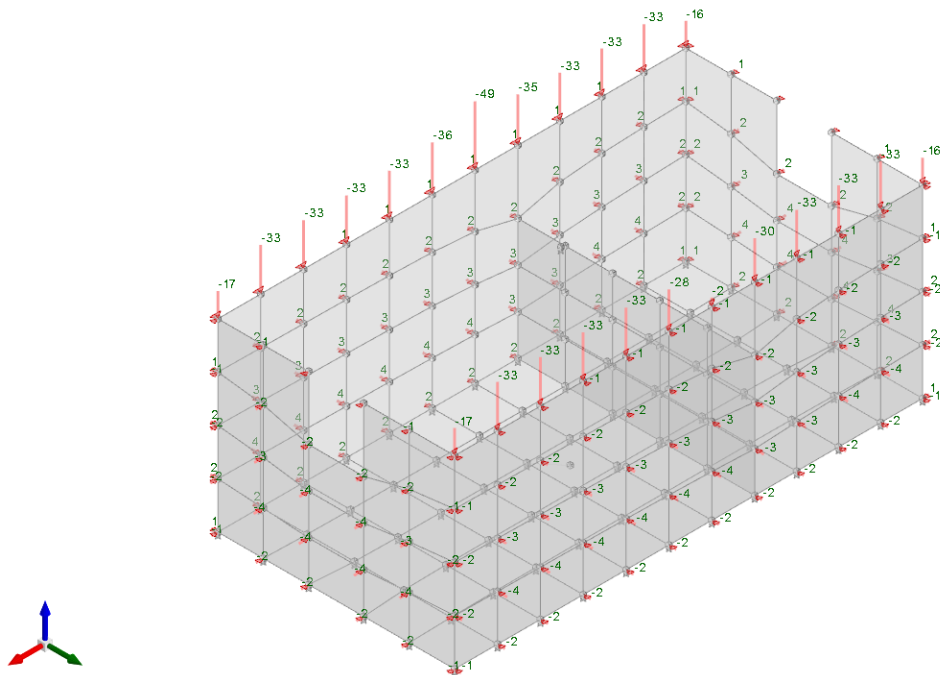


Figura 5 - Condizione sovraccarico accidentale (variabile traffico)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

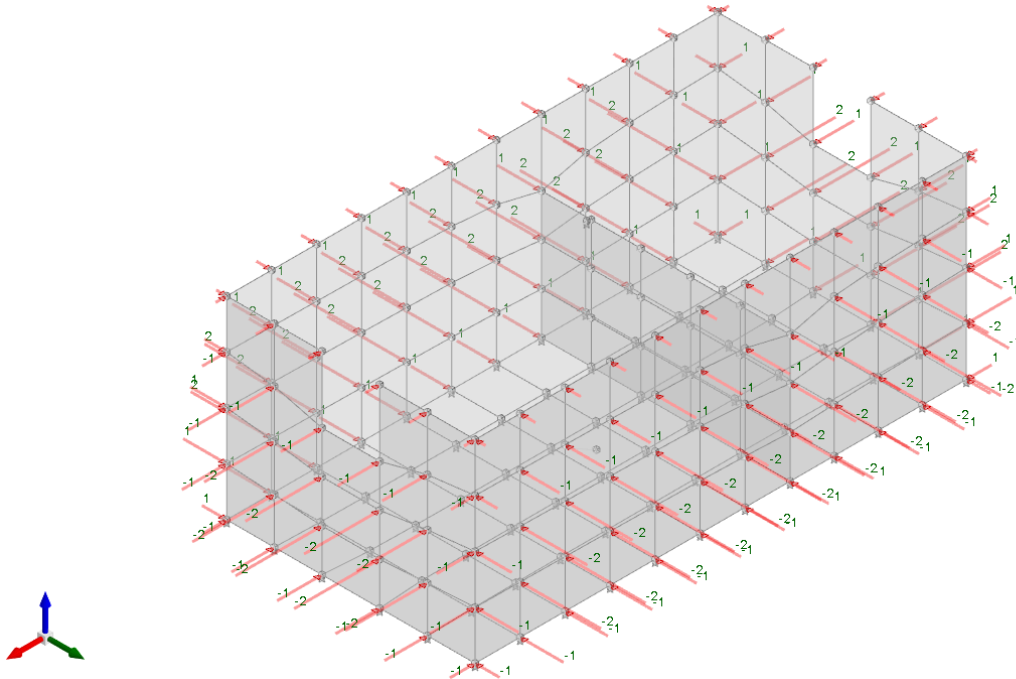


Figura 6 - Condizione spinta sismica terreno

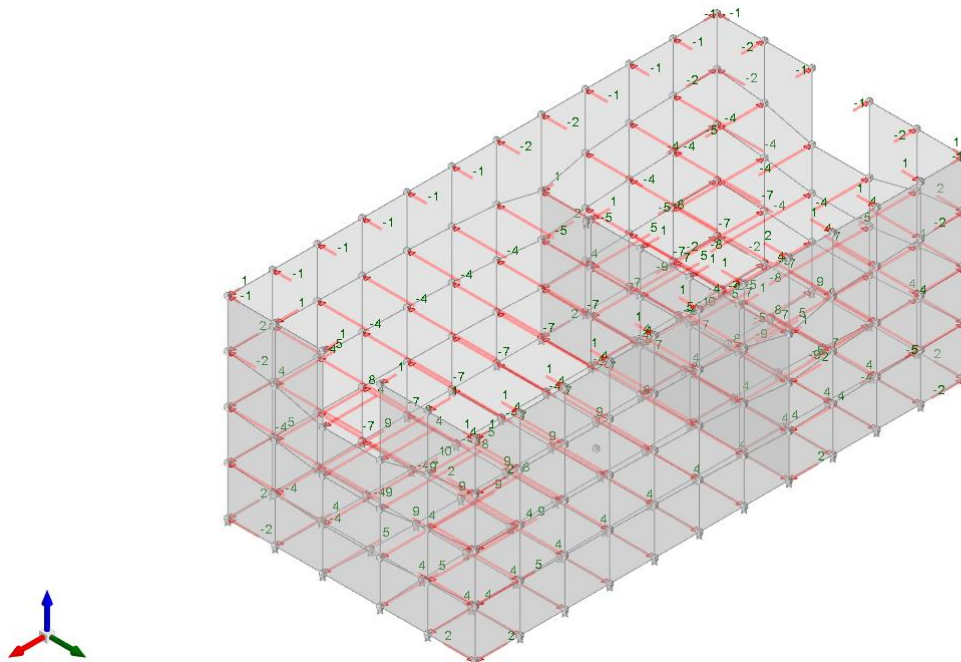


Figura 7 - Condizione spinta acqua

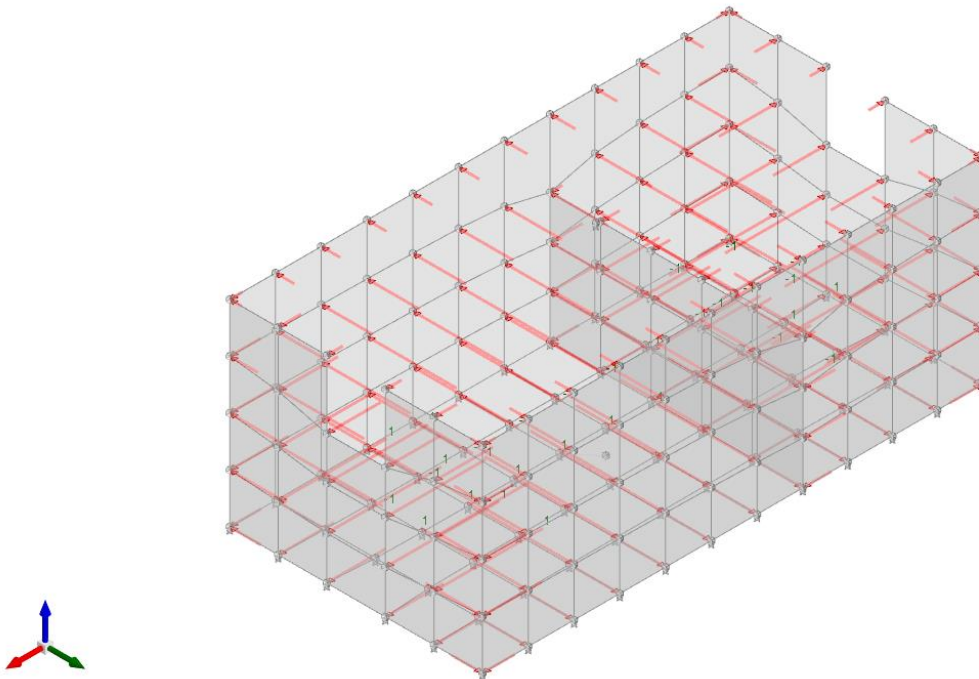
VASCHE DI PRIMA PIOGGIA
 RELAZIONE GEOTECNICA E DI CALCOLO


Figura 8 - Condizione spinta sismica acqua

5.6 MODELLAZIONE: OUTPUT

Si riportano i risultati grafici dell'analisi agli elementi finiti. I valori massimi delle caratteristiche di sollecitazione saranno utilizzati per le successive verifiche.

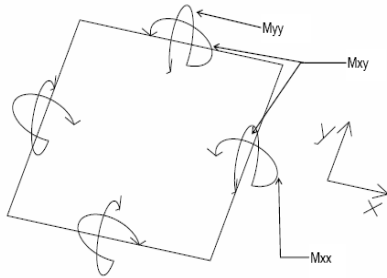
5.6.1 Convenzioni relative alle caratteristiche di sollecitazione

La convenzione sui segni per i parametri di sollecitazione delle aste è la seguente:

- sforzo normale $F1$ (N): viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di sforzo normale positivo (di trazione) viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- $F2$: viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di $F2$ positivo viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- $F3$: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di $F3$ positivo viene disegnato lungo l'asta dalla parte del semiasse 3 positivo;
- momento torcente $M1$ (Mt): viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di momento torcente positivo viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- momento $M2$: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di $M2$ positivo viene disegnato dalla parte del semiasse 3 negativo;
- momento $M3$: viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di $M3$ positivo viene disegnato dalla parte del semiasse 2 negativo.

In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione M_{xx} , M_{yy} , M_{xy} .

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO



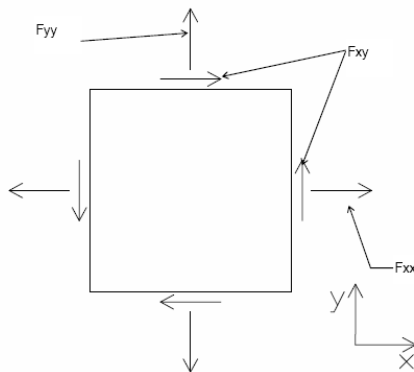
si definiscono:

M_{xx} : momento flettente [Forza*Lunghezza/Lunghezza] agente sul bordo di normale x (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{yy} : momento flettente [Forza*Lunghezza/Lunghezza] agente sul bordo di normale y (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{xy} : momento torcente [Forza*Lunghezza/Lunghezza] agente sui bordi (verso positivo indicato dalla freccia in figura).

Per quanto riguarda le sollecitazioni estensionali si faccia riferimento alla figura seguente dove per lo stesso elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione F_{xx} , F_{yy} , F_{xy} .



Si definiscono:

F_{xx} : sforzo estensionale [Forza/Lunghezza] agente sul bordo di normale x (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{yy} : sforzo estensionale [Forza/Lunghezza] agente sul bordo di normale all'asse y (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{xy} : sforzo di taglio [Forza/Lunghezza] agente sui bordi (verso positivo indicato dalla freccia in figura).

Vengono riportati inoltre i tagli fuori dal piano dell'elemento shell:

V_x : taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse x (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti);

V_y : taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse y (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti).

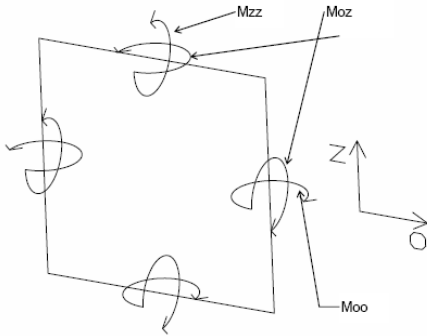
Gusci verticali: pareti e muri

Il sistema di riferimento nel quale sono espressi i parametri di sollecitazione è così definito: "origine appartenente al piano dell'elemento, asse O (ascisse) e z (ordinate) contenuti nel piano dell'elemento e terzo asse ortogonale al piano dell'elemento a formare una terna destrorsa". In particolare l'asse O è orizzontale e l'asse z parallelo ed equiverso con l'asse Z globale. Si

VASCHE DI PRIMA PIOGGIA
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sottolinea che non ha alcun interesse collocare esattamente nel piano dell'elemento la posizione dell'origine in quanto i parametri di sollecitazione sono invarianti rispetto a tale posizione.

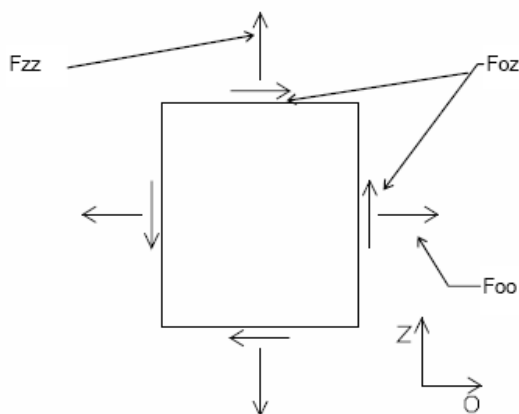
In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione M_{oo} , M_{zz} , M_{oz} .



M_{oo} : momento flettente distribuito [Forza*Lunghezza/Lunghezza] applicato al bordo di normale parallela all'asse O (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{zz} : momento flettente distribuito [Forza*Lunghezza/Lunghezza] applicato al bordo di normale parallela all'asse z (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{oz} : momento "torcente" distribuito [Forza*Lunghezza/Lunghezza] applicato sui bordi (verso positivo indicato dalla freccia in figura). Per quanto riguarda le sollecitazioni estensionali si faccia riferimento alla figura seguente dove per lo stesso elemento infinitesimo di shell con indicato il sistema di riferimento i parametri di sollecitazione F_{oo} , F_{zz} , F_{oz} sono rispettivamente:



F_{zz} : sforzo tensionale distribuito [Forza/Lunghezza] applicato al bordo di normale parallela all'asse z (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{oo} : sforzo tensionale distribuito [Forza/Lunghezza] applicato al bordo di normale parallela all'asse O (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{oz} : sforzo tagliante distribuito [Forza/Lunghezza] applicato sui bordi (verso positivo indicato dalla freccia in figura).

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

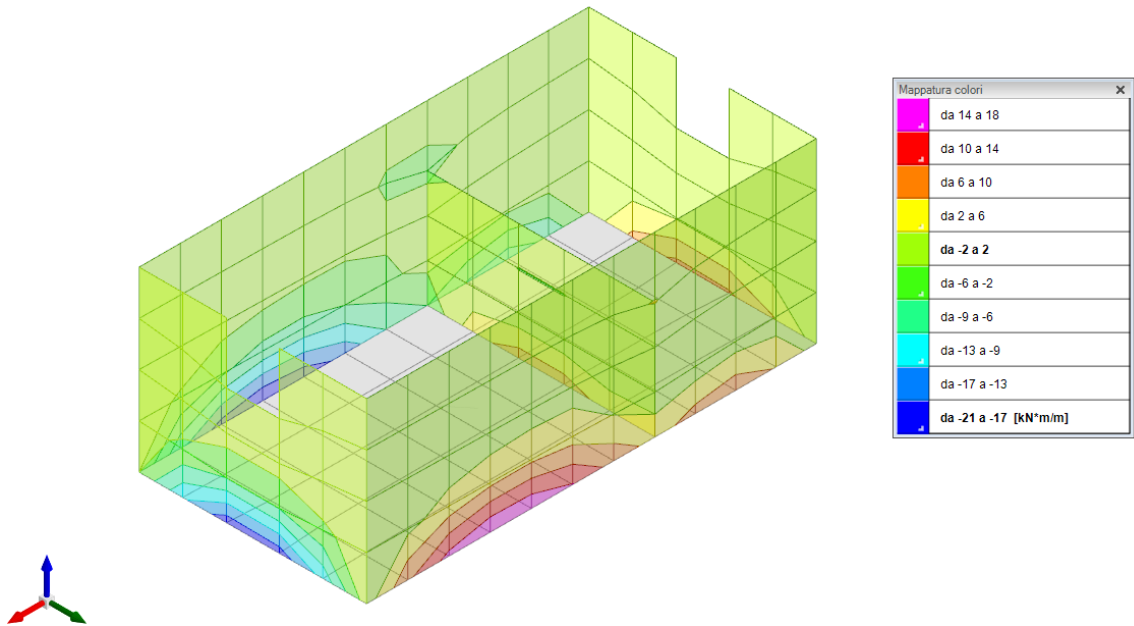


Figura 9 - Inviluppo momento flettente Mzz

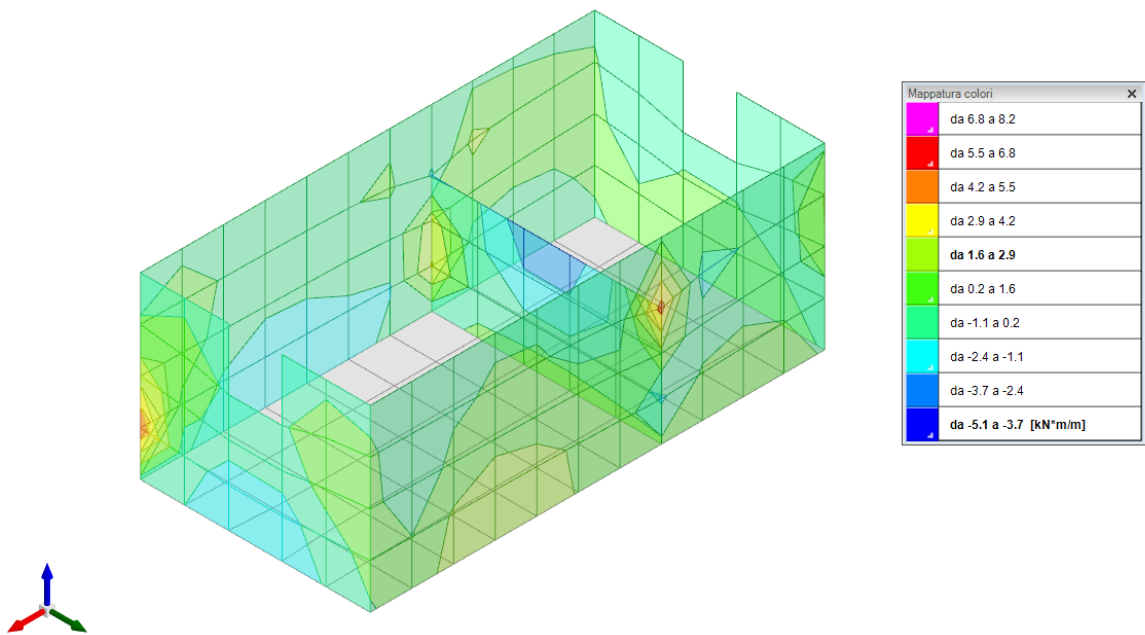


Figura 10 - Inviluppo momento flettente Moo

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

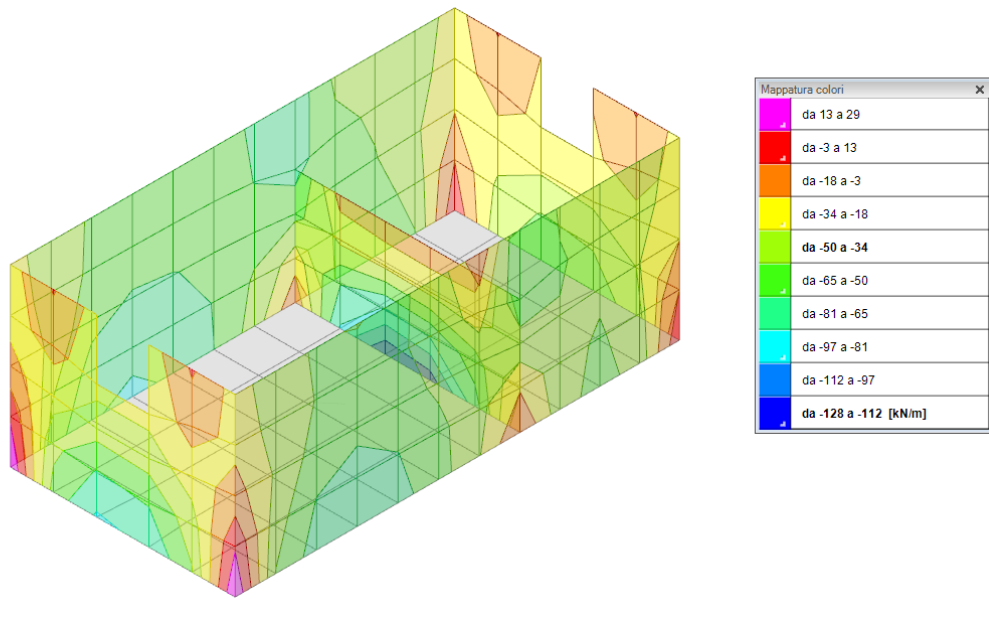


Figura 11 - Involuppo sforzo di taglio F_z

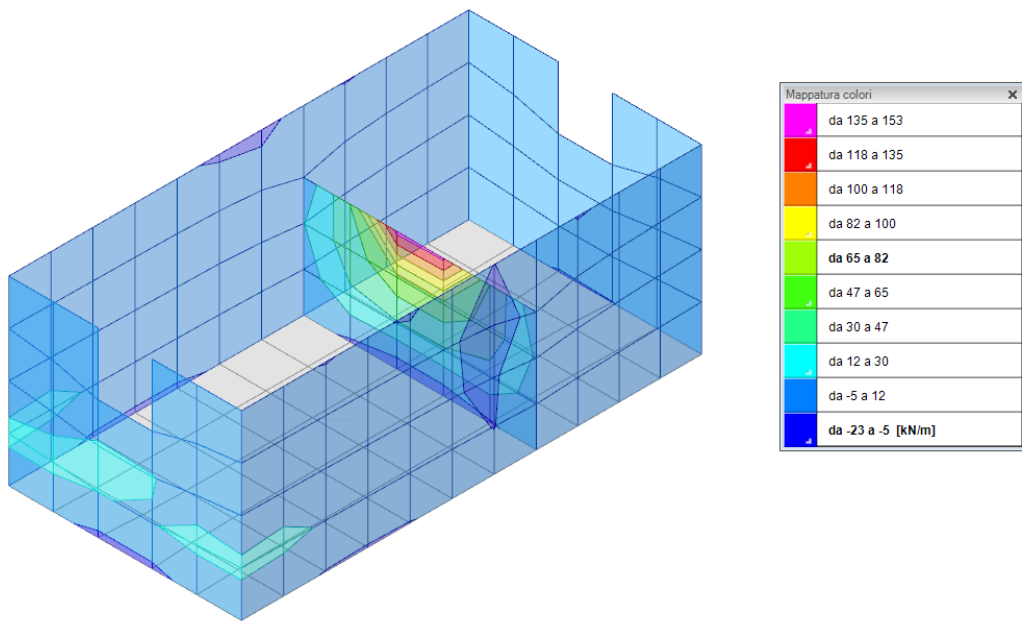


Figura 12 - Involuppo sforzo di taglio F_{00}

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 RELAZIONE GEOTECNICA E DI CALCOLO

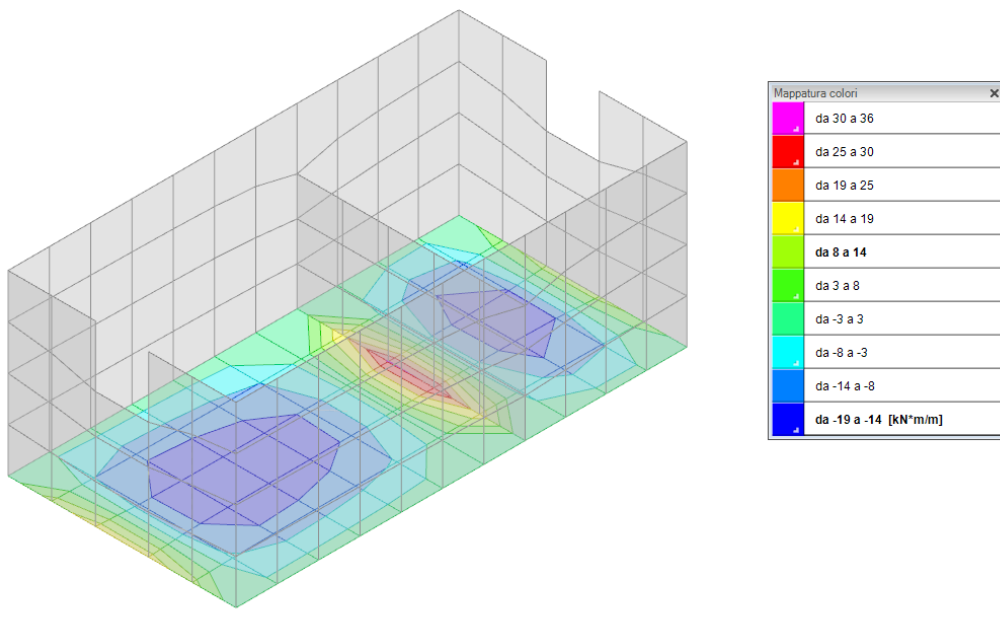


Figura 13 - Involuppo momento flettente Mxx

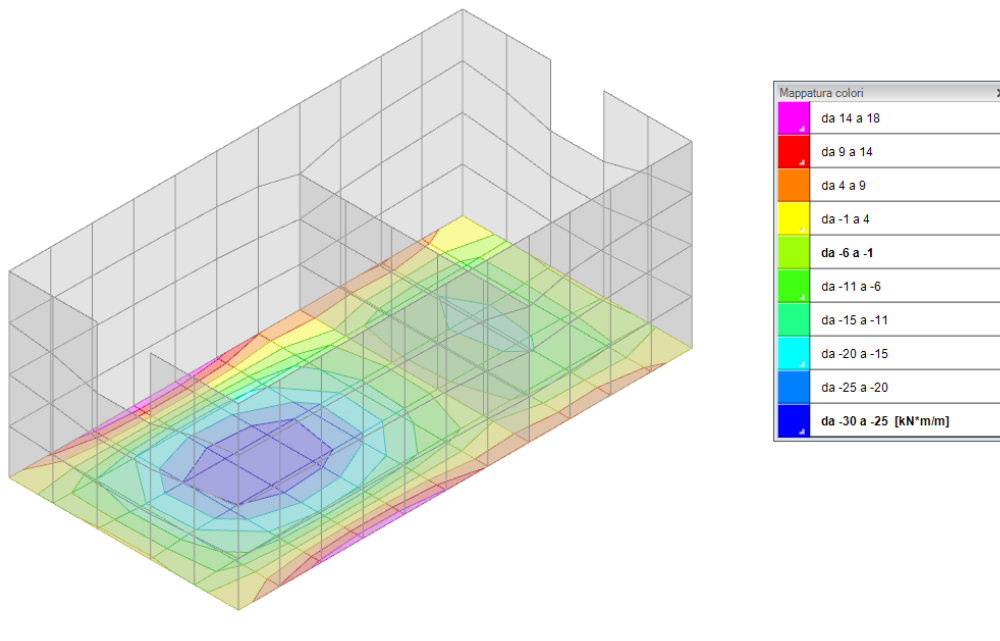


Figura 14 - Involuppo momento flettente Myy

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

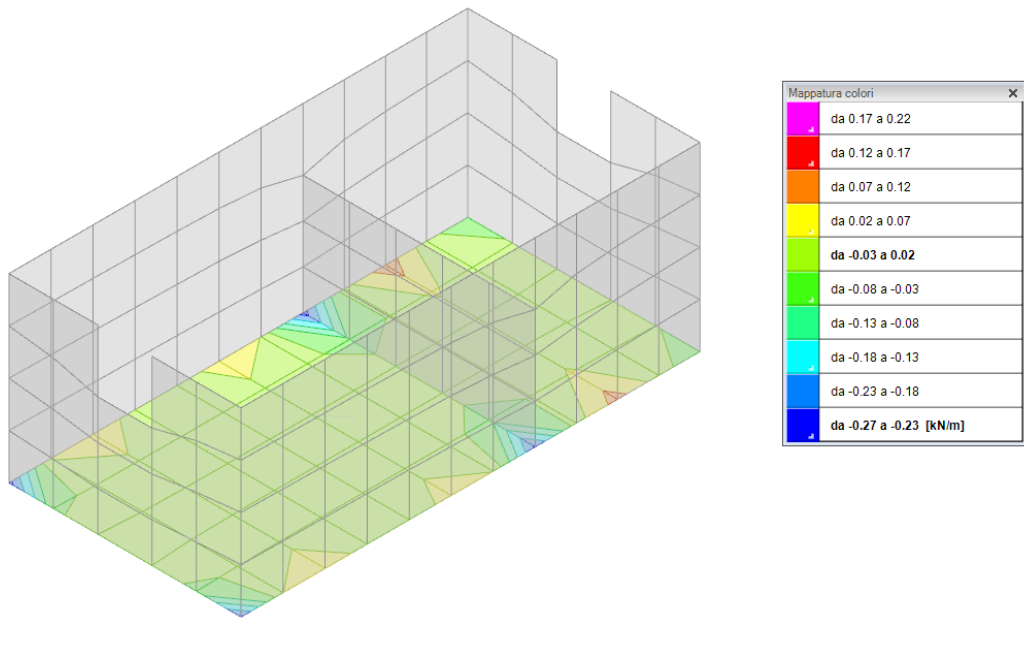


Figura 15 - Inviluppo sforzo di taglio Fxx

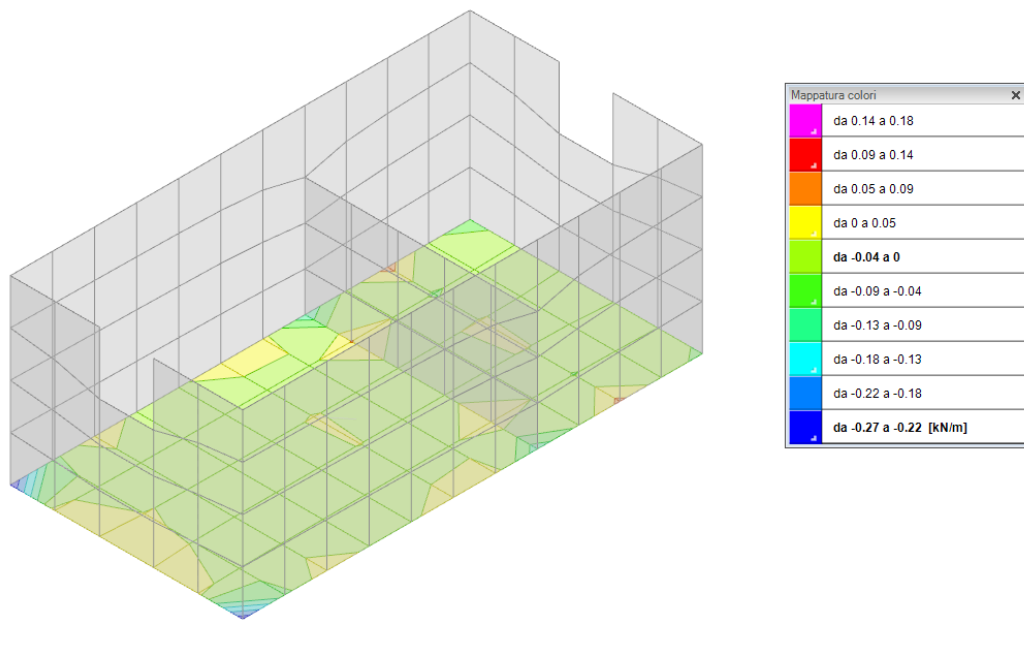


Figura 16 - Inviluppo sforzo di taglio Fyy

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

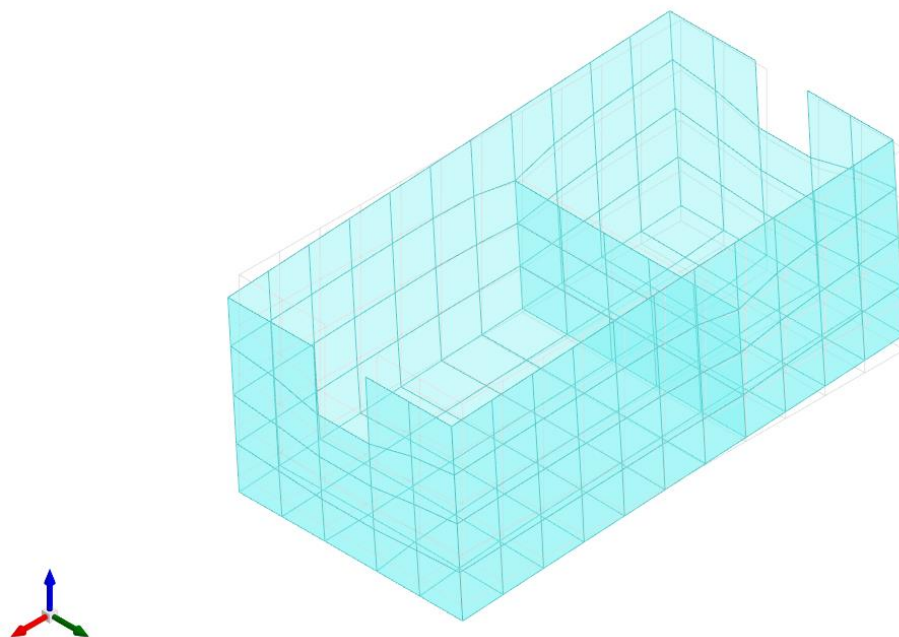


Figura 17 – Spostamenti condizione sisma X SLV

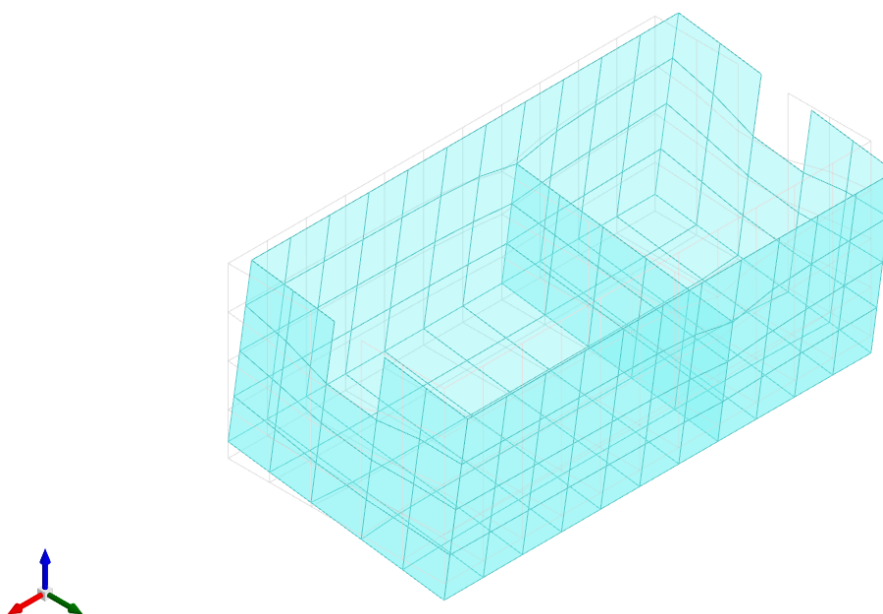


Figura 18 – Spostamenti condizione sisma Y SLV

5.7 VERIFICHE STRUTTURALI

Si riportano di seguito i tabulati di calcolo delle verifiche dei vari elementi strutturali.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.7.1 Verifiche pareti

nod.: nodo del modello FEM
sez.: tipo di sezione (o = orizzontale, v = verticale)
B: base della sezione
H: altezza della sezione
Af+: area di acciaio dal lato B (inferiore per le piastre)
Af-: area di acciaio dal lato A (superiore per le piastre)
c+: copriferro dal lato B (inferiore per le piastre)
c-: copriferro dal lato A (superiore per le piastre)
sc: tensione sul calcestruzzo in esercizio
comb: combinazione di carico
c.s.: coefficiente di sicurezza
N: sforzo normale di calcolo
M: momento flettente di calcolo
Mu: momento flettente ultimo
Nu: sforzo normale ultimo
sf: tensione sull'acciaio in esercizio
Wk: apertura caratteristica delle fessure
Sm: distanza media fra le fessure
st: sigma a trazione nel calcestruzzo in condizioni non fessurate
fcK: resistenza caratteristica cilindrica del calcestruzzo
fcD: resistenza a compressione di calcolo del calcestruzzo
fcTd: resistenza a trazione di calcolo del calcestruzzo
Hcr: altezza critica
q.Hcr: *quota della sezione alla altezza critica
hw: altezza della parete
lw: lunghezza della parete
n.p.: numero di piani
hs: altezza dell'interpiano
Mxd: momento di progetto attorno all'asse x (fuori piano)
Myd: momento di progetto attorno all'asse y (nel piano)
NEd: sforzo normale di progetto
MEd: Momento flettente di progetto di progetto
VEd: sforzo di taglio di progetto
Ngrav.: sforzo normale dovuto ai carichi gravitazionali
NReale.: sforzo normale derivante dall'analisi
VRcd: resistenza a taglio dovuta alle bielle di calcestruzzo
epsilon: coefficiente di maggiorazione del taglio derivante dall'analisi
alfaS: $MEd/(VEd*lw)$ formula 7.4.15
At: area tesa di acciaio
roh: rapporto tra area della sezione orizzontale dell'armatura di anima e l'area della sezione di calcestruzzo
rov: rapporto tra area della sezione verticale dell'armatura di anima e l'area della sezione di calcestruzzo
VRsd: resistenza a taglio della sezione con armature
Somma(Asj)- Ai: somma delle aree delle barre verticali che attraversano la superficie di scorrimento
csi: altezza della parte compressa normalizzata all'altezza della sezione
Vdd: contributo dell'effetto spinotto delle armature verticali
Vfd: contributo della resistenza per attrito
Vid: contributo delle armature inclinate presenti alla base
VRd,s: valore di progetto della resistenza a taglio nei confronti dello scorrimento
M01: momento flettente inferiore per verifica instabilità
M02: momento flettente superiore per verifica instabilità
etot: eccentricità complessiva EC2 12.6.5.2 (12.12)
Fi: coefficiente riduttivo EC2 12.6.5.2 (12.11)
l0: lunghezza libera di inflessione
beta: coefficiente EC2 12.6.5.1 (12.9)
Nrd: resistenza di progetto EC2 12.6.5.2 (12.10)
l,lim: snellezza limite EC2 12.6.5.1 (4)
At: area di calcestruzzo del traverso in parete con blocco cassero in legno
Vr,cls: resistenza a taglio in assenza di armatura orizzontale in parete con blocco cassero in legno
Mu: momento resistente ultimo del singolo traverso in parete con blocco cassero in legno
Hp: resistenza a trazione dell'elemento teso in parete con blocco cassero in legno
R: fattore di efficienza in parete con blocco cassero in legno

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Vr,s: contributo alla resistenza a taglio della armatura orizzontale in parete con blocco cassero in legno

Vrd: resistenza a taglio per trazione del diagonale in parete con blocco cassero in legno

l: luce netta della trave di collegamento

h: altezza della trave di collegamento

b: spessore della trave di collegamento

d: altezza utile della trave di collegamento

Asi: area complessiva della armatura a X

M,plast: momenti resistenti della trave a filo appoggio

T,plast: sforzi di taglio nella trave derivanti da gerarchia delle resistenze

Parete fra le coordinate in pianta (4848;6070) (4848;5610)

da quota -40 a quota 330

Valori in daN, cm

C32/40: rck 400

fyk 4500

Verifica di stato limite ultimo

nod	sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd
27	o 100	30	10.1	10.1	7.0	7.0		4.750	23 SLU	-10195	-303751	-48429	-1442830	4155	14182
	v 70	30	4.5	4.5	5.6	5.6		48.539	24 SLU	-383	-14103	-18599	-684555	415	9065
50	o 100	30	10.1	10.1	7.0	7.0		4.744	23 SLU	-9541	-298100	-45264	-1414185	4101	14107
	v 70	30	4.5	4.5	5.6	5.6		49.636	24 SLU	-349	-13519	-17307	-671000	323	9069
78	o 100	30	10.1	10.1	7.0	7.0		49.538	24 SLU	-9007	-40429	-446189	-2002793	4144	14050
	v 100	30	5.7	5.7	5.6	5.6		17.767	10 SLU	917	-22442	16290	-398728	292	12942
146	o 50	30	6.0	6.0	7.0	7.0		118.683	23 SLU	-2300	4253	-272966	504800	86	7133
	v 100	30	5.7	5.7	5.6	5.6		6.986	17 SLU	-3385	-126222	-23646	-881785	2086	13355

Combinazione rara

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c		
27	o 100	30	10.1	10.1	7.0	7.0	-29.1	5	ra	-7.26E03	-2.20E05	678.9	5	ra	-7.26E03	-2.20E05	0.00999	0.00	11.8	0.0	1	ra
	v 70	30	4.5	4.5	5.6	5.6	-2.0	6	ra	-2.97E02	-9.89E03	64.1	6	ra	-2.97E02	-9.89E03	0.00999	0.00	0.8	0.0	1	ra
50	o 100	30	10.1	10.1	7.0	7.0	-28.7	5	ra	-6.81E03	-2.16E05	683.0	5	ra	-6.81E03	-2.16E05	0.00999	0.00	11.7	0.0	1	ra
	v 70	30	4.5	4.5	5.6	5.6	-1.9	6	ra	-2.74E02	-9.50E03	62.8	6	ra	-2.74E02	-9.50E03	0.00999	0.00	0.8	0.0	1	ra
78	o 100	30	10.1	10.1	7.0	7.0	-3.5	6	ra	-6.42E03	-2.59E04	-28.3	5	ra	-6.42E03	-2.59E04	0.00999	0.00	0.6	0.0	1	ra
	v 100	30	5.7	5.7	5.6	5.6	-1.9	5	ra	-7.56E02	1.37E04	126.9	4	ra	3.52E02	-1.19E04	0.00999	0.00	0.9	0.0	1	ra
146	o 50	30	6.0	6.0	7.0	7.0	-1.3	5	ra	-1.63E03	3.04E03	-12.0	6	ra	-1.60E03	2.33E03	0.00999	0.00	0.0	0.0	1	ra
	v 100	30	5.7	5.7	5.6	5.6	-13.5	5	ra	-2.44E03	-8.94E04	479.3	5	ra	-2.44E03	-8.94E04	0.00999	0.00	5.0	0.0	1	ra

Combinazione frequente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c		
27	o 100	30	10.1	10.1	7.0	7.0	-25.4	5	fr	-6.71E03	-1.92E05	576.0	5	fr	-6.71E03	-1.92E05	0.00	0.30	10.2	0.0	1	fr
	v 70	30	4.5	4.5	5.6	5.6	-1.8	4	fr	-1.88E02	-8.81E03	65.6	4	fr	-1.88E02	-8.81E03	0.00	0.30	0.7	0.0	1	fr
50	o 100	30	10.1	10.1	7.0	7.0	-25.0	5	fr	-6.31E03	-1.89E05	579.8	5	fr	-6.31E03	-1.89E05	0.00	0.30	10.1	0.0	1	fr
	v 70	30	4.5	4.5	5.6	5.6	-1.8	4	fr	-1.70E02	-8.50E03	64.6	4	fr	-1.70E02	-8.50E03	0.00	0.30	0.7	0.0	1	fr
78	o 100	30	10.1	10.1	7.0	7.0	-3.5	4	fr	-5.50E03	-2.93E04	-24.0	5	fr	-6.00E03	-6.63E03	0.00	0.30	0.5	0.0	1	fr
	v 100	30	5.7	5.7	5.6	5.6	-1.7	4	fr	2.65E02	-1.11E04	114.2	2	fr	3.02E02	-1.09E04	0.00	0.30	0.8	0.0	1	fr
146	o 50	30	6.0	6.0	7.0	7.0	-1.2	5	fr	-1.45E03	2.58E03	-10.4	5	fr	-1.45E03	2.58E03	0.00	0.30	0.0	0.0	1	fr
	v 100	30	5.7	5.7	5.6	5.6	-10.5	5	fr	-1.92E03	-6.95E04	369.7	5	fr	-1.92E03	-6.95E04	0.00	0.30	3.9	0.0	1	fr

Combinazione quasi permanente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c		
27	o 100	30	10.1	10.1	7.0	7.0	-23.6	5	q	-6.18E03	-1.79E05	539.6	5	q	-6.18E03	-1.79E05	0.00	0.20	9.5	0.0	1	q
	v 70	30	4.5	4.5	5.6	5.6	-1.8	6	q	-1.88E02	-8.81E03	65.6	6	q	-1.88E02	-8.81E03	0.00	0.20	0.7	0.0	1	q
50	o 100	30	10.1	10.1	7.0	7.0	-23.3	5	q	-5.82E03	-1.76E05	543.1	5	q	-5.82E03	-1.76E05	0.00	0.20	9.5	0.0	1	q
	v 70	30	4.5	4.5	5.6	5.6	-1.8	6	q	-1.70E02	-8.50E03	64.6	6	q	-1.70E02	-8.50E03	0.00	0.20	0.7	0.0	1	q
78	o 100	30	10.1	10.1	7.0	7.0	-3.5	6	q	-5.50E03	-2.93E04	-22.5	5	q	-5.53E03	-5.40E03	0.00	0.20	0.6	0.0	1	q
	v 100	30	5.7	5.7	5.6	5.6	-1.9	4	q	3.52E02	-1.19E04	126.9	4	q	3.52E02	-1.19E04	0.00	0.20	0.9	0.0	1	q
146	o 50	30	6.0	6.0	7.0	7.0	-1.1	5	q	-1.33E03	2.35E03	-9.6	5	q	-1.33E03	2.35E03	0.00	0.20	0.0	0.0	1	q
	v 100	30	5.7	5.7	5.6	5.6	-10.0	5	q	-1.82E03	-6.61E04	352.9	5	q	-1.82E03	-6.61E04	0.00	0.20	3.7	0.0	1	q

Parete fra le coordinate in pianta (5698;5610) (5698;6070)

da quota -40 a quota 330

Valori in daN, cm

C32/40: rck 400

fyk 4500

Verifica di stato limite ultimo

nod	sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd
28	o 100	30	10.1	10.1	7.0	7.0		3.579	23 SLU	-12540	-394135	-44885	-1410734	4840	14452
	v 70	30	4.5	4.5	5.6	5.6		21.676	24 SLU	-247	-25151	-5361	-545165	587	9209
51	o 100	30	10.1	10.1	7.0	7.0		3.581	23 SLU	-11810	-387414	-42289	-1387174	4778	14368
	v 70	30	4.5	4.5	5.6	5.6		21.761	24 SLU	-190	-24455	-4130	-532182	487	9213
79	o 100	30	10.1	10.1	7.0	7.0		29.705	24 SLU	-11831	-82395	-351424	-2447521	4821	14282
	v 100	30	5.7	5.7	5.6	5.6		10.296	10 SLU	1672	-37503	17217	-386122	601	12942
109	o 65	30	7.0	7.0	7.0	7.0		63.819	10 SLU	410	-6255	26188	-399202	98	8716
	v 100	30	5.7	5.7	5.6	5.6		4.877	10 SLU	2597	91710	12668	447283	1483	12942

Combinazione rara

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c
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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

28	o	100	30	10.1	10.1	7.0	7.0	-37.6	5	ra	-8.89E03	-2.83E05	897.5	5	ra	-8.89E03	-2.83E05	0.00999.00	15.4	0.0	1	ra
	v	70	30	4.5	4.5	5.6	5.6	-3.7	6	ra	-2.04E02	-1.76E04	150.1	6	ra	-2.04E02	-1.76E04	0.00999.00	1.5	0.0	1	ra
51	o	100	30	10.1	10.1	7.0	7.0	-37.1	5	ra	-8.38E03	-2.78E05	901.0	5	ra	-8.38E03	-2.78E05	0.00999.00	15.2	0.0	1	ra
	v	70	30	4.5	4.5	5.6	5.6	-3.6	6	ra	-1.65E02	-1.71E04	149.9	6	ra	-1.65E02	-1.71E04	0.00999.00	1.5	0.0	1	ra
79	o	100	30	10.1	10.1	7.0	7.0	-6.1	6	ra	-8.36E03	-5.51E04	-22.7	5	ra	-7.85E03	-2.63E04	0.00999.00	1.6	0.0	1	ra
	v	100	30	5.7	5.7	5.6	5.6	-3.6	4	ra	9.63E02	-2.31E04	274.3	4	ra	9.63E02	-2.31E04	0.00999.00	1.8	0.0	1	ra
109	o	65	30	7.0	7.0	7.0	7.0	-1.1	5	ra	-1.99E03	-2.12E03	36.3	4	ra	5.99E01	-4.59E03	0.00999.00	0.5	0.0	1	ra
	v	100	30	5.7	5.7	5.6	5.6	-7.7	4	ra	1.44E03	4.93E04	524.9	4	ra	1.44E03	4.93E04	0.00999.00	3.7	0.0	1	ra

Combinazione frequente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c			
28	o	100	30	10.1	10.1	7.0	7.0	-33.6	5	fr	-8.27E03	-2.53E05	787.5	5	fr	-8.27E03	-2.53E05	0.00	0.30	13.7	0.0	1	fr
	v	70	30	4.5	4.5	5.6	5.6	-3.3	4	fr	-9.81E01	-1.57E04	143.8	4	fr	-9.81E01	-1.57E04	0.00	0.30	1.4	0.0	1	fr
51	o	100	30	10.1	10.1	7.0	7.0	-33.1	5	fr	-7.82E03	-2.49E05	790.8	5	fr	-7.82E03	-2.49E05	0.00	0.30	13.5	0.0	1	fr
	v	70	30	4.5	4.5	5.6	5.6	-3.2	4	fr	-6.86E01	-1.53E04	143.6	4	fr	-6.86E01	-1.53E04	0.00	0.30	1.4	0.0	1	fr
79	o	100	30	10.1	10.1	7.0	7.0	-5.9	4	fr	-7.25E03	-5.53E04	-18.7	5	fr	-7.34E03	-2.99E04	0.00	0.30	1.5	0.0	1	fr
	v	100	30	5.7	5.7	5.6	5.6	-3.7	4	fr	9.34E02	-2.37E04	275.7	4	fr	9.34E02	-2.37E04	0.00	0.30	1.8	0.0	1	fr
109	o	65	30	7.0	7.0	7.0	7.0	-1.0	4	fr	-7.68E01	-5.04E03	32.3	2	fr	1.62E01	-4.49E03	0.00	0.30	0.5	0.0	1	fr
	v	100	30	5.7	5.7	5.6	5.6	-7.4	4	fr	1.42E03	4.72E04	506.8	4	fr	1.42E03	4.72E04	0.00	0.30	3.5	0.0	1	fr

Combinazione quasi permanente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c			
28	o	100	30	10.1	10.1	7.0	7.0	-31.1	5	q.	-7.58E03	-2.34E05	732.5	5	q.	-7.58E03	-2.34E05	0.00	0.20	12.7	0.0	1	q.
	v	70	30	4.5	4.5	5.6	5.6	-3.3	6	q.	-9.81E01	-1.57E04	143.8	6	q.	-9.81E01	-1.57E04	0.00	0.20	1.4	0.0	1	q.
51	o	100	30	10.1	10.1	7.0	7.0	-30.7	5	q.	-7.18E03	-2.31E05	735.7	5	q.	-7.18E03	-2.31E05	0.00	0.20	12.6	0.0	1	q.
	v	70	30	4.5	4.5	5.6	5.6	-3.2	6	q.	-6.86E01	-1.53E04	143.6	6	q.	-6.86E01	-1.53E04	0.00	0.20	1.4	0.0	1	q.
79	o	100	30	10.1	10.1	7.0	7.0	-5.9	6	q.	-7.25E03	-5.53E04	21.6	4	q.	-5.45E03	-5.17E04	0.00	0.20	1.6	0.0	1	q.
	v	100	30	5.7	5.7	5.6	5.6	-3.7	6	q.	9.34E02	-2.37E04	275.7	6	q.	9.34E02	-2.37E04	0.00	0.20	1.8	0.0	1	q.
109	o	65	30	7.0	7.0	7.0	7.0	-1.0	6	q.	-7.68E01	-5.04E03	36.3	4	q.	5.99E01	-4.59E03	0.00	0.20	0.5	0.0	1	q.
	v	100	30	5.7	5.7	5.6	5.6	-7.7	4	q.	1.44E03	4.93E04	524.9	4	q.	1.44E03	4.93E04	0.00	0.20	3.7	0.0	1	q.

Parete a "Fondazione - Copertura"

Parete fra le coordinate in pianta (4833;5625) (5713;5625)
da quota -40 a quota 330
Valori in daN, cm
C32/40: rck 400
fyk 4500

Verifica di stato limite ultimo

nod	sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd	
10	o	100	30	10.1	10.1	7.0	7.0	2.888	23	SLU	-14693	-480753	-42435	-1388467	5303	14699
	v	70	30	3.4	3.4	5.6	5.6	20.126	24	SLU	-533	-25158	-10719	-506346	299	9148
11	o	100	30	10.1	10.1	7.0	7.0	2.872	23	SLU	-14775	-483398	-42441	-1388560	5332	14709
	v	70	30	3.4	3.4	5.6	5.6	17.722	24	SLU	-408	-26154	-7239	-463520	273	9143
100	o	100	30	10.1	10.1	7.0	7.0	22.914	24	SLU	-14741	-108576	-337769	-2487897	5329	14684
	v	100	30	5.7	5.7	5.6	5.6	13.006	10	SLU	990	-34184	12873	-444604	249	12942

Combinazione rara

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c		
10	o	100	30	10.1	10.1	7.0	7.0	-46.2	5	ra	-1.04E04	-3.46E05	1121.6	5	ra	-1.04E04	-3.46E05	0.00999.00	19.0	0.0	1	ra
	v	70	30	3.4	3.4	5.6	5.6	-4.4	5	ra	-5.21E02	-1.90E04	171.7	6	ra	-3.95E02	-1.79E04	0.00999.00	1.5	0.0	1	ra
11	o	100	30	10.1	10.1	7.0	7.0	-46.4	5	ra	-1.05E04	-3.48E05	1126.8	5	ra	-1.05E04	-3.48E05	0.00999.00	19.1	0.0	1	ra
	v	70	30	3.4	3.4	5.6	5.6	-4.4	5	ra	-5.35E02	-1.92E04	191.9	6	ra	-3.19E02	-1.86E04	0.00999.00	1.6	0.0	1	ra
100	o	100	30	10.1	10.1	7.0	7.0	-7.9	6	ra	-1.04E04	-7.22E04	37.1	4	ra	-6.83E03	-6.86E04	0.00999.00	2.2	0.0	1	ra
	v	100	30	5.7	5.7	5.6	5.6	-3.6	6	ra	1.34E02	-2.31E04	222.4	4	ra	5.47E02	-2.17E04	0.00999.00	1.6	0.0	1	ra

Combinazione frequente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c			
10	o	100	30	10.1	10.1	7.0	7.0	-40.6	5	fr	-9.56E03	-3.05E05	969.8	5	fr	-9.56E03	-3.05E05	0.00	0.30	16.6	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-4.0	5	fr	-4.67E02	-1.75E04	155.1	5	fr	-4.67E02	-1.75E04	0.00	0.30	1.4	0.0	1	fr
11	o	100	30	10.1	10.1	7.0	7.0	-40.9	5	fr	-9.63E03	-3.08E05	976.8	5	fr	-9.63E03	-3.08E05	0.00	0.30	16.7	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-4.1	5	fr	-4.76E02	-1.77E04	169.8	4	fr	-2.27E02	-1.58E04	0.00	0.30	1.4	0.0	1	fr
100	o	100	30	10.1	10.1	7.0	7.0	-7.9	4	fr	-8.06E03	-7.30E04	30.7	2	fr	-6.81E03	-6.61E04	0.00	0.30	2.1	0.0	1	fr
	v	100	30	5.7	5.7	5.6	5.6	-3.8	4	fr	2.16E02	-2.38E04	229.2	4	fr	5.44E02	-2.26E04	0.00	0.30	1.6	0.0	1	fr

Combinazione quasi permanente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c			
10	o	100	30	10.1	10.1	7.0	7.0	-37.7	5	q.	-8.74E03	-2.83E05	905.3	5	q.	-8.74E03	-2.83E05	0.00	0.20	15.4	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-3.7	5	q.	-4.28E02	-1.61E04	148.5	6	q.	-3.10E02	-1.51E04	0.00	0.20	1.3	0.0	1	q.
11	o	100	30	10.1	10.1	7.0	7.0	-37.9	5	q.	-8.80E03	-2.85E05	911.2	5	q.	-8.80E03	-2.85E05	0.00	0.20	15.5	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-3.7	5	q.	-4.35E02	-1.63E04	169.8	6	q.	-2.27E02	-1.58E04	0.00	0.20	1.4	0.0	1	q.
100	o	100	30	10.1	10.1	7.0	7.0	-7.9	6	q.	-8.06E03	-7.30E04	37.1	4	q.	-6.83E03	-6.86E04	0.00	0.20	2.2	0.0	1	q.
	v	100	30	5.7	5.7	5.6	5.6	-3.8	6	q.	2.16E02	-2.38E04	229.2	6	q.	5.44E02	-2.26E04	0.00	0.20	1.6	0.0	1	q.

Parete a "Fondazione

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

	v	70	30	3.4	3.4	5.6	5.6	18.517	24	SLU	-390	-25022	-7224	-463335	290	9141							
101	o	100	30	10.1	10.1	7.0	7.0	24.933	24	SLU	-12947	-101327	-322805	-2526343	5256	14478							
	v	100	30	5.7	5.7	5.6	5.6	12.930	10	SLU	1094	-33068	14145	-427562	260	12942							
Combinazione rara																							
nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c				
71	o	100	30	10.1	10.1	7.0	7.0	-45.2	5	ra	-9.04E03	-3.37E05	1145.0	5	ra	-9.04E03	-3.37E05	0.00999.00	18.8	0.0	1	ra	
	v	70	30	3.4	3.4	5.6	5.6	-4.2	5	ra	-4.01E02	-1.82E04	174.3	5	ra	-4.01E02	-1.82E04	0.00999.00	1.5	0.0	1	ra	
72	o	100	30	10.1	10.1	7.0	7.0	-45.4	5	ra	-9.19E03	-3.38E05	1146.4	5	ra	-9.19E03	-3.38E05	0.00999.00	18.9	0.0	1	ra	
	v	70	30	3.4	3.4	5.6	5.6	-4.3	5	ra	-4.11E02	-1.84E04	183.8	6	ra	-3.06E02	-1.78E04	0.00999.00	1.5	0.0	1	ra	
101	o	100	30	10.1	10.1	7.0	7.0	-7.3	4	ra	-6.16E03	-6.56E04	44.1	4	ra	-6.16E03	-6.56E04	0.00999.00	2.3	0.0	1	ra	
	v	100	30	5.7	5.7	5.6	5.6	-3.4	4	ra	2.89E02	-2.17E04	223.3	4	ra	6.25E02	-2.08E04	0.00999.00	1.6	0.0	1	ra	
Combinazione frequente																							
nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
71	o	100	30	10.1	10.1	7.0	7.0	-39.7	5	fr	-8.34E03	-2.97E05	990.4	5	fr	-8.34E03	-2.97E05	0.00	0.30	16.4	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-3.9	5	fr	-3.61E02	-1.67E04	161.7	5	fr	-3.61E02	-1.67E04	0.00	0.30	1.4	0.0	1	fr
72	o	100	30	10.1	10.1	7.0	7.0	-40.0	5	fr	-8.49E03	-2.99E05	994.1	5	fr	-8.49E03	-2.99E05	0.00	0.30	16.5	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-4.0	5	fr	-3.67E02	-1.70E04	164.0	5	fr	-3.67E02	-1.70E04	0.00	0.30	1.4	0.0	1	fr
101	o	100	30	10.1	10.1	7.0	7.0	-7.5	4	fr	-7.22E03	-6.91E04	37.0	2	fr	-6.15E03	-6.31E04	0.00	0.30	2.1	0.0	1	fr
	v	100	30	5.7	5.7	5.6	5.6	-3.6	4	fr	2.89E02	-2.27E04	230.4	4	fr	6.43E02	-2.15E04	0.00	0.30	1.6	0.0	1	fr
Combinazione quasi permanente																							
nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
71	o	100	30	10.1	10.1	7.0	7.0	-36.9	5	q.	-7.68E03	-2.76E05	923.4	5	q.	-7.68E03	-2.76E05	0.00	0.20	15.3	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-3.6	5	q.	-3.35E02	-1.54E04	148.6	5	q.	-3.35E02	-1.54E04	0.00	0.20	1.3	0.0	1	q.
72	o	100	30	10.1	10.1	7.0	7.0	-37.2	5	q.	-7.81E03	-2.78E05	926.4	5	q.	-7.81E03	-2.78E05	0.00	0.20	15.4	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-3.6	5	q.	-3.39E02	-1.56E04	163.4	6	q.	-2.17E02	-1.52E04	0.00	0.20	1.3	0.0	1	q.
101	o	100	30	10.1	10.1	7.0	7.0	-7.5	6	q.	-7.22E03	-6.91E04	44.1	4	q.	-6.16E03	-6.56E04	0.00	0.20	2.3	0.0	1	q.
	v	100	30	5.7	5.7	5.6	5.6	-3.6	6	q.	2.89E02	-2.27E04	230.4	6	q.	6.43E02	-2.15E04	0.00	0.20	1.6	0.0	1	q.

Parete a "Fondazione - Sfiro"

Parete fra le coordinate in pianta (5153;6070) (5153;5610)
da quota -40 a quota 200
Valori in daN, cm
C32/40; rck 400
fyk 4500

Verifica di stato limite ultimo

nod sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Ved		
81	o	100	20	5.7	5.7	6.6	6.6	20.704	24	SLU	-16677	3274	-345269	67779	1792	8633
	v	100	20	3.9	3.9	5.5	5.5	5.103	10	SLU	4722	12772	24098	65182	72	8271
148	o	65	20	4.2	4.2	6.6	6.6	36.193	24	SLU	-6309	-4239	-228359	-153419	133	5648
	v	50	20	2.4	2.4	5.5	5.5	2.534	10	SLU	1901	-49856	4819	-126351	696	4135
152	o	100	20	5.7	5.7	6.6	6.6	342.000	24	SLU	-1010	-280	-345269	-95801	233	7758
	v	50	20	2.4	2.4	5.5	5.5	1.372	24	SLU	11347	20618	15563	28279	198	4135
153	o	100	20	5.7	5.7	6.6	6.6	339.571	23	SLU	-1017	64	-345269	21573	233	7760
	v	50	20	2.4	2.4	5.5	5.5	1.380	24	SLU	11267	20603	15554	28441	199	4135

Combinazione rara

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c			
81	o	100	20	5.7	5.7	6.6	6.6	-5.9	5	ra	-1.14E04	-4.35E03	-80.5	6	ra	-1.19E04	1.96E03	0.00999.00	0.0	0.0	1	ra
	v	100	20	3.9	3.9	5.5	5.5	-2.8	4	ra	2.83E03	8.06E03	605.4	4	ra	3.07E03	8.20E03	0.00999.00	2.7	0.0	1	ra
148	o	65	20	4.2	4.2	6.6	6.6	-3.7	6	ra	-4.42E03	-2.80E03	-46.0	5	ra	-4.37E03	2.53E01	0.00999.00	0.0	0.0	1	ra
	v	50	20	2.4	2.4	5.5	5.5	-27.5	4	ra	5.32E02	-3.31E04	1154.2	4	ra	5.32E02	-3.31E04	0.00999.00	10.3	0.0	1	ra
152	o	100	20	5.7	5.7	6.6	6.6	-0.4	6	ra	-7.24E02	-1.85E02	-4.9	6	ra	-7.24E02	-1.85E02	0.00999.00	0.0	0.0	1	ra
	v	50	20	2.4	2.4	5.5	5.5	-8.9	4	ra	5.60E03	1.52E04	2276.0	6	ra	7.69E03	1.37E04	0.00999.00	11.5	0.0	1	ra
153	o	100	20	5.7	5.7	6.6	6.6	-0.4	6	ra	-7.24E02	-1.46E02	-5.0	5	ra	-7.30E02	4.53E01	0.00999.00	0.0	0.0	1	ra
	v	50	20	2.4	2.4	5.5	5.5	-9.3	4	ra	5.44E03	1.52E04	2263.8	6	ra	7.63E03	1.37E04	0.00999.00	11.4	0.0	1	ra

Combinazione frequente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
81	o	100	20	5.7	5.7	6.6	6.6	-5.5	5	fr	-1.07E04	-4.20E03	-70.7	5	fr	-1.07E04	-4.20E03	0.00	0.30	0.0	0.0	1	fr
	v	100	20	3.9	3.9	5.5	5.5	-2.5	2	fr	2.70E03	7.46E03	612.2	4	fr	3.23E03	7.32E03	0.00	0.30	2.7	0.0	1	fr
148	o	65	20	4.2	4.2	6.6	6.6	-3.2	4	fr	-3.66E03	-2.72E03	-42.0	5	fr	-4.00E03	8.17E01	0.00	0.30	0.0	0.0	1	fr
	v	50	20	2.4	2.4	5.5	5.5	-25.6	2	fr	3.88E02	-3.10E04	1054.1	2	fr	3.88E02	-3.10E04	0.00	0.30	9.5	0.0	1	fr
152	o	100	20	5.7	5.7	6.6	6.6	-0.3	4	fr	-6.35E02	-1.80E02	-4.3	4	fr	-6.35E02	-1.80E02	0.00	0.30	0.0	0.0	1	fr
	v	50	20	2.4	2.4	5.5	5.5	-7.8	2	fr	5.43E03	1.42E04	2202.1	4	fr	7.30E03	1.39E04	0.00	0.30	11.2	0.0	1	fr
153	o	100	20	5.7	5.7	6.6	6.6	-0.3	5	fr	-6.85E02	4.42E01	-4.7	5	fr	-6.85E02	4.42E01	0.00	0.30	0.0	0.0	1	fr
	v	50	20	2.4	2.4	5.5	5.5	-8.3	2	fr	5.27E03	1.42E04	2192.7	4	fr	7.26E03	1.38E04	0.00	0.30	11.1	0.0	1	fr

Combinazione quasi permanente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
81	o	100	20	5.7	5.7	6.6	6.6	-5.1	6	q.	-1.03E04	2.47E03	-69.6	6	q.	-1.03E04	2.47E03	0.00	0.20	0.0	0.0	1	q.
	v	100	20	3.9	3.9	5.5	5.5	-2.8	4	q.	2.83E03	8.06E03	612.2	6	q.	3.23E03	7.32E03	0.00	0.20	2.7	0.0	1	q.
148	o	65	20	4.2	4.2	6.6	6.6	-3.2	6	q.	-3.66E03	-2.72E03	-37.9	5	q.	-3.61E03	1.07E02	0.00	0.20	0.0	0.0	1	q.
	v	50	20	2.4	2.4	5.5	5.5	-27.5	4	q.	5.32E02	-3.31E04	1154.2	4	q.	5.32E02	-3.31E04	0.00	0.20	10.3	0.0	1	q.
152	o	100	20	5.7	5.7	6.6	6.6	-0.3	6	q.	-6.35E02	-1.80E02	-4.3	6	q.	-6.35E02							

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Dir.: direzione della sezione di verifica
B: base della sezione rettangolare di verifica [m]
H: altezza della sezione rettangolare di verifica [m]
A. sup.: area barre armatura superiori [m²]
C. sup.: distanza media delle barre superiori dal bordo superiore della sezione [m]
A. inf.: area barre armatura inferiori [m²]
C. inf.: distanza media delle barre inferiori dal bordo inferiore della sezione [m]
Comb.: combinazione di verifica
M: momento flettente [kN*m]
N: sforzo normale [kN]
Mu: momento flettente ultimo [kN*m]
Nu: sforzo normale ultimo [kN]
c.s.: coefficiente di sicurezza
Verifica: stato di verifica
A. st.: area staffe su interasse [m]
A. sag.: area sagomati su interasse [m]
Ved: taglio agente [kN]
Vrd: taglio resistente [kN]
Vrdc: resistenza di calcolo a taglio per elementi privi di armature trasversali [kN]
Vrsd: resistenza di calcolo a taglio trazione [kN]
Vrcd: resistenza di calcolo a taglio compressione [kN]
cotgθ: cotangente dell'inclinazione dei puntoni di calcestruzzo rispetto all'asse dell'elemento
Asl: area longitudinale tesa nella combinazione di verifica di Ved [m²]
σc: tensione nel calcestruzzo [kN/m²]
σlim: tensione limite [kN/m²]
Es/Ec: coefficiente di omogenizzazione
σf: tensione nell'acciaio d'armatura [kN/m²]

Le unità di misura delle verifiche elencate nel capitolo sono in [m, kN] ove non espressamente specificato.

Platea a "Fondazione"

Verifiche condotte secondo D.M. 17-01-18 (N.T.C.)

Caratteristiche dei materiali

Acciaio: B450C Fyk 450000

Calcestruzzo: C32/40 Rck 40000

Verifiche nei nodi

Verifiche SLU flessione nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	Mu	Nu	c.s.	Verifica
38	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	61.4491	0.02	134.0284	0.04	2.1811	Si
40	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	59.8558	0.01	134.0298	0.03	2.2392	Si
33	X	1	0.4	0.001005	0.074	0.001005	0.074	SLU 24	-50.9368	0	-135.567	0.01	2.6615	Si
35	X	1	0.4	0.001005	0.074	0.001005	0.074	SLU 24	-50.2714	0	-135.5708	-0.01	2.6968	Si
11	X	1	0.4	0.001005	0.074	0.001005	0.074	SLU 23	48.3922	0.03	135.5567	0.07	2.8012	Si

Verifiche SLU taglio nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	A. st.	A. sag.	Comb.	Ved	N	Vrd	Vrdc	Vrsd	Vrcd	cotgθ	Asl	c.s.	Verifica
11	X	1	0.4	0.001005	0.074	0.001005	0.074	0	0	SLU 23	-92.28	0.03	156.56	156.56	0	951.7	2.5	0.0010053	1.6965	Si
21	X	1	0.4	0.001005	0.074	0.001005	0.074	0	0	SLU 23	-92.28	-0.03	156.56	156.56	0	951.7	2.5	0.0010053	1.6965	Si
10	X	1	0.4	0.001005	0.074	0.001005	0.074	0	0	SLU 23	-91.26	0.01	156.56	156.56	0	951.7	2.5	0.0010053	1.7156	Si
22	X	1	0.4	0.001005	0.074	0.001005	0.074	0	0	SLU 23	-91.26	0	156.56	156.56	0	951.7	2.5	0.0010053	1.7156	Si
37	Y	1	0.4	0.001005	0.058	0.001005	0.058	0	0	SLU 24	-88.12	-0.02	161.69	161.69	0	998.41	2.5	0.0010053	1.835	Si

Verifiche SLE tensione calcestruzzo nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	σc	σlim	Es/Ec	Verifica
38	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE QP 6	38.0245	0.01	-1280	14940	15	Si
40	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE QP 6	37.1765	0.01	-1251	14940	15	Si
38	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	43.208	0.01	-1454	19920	15	Si
33	X	1	0.4	0.001005	0.074	0.001005	0.074	SLE QP 6	-31.2919	0	-1077	14940	15	Si
40	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	42.1159	0.01	-1418	19920	15	Si

Verifiche SLE tensione acciaio nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	σf	σlim	Es/Ec	Verifica
38	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	43.208	0.01	15490	360000	15	Si
40	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	42.1159	0.01	15099	360000	15	Si

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	of	qlim	Es/Ec	Verifica
33	X	1	0.4	0.001005	0.074	0.001005	0.074	SLE RA 6	-35.979	0	11700	360000	15	Si
35	X	1	0.4	0.001005	0.074	0.001005	0.074	SLE RA 6	-35.5508	0	11560	360000	15	Si
11	X	1	0.4	0.001005	0.074	0.001005	0.074	SLE RA 5	34.8275	0.02	11326	360000	15	Si

Verifiche SLE fessurazione nei nodi

La piastra non presenta nodi con apertura delle fessure.

5.8 CAPACITÀ PORTANTE DEL TERRENO

5.8.1 Valutazione della costante di sottofondo

La rigidezza delle molle, attraverso la quale viene schematizzata l'interazione terreno-struttura, viene calcolata utilizzando un coefficiente di sottofondo pari a 63000 kN/m³.

Tale valore è stato valutato mediante la metodologia di Joseph E. Bowles, che permette di stimare la costante di Winkler verticale per fondazioni superficiali rettangolari sulla base della capacità portante (carico ultimo) della fondazione, calcolata tramite la formula di Hansen, con la seguente formula:

$$k = 40 \times q_{lim}$$

dove la resistenza ultima del terreno corrisponde ad un cedimento $w = 2.5$ cm, limite per le condizioni di esercizio di una struttura.

In relazione al valore di capacità portante calcolato nei paragrafi successivi si ottiene: $k = 40 \times 1568 = 62754$ kN/m³. Pertanto in sede di modellazione è stato assunto un valore della costante di sottofondo pari a 63000 kN/m³.

5.8.2 Verifica della capacità portante del complesso terreno-fondazione

Per il calcolo del carico limite della fondazione si utilizza la formula di Brinch-Hansen. La verifica viene condotta allo stato limite ultimo secondo l'Approccio di progetto 2:

- Combo 1 : A1 + M1 + R3

Le fondazioni delle vasche di questa tipologia, in accordo con i profili geotecnici, poggiano in parte sullo strato riconducibile al litotipo UG1 (cfr. paragrafo 2), pertanto la verifica della capacità portante viene eseguita considerando un suolo di fondazione con le caratteristiche di questa litologia.

I calcoli per la valutazione della pressione limite di progetto sono riepilogati nelle tabelle di seguito:

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

AZIONI IN TESTA ALLA FONDAZIONE

$F_x =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione X (Direzione parallela alla base)
$F_y =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione Y (Direzione parallela alla lunghezza)
$F_z =$	<input type="text" value="0,00"/>	kN	Forza in direzione verticale (>0 se di compressione)
$M_x =$	<input type="text" value="0,00"/>	kNm	Momento in direzione X
$M_y =$	<input type="text" value="0,00"/>	kNm	Momento in direzione Y

CARATTERISTICHE FONDAZIONE

$B =$	<input type="text" value="4,60"/>	m	Base
$L =$	<input type="text" value="8,80"/>	m	Lunghezza
$H =$	<input type="text" value="0,40"/>	m	Altezza
$D =$	<input type="text" value="3,70"/>	m	Profondità piano di posa
$\alpha =$	<input type="text" value="0"/>	°	Inclinazione del piano di posa

Considera peso proprio fondazione

$\gamma_b =$	<input type="text" value="25,00"/>	kN/m ³	Peso per unità di volume fondazione
$P_b =$	<input type="text" value="0,00"/>	kN	Peso proprio plinto

AZIONI DALLA BASE DELLA FONDAZIONE

Considera momenti di trasporto

$F_{xt} =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione X
$F_{yt} =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione Y
$F_{zt} =$	<input type="text" value="0,00"/>	kN	Forza in direzione verticale (>0 se di compressione)
$M_{xt} =$	<input type="text" value="0,00"/>	kNm	Momento in direzione X
$M_{yt} =$	<input type="text" value="0,00"/>	kNm	Momento in direzione Y
$V =$	<input type="text" value="0,00"/>	kN	Componente verticale del carico
$H =$	<input type="text" value="0,00"/>	kN	Componente orizzontale del carico
$\theta_v =$	<input type="text" value="0,00"/>	°	Inclinazione del carico rispetto alla verticale
$\theta_h =$	<input type="text" value="90,00"/>	°	Inclinazione del carico orizzontale rispetto alla direzione della lunghezza
$e_x =$	<input type="text" value="0,00"/>	m	Eccentricità in direzione X
$e_y =$	<input type="text" value="0,00"/>	m	Eccentricità in direzione Y

CARATTERISTICHE FONDAZIONE RIDOTTA

$B' =$	<input type="text" value="4,60"/>	m	Base ridotta
$L' =$	<input type="text" value="8,80"/>	m	Lunghezza ridotta
$A' =$	<input type="text" value="40,48"/>		Area ridotta

PARAMETRI DEL TERRENO

$\gamma =$	<input type="text" value="17"/>	kN/m ³	Peso per unità di volume del terreno di fondazione
$\phi =$	<input type="text" value="24"/>	°	Angolo di attrito
$c' =$	<input type="text" value="10"/>	kN/m ²	Coesione efficace
$c_u =$	<input type="text" value="0"/>	kN/m ²	Coesione non drenata
$\gamma_r =$	<input type="text" value="25"/>	kN/m ³	Peso per unità di volume del terreno di riempimento laterale
$K_0 =$	<input type="text" value="2,371"/>		Coefficiente di spinta passiva
$q =$	<input type="text" value="92,50"/>	kN/m ²	Pressione litostatica alla profondità del piano di posa

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PARAMETRI DI PORTANZA DELLA FONDAZIONE (BRINCH-HANSEN)

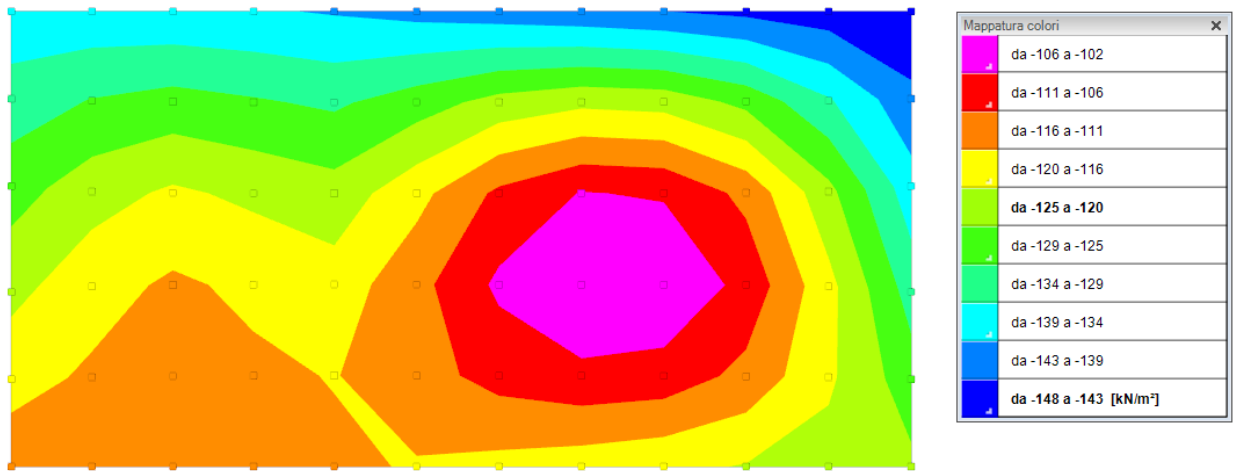
$k=$	0,80	Fattore di profondità
$m_b=$	1,66	Parametro di forma per carico agente in direzione della base
$m_l=$	1,34	Parametro di forma per carico agente in direzione della lunghezza
$m=$	1,66	Parametro di forma complessivo
$N_c=$	19,32	Fattori di capacità portante
$N_q=$	9,60	
$N_\gamma=$	7,66	
$s_c=$	1,24	Fattori di forma
$s_q=$	1,21	
$s_\gamma=$	0,84	
$b_c=$	1,00	Fattori di inclinazione del piano di posa
$b_q=$	1,00	
$b_\gamma=$	1,00	
$i_c=$	1,00	Fattori di inclinazione del carico
$i_q=$	1,00	
$i_\gamma=$	1,00	

PRESSIONI LIMITE ED AMMISSIBILI

Condizioni drenate	
F.S.=	2,3 Fattore di sicurezza
$q_{LIM}=$	1568,845 kN/m ² Pressione limite
$q_{R,D}=$	682,11 kN/m ² Pressione resistente di progetto

La verifica della capacità portante del complesso terreno fondazione viene effettuata confrontando le pressioni esercitate dalla struttura sul terreno, ottenute dall'analisi ad elementi finiti, con la pressione resistente limite precedentemente determinata. I valori massimi delle pressioni sul terreno sono riportati graficamente nello schema seguente:

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO



Essendo la pressione sul terreno inferiore a quella limite di progetto la verifica risulta soddisfatta.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

6. VASCHE TIPO 2 (VPP1, VPP4, VPP5, VPP8)

6.1 GEOMETRIA DELL'OPERA

Le vasche di prima pioggia TIPO 2 sono realizzate in c.a. gettato in opera, con forma in pianta rettangolare di lati 5.60 x 11.30 m, ed altezza di 3.70 m.

Le pareti presentano uno spessore di 30 cm. La copertura è costituita da lastre in c.a. amovibili di spessore pari a 30 cm.

La fondazione è di tipo diretto a platea di spessore pari a 40 cm.

Per ulteriori dettagli si vedano gli elaborati grafici di progetto.

6.2 ANALISI DEI CARICHI

I valori dei carichi sono riepilogati di seguito.

6.2.1 Copertura

CARICHI PERMANENTI STRUTTURALI

Copertura plotte in c.a. (sp=30 cm).....	7.50 kN/m ²
Carico permanente non strutturale totale G_{1k}	7.50 kN/m²

CARICHI PERMANENTI NON STRUTTURALI

Terreno di copertura e pacchetto stradale.....	10.80 kN/m ²
Carico permanente non strutturale totale G_{2k}	10.80 kN/m²

CARICHI VARIABILI

Copertura carrabile.....	20.00 kN/m ²
Carico variabile totale Q_{1k}	20.00 kN/m²

6.2.2 Platea

CARICHI PERMANENTI STRUTTURALI

Peso dell'acqua (H _{max} = 2.00 m).....	20.00 kN/m ²
Carico permanente non strutturale totale G_{1k}	20.00 kN/m²

CARICHI PERMANENTI NON STRUTTURALI

Massetto (sp = 15 cm).....	3.75 kN/m ²
Carico permanente non strutturale totale G_{2k}	3.75 kN/m²

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

6.2.3 Spinta dell'acqua di invaso

La spinta statica dell'acqua presente all'interno della vasca è valutata di seguito, tenendo conto dell'altezza massima dell'invaso pari a 2.00 m:

$$p_w(H_w) = \gamma_w \cdot H_w = 20.00 \text{ kN/m}^2$$

dove:

γ_w , peso specifico dell'acqua;
 H_w , altezza massima dell'invaso.

L'azione sismica dell'acqua invasata è, inoltre, caratterizzata dalla relazione in seguito riportata, e risulta pari a 1.15 kN/m²:

$$\Delta\sigma_a(z) = \frac{7}{8} \cdot a_g \cdot S \cdot \gamma_w \cdot \sqrt{H_w \cdot z'}$$

dove:

$\gamma_w = 10 \text{ kN/m}^3$, peso specifico dell'acqua;
 $H_w = 2.00 \text{ m}$, altezza massima dell'invaso;
 $z' = 2.00 \text{ m}$, quota a cui viene calcolata la pressione;
 $a_g = 0.046 \text{ g}$, coefficiente sismico orizzontale;
 $S = 1.432$, coefficiente amplificativo del suolo.

6.2.4 Spinta del terreno sulle pareti

Si riportano di seguito i grafici delle spinte del terreno sulle pareti tenendo conto della presenza di materiale di riporto a tergo, per il quale si considerano le seguenti caratteristiche geomeccaniche:

$\gamma_k = 19,0 \text{ kN/m}^3$ peso di volume caratteristico;
 $\varphi'_k = 35^\circ$ angolo di operativo attrito caratteristico.

Considerando che le strutture in esame non sono in grado di subire spostamenti sufficienti alla mobilitazione della spinta attiva le azioni agenti sulle stesse verranno calcolate per mezzo del coefficiente di spinta in quiete.

Nel calcolo delle spinte si è tenuto conto di un sovraccarico accidentale sul terreno di 20 kN/m².

I risultati e gli andamenti delle pressioni di progetto (comprehensive dei fattori parziali di sicurezza), sono riportati nelle tabelle seguenti.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Tutti i valori sono riferiti a una striscia di larghezza unitaria.

GEOMETRIA MURO E RINTERRO

γ_{MF}	25	kN/m ³	Peso per unità di volume
s_1	0,3	m	Spessore alla base
s_2	0,3	m	Spessore in testa
h_1	0,4	m	Altezza suola fondazione
h	3,3	m	Altezza paramento
β	0	°	Ang. terrapieno sull'orizzontale (>0 antiorario)
ψ	90	°	Ang. par. interna sull'orizzontale (>0 orario)
H	3,7	m	Altezza totale muro

MODALITA' DI SPINTA

Spinta in quiete

PARAMETRI SISMICI

C Categoria suolo
T1 - Superficie pianeggiante, pendii e rilievi isolati con inclinazione media $i < 15^\circ$ Caratteristiche pendio
Muro non in grado di subire spostamenti relativi rispetto al terreno Caratteristiche pendio

a_g	0,046	g	Accelerazione orizzontale massima su sito di riferimento rigido orizzontale (riferita all'accel. di gravità g)
F_0	2,817		Fattore di amplificazione spettrale massima su sito di riferimento rigido orizzontale
$T_{0,1}$	0,273	s	Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale
C_c	1,612		Coefficiente che modifica il valore del periodo T_c
S_c	1,500		Coefficiente di amplificazione stratigrafica
S_T	1,000		Coefficiente di amplificazione topografica
S	1,500		Coefficiente che tiene conto della categoria di sottosuolo
a_{max}	0,069	g	Accelerazione massima attesa al sito (riferita all'accelerazione di gravità g)
$\beta_{m,1}$	1,00		Coefficiente di riduzione dell'accelerazione massima attesa al sito
k_h	0,069		Coefficiente sismico orizzontale
k_v	0,035		Coefficiente sismico verticale con accelerazione diretta verso l'alto
k_v	-0,035		Coefficiente sismico verticale con accelerazione diretta verso il basso
θ_A	3,82	°	Rotazione addizionale terreno-muro per accelerazione sismica verticale verso l'alto
θ_B	4,09	°	Rotazione addizionale terreno-muro per accelerazione sismica verticale verso il basso

SOVRACCARICHI SUL RINTERRO

q_{1k}	q_{2k}	q_{3k}	
0	0	20	kN/m ²
s_{q1k}	s_{q2k}	s_{q3k}	
1	1	0,3	

Carico uniformemente distribuito a tergo del paramento
Coefficiente di riduzione della massa del sovraccarico

Coefficiente parziali di sicurezza dei carichi

γ_{G1}	γ_{G2}	γ_G	γ_E
1	1	1	-
1,3	1,5	1,5	-
1	1,3	1,3	-
1	1	1	1

Coefficiente parziali di sicurezza dei carichi SLE
Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 1 (A1) E APPROCCIO 2
Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 2 (A2)
Coefficiente parziali di sicurezza dei carichi in combinazione sismica SLV

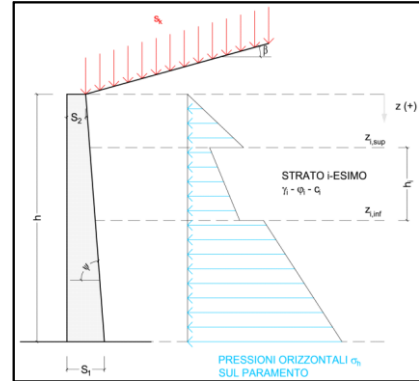
Coefficiente parziali di sicurezza per i parametri geotecnici del terreno

γ_r	γ_p	γ_c
1	1	1
1	1,25	1,25

Coefficiente parziali di sicurezza dei parametri geotecnici SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV
Coefficiente parziali di sicurezza dei parametri geotecnici - SLU - APPROCCIO 1 - COMB 2 (M2)

CARATTERISTICHE STRATI TERRENO

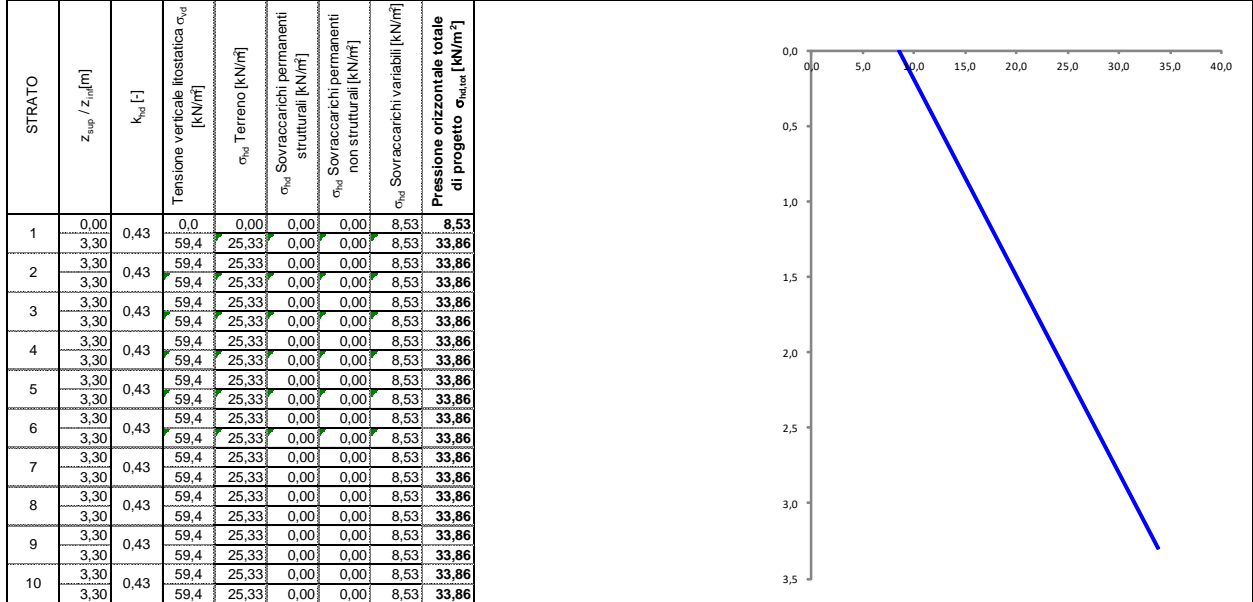
Strato	z_{sup} [m]	z_{inf} [m]	h [m]	PARAMETRI GEOTECNICI CARATTERISTICI				PARAMETRI GEOTECNICI DI PROGETTO SLE/ SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV				COEFF. DI SPINTA DI PROGETTO SLE/ SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV				PARAMETRI GEOTECNICI DI PROGETTO SLU - APPROCCIO 1 - COMB 2 (M2)				COEFF. DI SPINTA DI PROGETTO SLU - APPROCCIO 1 - COMB 2 (M2)			
				γ_k [kN/m ³]	ϕ_k [°]	δ_k [°]	c_u' [kN/m ²]	γ_d [kN/m ³]	ϕ_d [°]	δ_d [°]	c_d' [kN/m ²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{sa,d}$ [-]	$k_{sb,d}$ [-]	γ_d [kN/m ³]	ϕ_d [°]	δ_d [°]	c_d' [kN/m ²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{sa,d}$ [-]	$k_{sb,d}$ [-]
1	0,00	3,30	3,30	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
2	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
3	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
4	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
5	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
6	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
7	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
8	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
9	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388
10	3,30	3,30	0,00	18,00	35,00	0,00	0,00	18,00	35,00	0,00	0,00	0,426	0,271	0,308	0,311	18,00	29,26	0,00	0,00	0,511	0,343	0,385	0,388



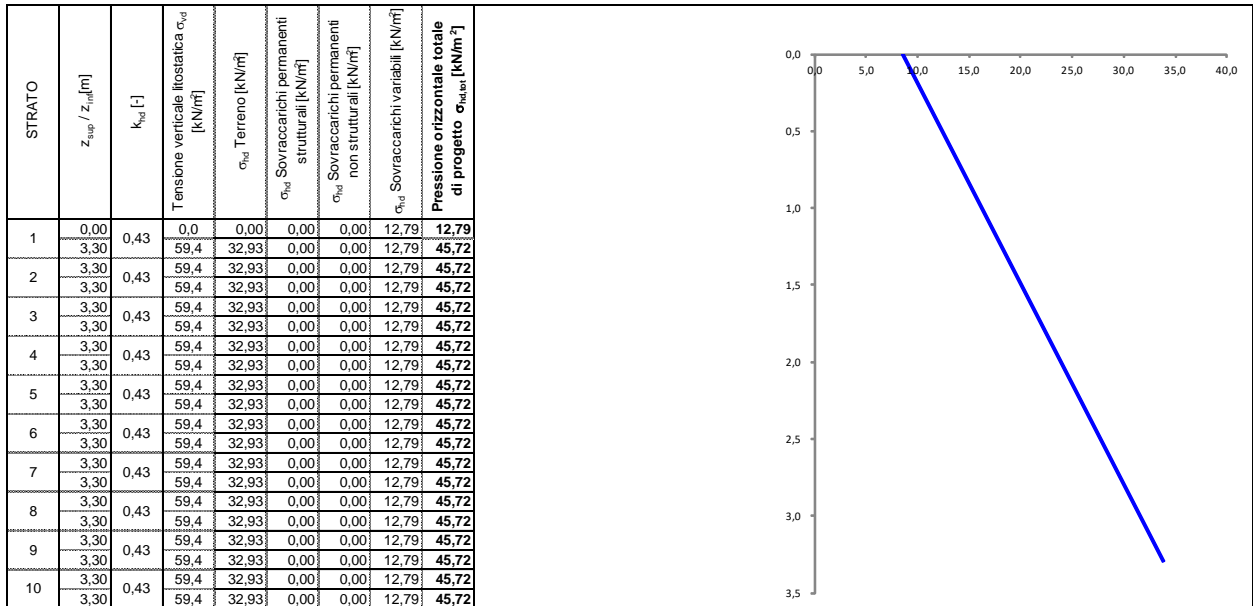
VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PRESSIONI DI PROGETTO SUL PARAMENTO (INCLUDONO I FATTORI DI SICUREZZA PARZIALI DELLE AZIONI)

PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLE

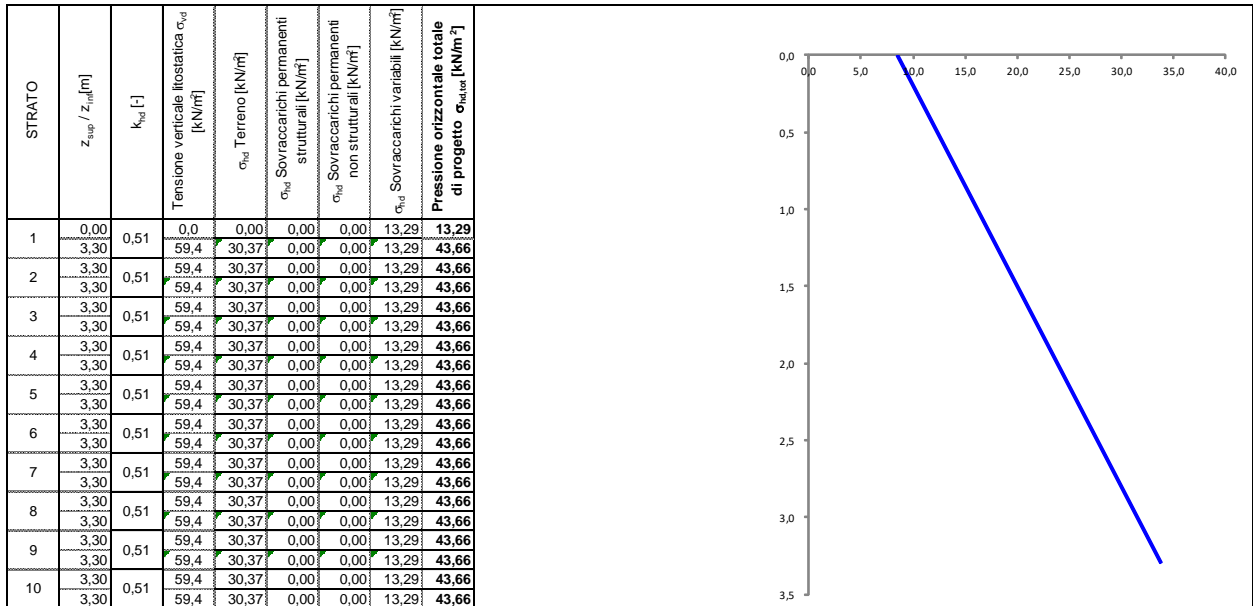


PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLU APPROCCIO 1 - COMBINAZIONE 1 E APPROCCIO 2

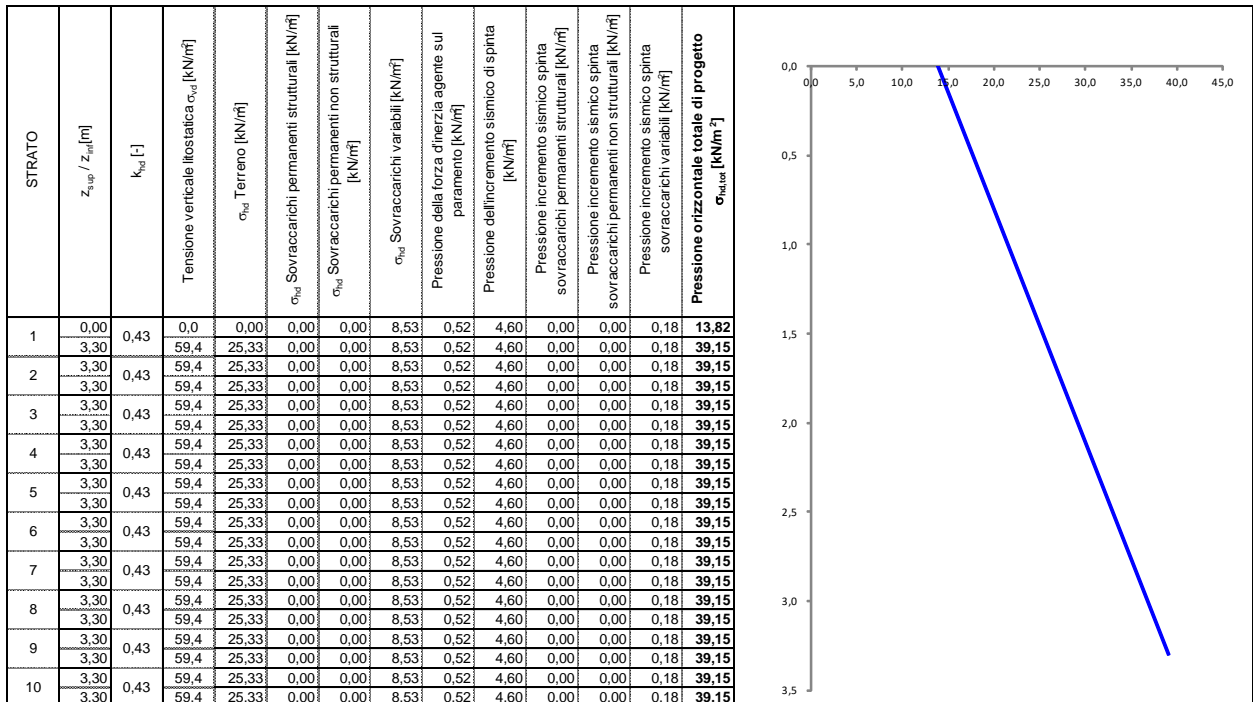


VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PRESSIONI DI PROGETTO CONDIZIONI STATICHE SLU APPROCCIO 1 - COMBINAZIONE 2



PRESSIONI DI PROGETTO CONDIZIONI SISMICHE SLV



6.2.5 Criteri di calcolo delle azioni sismiche

Le azioni sismiche di progetto, in base alle quali valutare i diversi stati limite considerati, si definiscono a partire dalla "pericolosità sismica di base" del sito di costruzione.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Tutti i parametri che definiscono tale caratterizzazione dipendono dalla probabilità di superamento PVR dell'evento sismico nel periodo di riferimento VR.

Per il progetto in essere, in accordo con la committenza, sono stati scelti i seguenti valori dei parametri di progetto relativi alla tipologia e all'uso a cui le strutture sono destinate:

Vita nominale $V_N = 50$ anni

Classe d'uso II (coefficiente d'uso $C_U = 1$)

Periodo di riferimento per l'azione sismica $V_R = V_N \times C_U = 50 \times 1 = 50$ anni

Gli stati limite rispetto ai quali effettuare le verifiche sono:

STATI LIMITE DI ESERCIZIO (SLE)

SLO – Stato limite di operatività

SLD – Stato limite di danno

STATI LIMITE ULTIMI (SLU)

SLV – Stato limite di salvaguardia della vita

SLC – Stato limite di collasso

Per costruzioni di classe d'uso II le verifiche possono essere limitate ai soli SLD e SLV.

Per gli scopi progettuali l'azione sismica viene definita mediante forme spettrali dipendenti da tre parametri a loro volta funzione della localizzazione geografica del sito e del periodo di ritorno considerato:

a_g – Accelerazione massima orizzontale al sito

F_0 – Valore massimo del fattore di amplificazione dello spettro in accelerazione orizzontale

T^*_C – Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale

Nel caso in esame, per un periodo di ritorno pari a 475 anni (relativo allo stato SLV) risulta:

$a_g = 0.0463$ g

$F_0 = 2.817$

$T^*_C = 0.273$ s

Dal punto di vista sismico il suolo di fondazione è classificabile come di tipo "C".

L'amplificazione stratigrafica è descritta mediante i coefficienti S_S e S_T che assumono i seguenti valori:

$S_S = 1.432$

$S_T = 1.0$ (categoria T1 - superfici pianeggianti, pendii e rilievi isolati con pendenza < 15%)

Pertanto risulta:

$S = S_S \times S_T = 1.432 \times 1.0 = 1.432$

Lo spettro di progetto coincide con quello elastico dal momento che le strutture vengono considerate non dissipative. Tuttavia trattandosi di strutture a pareti accoppiate con $kh=0.70$, il fattore di comportamento impiegato nelle analisi risulta:

$q = 1.23$, fattore di comportamento.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

6.3 CONDIZIONI DI CARICO

Con riferimento al D.M. 17 gennaio 2018 le condizioni di carico prese in considerazione saranno le seguenti:

Descrizione	Nome breve	Durata	Psi0	Psi1	Psi2
Pesi strutturali	Pesi	Permanente			
Permanenti portati	Port.	Permanente			
Variabile traffico	Variabile traffico	Media	0.7	0.5	0.3
Spinta sismica terreno	spinta sismica terreno	Media	0	0	0
Spinta sismica acqua	spinta sismica acqua	Media	0	0	1
Spinta acqua	spinta acqua	Permanente	1	1	1
ΔT	ΔT	Media	0.6	0.5	0
Sisma X SLV	X SLV				
Sisma Y SLV	Y SLV				
Sisma Z SLV	Z SLV				
Eccentricità Y per sisma X SLV	EY SLV				
Eccentricità X per sisma Y SLV	EX SLV				
Sisma X SLD	X SLD				
Sisma Y SLD	Y SLD				
Sisma Z SLD	Z SLD				
Eccentricità Y per sisma X SLD	EY SLD				
Eccentricità X per sisma Y SLD	EX SLD				
Terreno sisma X SLV	Tr x SLV				
Terreno sisma Y SLV	Tr y SLV				
Terreno sisma Z SLV	Tr z SLV				
Terreno sisma X SLD	Tr x SLD				
Terreno sisma Y SLD	Tr y SLD				
Terreno sisma Z SLD	Tr z SLD				
Rig. Ux	R Ux				
Rig. Uy	R Uy				
Rig. Rz	R Rz				

6.4 COMBINAZIONI DI CARICO

Le combinazioni di carico da considerare ai fini delle verifiche sono state elaborate tenendo conto di quanto riportato nel D.M.17 gennaio 2018.

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

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

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

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

- Combinazione quasi permanente (SLE), generalmente impiegata per gli effetti a lungo termine:

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

γ_{G1} coefficiente parziale del peso proprio della struttura, del terreno e dell'acqua, quando pertinente;

γ_{G2} coefficiente parziale dei pesi propri degli elementi non strutturali;

γ_Q coefficiente parziale delle azioni variabili da traffico;

γ_{Qi} coefficiente parziale delle azioni variabili.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Il coefficiente parziale della precompressione si assume pari a $\gamma_P=1$

I valori dei coefficienti parziali di sicurezza sono riportati nelle tabelle seguenti.

Famiglia SLU

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLU 1	1	0.8	0	0	0	0	0
2	SLU 2	1	0.8	0	0	0	1.5	0
3	SLU 3	1	0.8	0	0	1.5	0	0
4	SLU 4	1	0.8	0	0	1.5	1.5	0
5	SLU 5	1	0.8	1.05	1.5	0	0	0
6	SLU 6	1	0.8	1.05	1.5	0	1.5	0
7	SLU 7	1	1.5	0	0	0	0	0
8	SLU 8	1	1.5	0	0	0	1.5	0
9	SLU 9	1	1.5	0	0	1.5	0	0
10	SLU 10	1	1.5	0	0	1.5	1.5	0
11	SLU 11	1	1.5	1.05	1.5	0	0	0
12	SLU 12	1	1.5	1.05	1.5	0	1.5	0
13	SLU 13	1.3	0.8	0	0	0	0	0
14	SLU 14	1.3	0.8	0	0	0	1.5	0
15	SLU 15	1.3	0.8	0	0	1.5	0	0
16	SLU 16	1.3	0.8	0	0	1.5	1.5	0
17	SLU 17	1.3	0.8	1.05	1.5	0	0	0
18	SLU 18	1.3	0.8	1.05	1.5	0	1.5	0
19	SLU 19	1.3	1.5	0	0	0	0	0
20	SLU 20	1.3	1.5	0	0	0	1.5	0
21	SLU 21	1.3	1.5	0	0	1.5	0	0
22	SLU 22	1.3	1.5	0	0	1.5	1.5	0
23	SLU 23	1.3	1.5	1.05	1.5	0	0	0
24	SLU 24	1.3	1.5	1.05	1.5	0	1.5	0

Famiglia SLE rara

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE RA 1	1	1	0	0	0	0	0
2	SLE RA 2	1	1	0	0	0	1	0
3	SLE RA 3	1	1	0	0	1	0	0
4	SLE RA 4	1	1	0	0	1	1	0
5	SLE RA 5	1	1	0.7	1	0	0	0
6	SLE RA 6	1	1	0.7	1	0	1	0

Famiglia SLE frequente

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE FR 1	1	1	0	0	0	0	0
2	SLE FR 2	1	1	0	0	0	1	0
3	SLE FR 3	1	1	0	0	1	0	0
4	SLE FR 4	1	1	0.3	0	0	1	0
5	SLE FR 5	1	1	0.5	0	0	0	0

Famiglia SLE quasi permanente

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
1	SLE QP 1	1	1	0	0	0	0	0
2	SLE QP 2	1	1	0	0	0	1	0
3	SLE QP 3	1	1	0	0	1	0	0
4	SLE QP 4	1	1	0	0	1	1	0
5	SLE QP 5	1	1	0.3	0	0	0	0
6	SLE QP 6	1	1	0.3	0	0	1	0

Famiglia SLD

Poiché il numero di condizioni elementari previste per le combinazioni di questa famiglia è cospicuo, la tabella verrà spezzata in più parti.

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLD
1	SLD 1	1	1	0	0	1	1	0	-1
2	SLD 2	1	1	0	0	1	1	0	-1
3	SLD 3	1	1	0	0	1	1	0	-1
4	SLD 4	1	1	0	0	1	1	0	-1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLD
5	SLD 5	1	1	0	0	1	1	0	-0.3
6	SLD 6	1	1	0	0	1	1	0	-0.3
7	SLD 7	1	1	0	0	1	1	0	-0.3
8	SLD 8	1	1	0	0	1	1	0	-0.3
9	SLD 9	1	1	0	0	1	1	0	0.3
10	SLD 10	1	1	0	0	1	1	0	0.3
11	SLD 11	1	1	0	0	1	1	0	0.3
12	SLD 12	1	1	0	0	1	1	0	0.3
13	SLD 13	1	1	0	0	1	1	0	1
14	SLD 14	1	1	0	0	1	1	0	1
15	SLD 15	1	1	0	0	1	1	0	1
16	SLD 16	1	1	0	0	1	1	0	1
17	SLD 17	1	1	0.3	0	0	1	0	-1
18	SLD 18	1	1	0.3	0	0	1	0	-1
19	SLD 19	1	1	0.3	0	0	1	0	-1
20	SLD 20	1	1	0.3	0	0	1	0	-1
21	SLD 21	1	1	0.3	0	0	1	0	-0.3
22	SLD 22	1	1	0.3	0	0	1	0	-0.3
23	SLD 23	1	1	0.3	0	0	1	0	-0.3
24	SLD 24	1	1	0.3	0	0	1	0	-0.3
25	SLD 25	1	1	0.3	0	0	1	0	0.3
26	SLD 26	1	1	0.3	0	0	1	0	0.3
27	SLD 27	1	1	0.3	0	0	1	0	0.3
28	SLD 28	1	1	0.3	0	0	1	0	0.3
29	SLD 29	1	1	0.3	0	0	1	0	1
30	SLD 30	1	1	0.3	0	0	1	0	1
31	SLD 31	1	1	0.3	0	0	1	0	1
32	SLD 32	1	1	0.3	0	0	1	0	1

Nome	Nome breve	Y SLD	Z SLD	EY SLD	EX SLD	Tr x SLD	Try SLD	Tr z SLD
1	SLD 1	-0.3	0	-1	0.3	-1	-0.3	0
2	SLD 2	-0.3	0	1	-0.3	-1	-0.3	0
3	SLD 3	0.3	0	-1	0.3	-1	0.3	0
4	SLD 4	0.3	0	1	-0.3	-1	0.3	0
5	SLD 5	-1	0	-0.3	1	-0.3	-1	0
6	SLD 6	-1	0	0.3	-1	-0.3	-1	0
7	SLD 7	1	0	-0.3	1	-0.3	1	0
8	SLD 8	1	0	0.3	-1	-0.3	1	0
9	SLD 9	-1	0	-0.3	1	0.3	-1	0
10	SLD 10	-1	0	0.3	-1	0.3	-1	0
11	SLD 11	1	0	-0.3	1	0.3	1	0
12	SLD 12	1	0	0.3	-1	0.3	1	0
13	SLD 13	-0.3	0	-1	0.3	1	-0.3	0
14	SLD 14	-0.3	0	1	-0.3	1	-0.3	0
15	SLD 15	0.3	0	-1	0.3	1	0.3	0
16	SLD 16	0.3	0	1	-0.3	1	0.3	0
17	SLD 17	-0.3	0	-1	0.3	-1	-0.3	0
18	SLD 18	-0.3	0	1	-0.3	-1	-0.3	0
19	SLD 19	0.3	0	-1	0.3	-1	0.3	0
20	SLD 20	0.3	0	1	-0.3	-1	0.3	0
21	SLD 21	-1	0	-0.3	1	-0.3	-1	0
22	SLD 22	-1	0	0.3	-1	-0.3	-1	0
23	SLD 23	1	0	-0.3	1	-0.3	1	0
24	SLD 24	1	0	0.3	-1	-0.3	1	0
25	SLD 25	-1	0	-0.3	1	0.3	-1	0
26	SLD 26	-1	0	0.3	-1	0.3	-1	0
27	SLD 27	1	0	-0.3	1	0.3	1	0
28	SLD 28	1	0	0.3	-1	0.3	1	0
29	SLD 29	-0.3	0	-1	0.3	1	-0.3	0
30	SLD 30	-0.3	0	1	-0.3	1	-0.3	0
31	SLD 31	0.3	0	-1	0.3	1	0.3	0
32	SLD 32	0.3	0	1	-0.3	1	0.3	0

Famiglia SLV

Poiché il numero di condizioni elementari previste per le combinazioni di questa famiglia è cospicuo, la tabella verrà spezzata in più parti.

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLV
1	SLV 1	1	1	0	0	1	1	0	-1
2	SLV 2	1	1	0	1	1	1	0	-1
3	SLV 3	1	1	0	1	1	1	0	-1
4	SLV 4	1	1	0	1	1	1	0	-1
5	SLV 5	1	1	0	1	1	1	0	-0.3

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT	X SLV
6	SLV 6	1	1	0	1	1	1	0	-0.3
7	SLV 7	1	1	0	1	1	1	0	-0.3
8	SLV 8	1	1	0	1	1	1	0	-0.3
9	SLV 9	1	1	0	1	1	1	0	0.3
10	SLV 10	1	1	0	1	1	1	0	0.3
11	SLV 11	1	1	0	1	1	1	0	0.3
12	SLV 12	1	1	0	1	1	1	0	0.3
13	SLV 13	1	1	0	1	1	1	0	1
14	SLV 14	1	1	0	1	1	1	0	1
15	SLV 15	1	1	0	1	1	1	0	1
16	SLV 16	1	1	0	1	1	1	0	1

Nome	Nome breve	Y SLV	Z SLV	EY SLV	EX SLV	Trx SLV	Try SLV	Trz SLV
1	SLV 1	-0.3	0	-1	0.3	-1	-0.3	0
2	SLV 2	-0.3	0	1	-0.3	-1	-0.3	0
3	SLV 3	0.3	0	-1	0.3	-1	0.3	0
4	SLV 4	0.3	0	1	-0.3	-1	0.3	0
5	SLV 5	-1	0	-0.3	1	-0.3	-1	0
6	SLV 6	-1	0	0.3	-1	-0.3	-1	0
7	SLV 7	1	0	-0.3	1	-0.3	1	0
8	SLV 8	1	0	0.3	-1	-0.3	1	0
9	SLV 9	-1	0	-0.3	1	0.3	-1	0
10	SLV 10	-1	0	0.3	-1	0.3	-1	0
11	SLV 11	1	0	-0.3	1	0.3	1	0
12	SLV 12	1	0	0.3	-1	0.3	1	0
13	SLV 13	-0.3	0	-1	0.3	1	-0.3	0
14	SLV 14	-0.3	0	1	-0.3	1	-0.3	0
15	SLV 15	0.3	0	-1	0.3	1	0.3	0
16	SLV 16	0.3	0	1	-0.3	1	0.3	0

6.5 MODELLAZIONE: INPUT

Le opere strutturali in oggetto sono state modellate con analisi agli elementi finiti (FEM), mediante codice di calcolo, di cui si riportano di seguito le principali caratteristiche e le convenzioni adottate. I risultati delle verifiche degli elementi strutturali sono riportati nei tabulati di calcolo e verifica nei successivi paragrafi.

6.5.1 Origine e caratteristiche del codice di calcolo

Parte delle analisi e delle verifiche delle strutture analizzate sono state eseguite mediante l'ausilio di codici di calcolo di comprovata validità. Si riportano di seguito le informazioni relative al codice impiegato e gli estremi della licenza d'uso.

Nominativo	SismiCAD 12.13
Produttore	Concrete s.r.l , Padova
Nome utente finale	ICARIA s.r.l
Numero licenza	5622053

L'analisi preliminare della documentazione a corredo del software impiegato ha consentito di accertarne l'affidabilità e l'idoneità al caso in oggetto. Il produttore del software fornisce, infatti, un'esauriente documentazione, atta a testimoniarne la validità, all'interno della quale sono descritte le basi teoriche e gli algoritmi impiegati, campi di impiego ed esempi risolti.

I risultati dell'elaborazione sono presentati in modo tale da costituire una sintesi completa ed efficace del comportamento della struttura, sia mediante l'ausilio di schemi grafici riportanti le parti più sollecitate della struttura, le configurazioni deformate e l'entità delle azioni, sia esplicitando i tabulati numerici con l'esito delle principali verifiche, i dati di input, le combinazioni di carico.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

6.5.2 Risultati della modellazione

Si riportano di seguito i dati di input del modello di calcolo.

1 Dati generali

1.1 Materiali

1.1.1 Materiali c.a.

Descrizione: descrizione o nome assegnato all'elemento.

Rck: resistenza caratteristica cubica; valore medio nel caso di edificio esistente. [kN/m²]

E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m²]

G: modulo di elasticità tangenziale del materiale, viene impiegato nella modellazione di aste e di elementi guscio a comportamento ortotropo. [kN/m²]

Poisson: coefficiente di Poisson. Il valore è adimensionale.

γ: peso specifico del materiale. [kN/m³]

α: coefficiente longitudinale di dilatazione termica. [°C⁻¹]

Descrizione	Rck	E	G	Poisson	γ	α
C32/40	40000	33642778	Default (15292172)	0.1	25	0.00001

1.1.2 Curve di materiali c.a.

Descrizione: descrizione o nome assegnato all'elemento.

Curva: curva caratteristica.

Reaz.traz.: reagisce a trazione.

Comp.frag.: ha comportamento fragile.

E.compr.: modulo di elasticità a compressione. [kN/m²]

Incr.compr.: incrudimento di compressione. Il valore è adimensionale.

EpsEc: ε elastico a compressione. Il valore è adimensionale.

EpsUc: ε ultimo a compressione. Il valore è adimensionale.

E.traz.: modulo di elasticità a trazione. [kN/m²]

Incr.traz.: incrudimento di trazione. Il valore è adimensionale.

EpsEt: ε elastico a trazione. Il valore è adimensionale.

EpsUt: ε ultimo a trazione. Il valore è adimensionale.

Descrizione	Curva									
	Reaz.traz.	Comp.frag.	E.compr.	Incr.compr.	EpsEc	EpsUc	E.traz.	Incr.traz.	EpsEt	EpsUt
C32/40	No	Si	33642778	0.001	-0.002	-0.0035	33642778	0.001	0.0000645	0.0000709

1.1.3 Armature

Descrizione: descrizione o nome assegnato all'elemento.

f_{yk}: resistenza caratteristica. [kN/m²]

σ_{amm.}: tensione ammissibile. [kN/m²]

Tipo: tipo di barra.

E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m²]

γ: peso specifico del materiale. [kN/m³]

Poisson: coefficiente di Poisson. Il valore è adimensionale.

α: coefficiente longitudinale di dilatazione termica. [°C⁻¹]

Livello di conoscenza: indica se il materiale è nuovo o esistente, e in tal caso il livello di conoscenza secondo Circ. 02/02/09 n. 617 §C8A. Informazione impiegata solo in analisi D.M. 14-01-08 (N.T.C.).

Descrizione	f _{yk}	σ _{amm.}	Tipo	E	γ	Poisson	α	Livello di conoscenza
B450C	450000	255000	Aderenza migliorata	206000000	78.5	0.3	0.000012	Nuovo

2 Preferenze commessa

2.1 Preferenze di analisi

Metodo di analisi

Tipo di costruzione

Vn

Classe d'uso

Vr

Tipo di analisi

Località

D.M. 17-01-18 (N.T.C.)

2 - Costruzioni con livelli di prestazioni ordinari

50

II

50

Lineare dinamica

Livorno, Piombino, Colmata; Latitudine ED50 42,9604° (42° 57' 37");

Longitudine ED50 10,5508° (10° 33' 3");

Altitudine s.l.m. 165,06 m.

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Categoria del suolo	C - Depositi di terreni a grana grossa mediamente addensati o terreni a grana fina mediamente consistenti
Categoria topografica	T1 - Superficie pianeggiante, pendii e rilievi isolati con inclinazione media $i \leq 15^\circ$
Ss orizzontale SLD	1.5
Tb orizzontale SLD	0.115 [s]
Tc orizzontale SLD	0.345 [s]
Td orizzontale SLD	1.702 [s]
Ss orizzontale SLV	1.5
Tb orizzontale SLV	0.147 [s]
Tc orizzontale SLV	0.44 [s]
Td orizzontale SLV	1.785 [s]
St	1
PVr SLD (%)	63
Tr SLD	50
Ag/g SLD	0.0254
Fo SLD	2.668
Tc* SLD	0.19 [s]
PVr SLV (%)	10
Tr SLV	475
Ag/g SLV	0.0463
Fo SLV	2.817
Tc* SLV	0.273 [s]
Smorzamento viscoso (%)	5
Classe di duttilità	Non dissipativa
Rotazione del sisma	0 [deg]
Quota dello '0' sismico	0 [m]
Regolarità in pianta	No
Regolarità in elevazione	No
Edificio C.A.	Si
Edificio esistente	No
T1,x	0.04628 [s]
T1,y	0.08811 [s]
λ SLD,x	1
λ SLD,y	1
λ SLV,x	1
λ SLV,y	1
Numero modi	4
Metodo di Ritz	non applicato
Limite spostamenti interpiano	0.005
Fattore di comportamento per sisma SLD X	1.23
Fattore di comportamento per sisma SLD Y	1.23
Fattore di comportamento per sisma SLV X	1.23
Fattore di comportamento per sisma SLV Y	1.23
Coefficiente di sicurezza per carico limite (fondazioni superficiali)	2.3
Coefficiente di sicurezza per scorrimento (fondazioni superficiali)	1.1
Coefficiente di sicurezza portanza verticale pali infissi, punta	1.15
Coefficiente di sicurezza portanza verticale pali infissi, laterale compressione	1.15
Coefficiente di sicurezza portanza verticale pali infissi, laterale trazione	1.25
Coefficiente di sicurezza portanza verticale pali trivellati, punta	1.35
Coefficiente di sicurezza portanza verticale pali trivellati, laterale compressione	1.15
Coefficiente di sicurezza portanza verticale pali trivellati, laterale trazione	1.25
Coefficiente di sicurezza portanza verticale micropali, punta	1.35
Coefficiente di sicurezza portanza verticale micropali, laterale compressione	1.15
Coefficiente di sicurezza portanza verticale micropali, laterale trazione	1.25
Coefficiente di sicurezza portanza trasversale pali	1.3
Fattore di correlazione resistenza caratteristica dei pali in base alle verticali indagate	1.7
Coefficiente di sicurezza per ribaltamento (plinti superficiali)	1.15

2.3 Preferenze di verifica

2.3.1 Normativa di verifica in uso

Norma di verifica	D.M. 17-01-18 (N.T.C.)
Cemento armato	Preferenze analisi di verifica in stato limite
Legno	Preferenze di verifica legno D.M. 17-01-18 (N.T.C.)
Acciaio	Preferenze di verifica acciaio D.M. 17-01-18 (N.T.C.)

2.3.2 Normativa di verifica C.A.

Coefficiente di omogeneizzazione	15
ys (fattore di sicurezza parziale per l'acciaio)	1.15
yc (fattore di sicurezza parziale per il calcestruzzo)	1.5
Limite σ_c/f_{ck} in combinazione rara	0.6
Limite σ_c/f_{ck} in combinazione quasi permanente	0.45
Limite σ_s/f_{yk} in combinazione rara	0.8
Coefficiente di riduzione della τ per cattiva aderenza	0.7
Dimensione limite fessure w1 §4.1.2.2.4	0.0002 [m]
Dimensione limite fessure w2 §4.1.2.2.4	0.0003 [m]
Dimensione limite fessure w3 §4.1.2.2.4	0.0004 [m]
Fattori parziali di sicurezza unitari per meccanismi duttili di strutture esistenti con fattore q	No
Copriferro secondo EC2	No

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

2.4 Preferenze FEM

Dimensione massima ottimale mesh pareti (default)	0.8 [m]
Dimensione massima ottimale mesh piastre (default)	0.8 [m]
Tipo di mesh dei gusci (default)	Quadrilateri o triangoli
Tipo di mesh imposta ai gusci	Specifico dell'elemento
Metodo P-Delta	non utilizzato
Analisi buckling	non utilizzata
Rapporto spessore flessionale/membranale gusci muratura verticali	0.2
Spessori membranale e flessionale pareti XLAM da sole tavole verticali	No
Moltiplicatore rigidità connettori pannelli pareti legno a diaframma	1
Tolleranza di parallelismo	4.99[deg]
Tolleranza di unicità punti	0.1[m]
Tolleranza generazione nodi di aste	0.01[m]
Tolleranza di parallelismo in suddivisione aste	4.99[deg]
Tolleranza generazione nodi di gusci	0.04[m]
Tolleranza eccentricità carichi concentrati	1 [m]
Considera deformazione a taglio delle piastre	No
Modello elastico pareti in muratura	Gusci
Concentra masse pareti nei vertici	No
Segno risultati analisi spettrale	Analisi statica
Memoria utilizzabile dal solutore	8000000
Metodo di risoluzione della matrice	Intel MKL PARDISO
Scrivi commenti nel file di input	No
Scrivi file di output in formato testo	No
Solidi colle e corpi ruvidi (default)	Solidi reali
Moltiplicatore rigidità molla torsionale applicata ad aste di fondazione	1
Modello trave su suolo alla Winkler nel caso di modellazione lineare	Equilibrio elastico

2.5 Moltiplicatori inerziali

Tipologia: tipo di entità a cui si riferiscono i moltiplicatori inerziali.

J2: moltiplicatore inerziale di J2. Il valore è adimensionale.

J3: moltiplicatore inerziale di J3. Il valore è adimensionale.

Jt: moltiplicatore inerziale di Jt. Il valore è adimensionale.

A: moltiplicatore dell'area della sezione. Il valore è adimensionale.

A2: moltiplicatore dell'area a taglio in direzione 2. Il valore è adimensionale.

A3: moltiplicatore dell'area a taglio in direzione 3. Il valore è adimensionale.

Conci rigidi: fattore di riduzione dei tronchi rigidi. Il valore è adimensionale.

Tipologia	J2	J3	Jt	A	A2	A3	Conci rigidi
Trave C.A.	1	1	0.01	1	1	1	0.5
Pilastro C.A.	1	1	0.01	1	1	1	0.5
Trave di fondazione	1	1	0.01	1	1	1	0.5
Palo	1	1	0.01	1	1	1	0
Trave in legno	1	1	1	1	1	1	1
Colonna in legno	1	1	1	1	1	1	1
Trave in acciaio	1	1	1	1	1	1	1
Colonna in acciaio	1	1	1	1	1	1	1
Trave di reticolare in acciaio	1	1	1	1	1	1	1
Maschio in muratura	0	1	0	1	1	1	1
Trave di accoppiamento in muratura	0	1	0	1	1	1	1
Trave di scala C.A. nervata	1	1	1	1	1	1	0.5
Trave tralicciata	1	1	0.01	1	1	1	0.5

3 Quote

3.1 Livelli

Descrizione breve: nome sintetico assegnato al livello.

Descrizione: nome assegnato al livello.

Quota: quota superiore espressa nel sistema di riferimento assoluto. [m]

Spessore: spessore del livello. [m]

Descrizione breve	Descrizione	Quota	Spessore
L1	Fondazione	0	0.4
L2	Sfioro	2	0
L3	Copertura	3.3	0.3

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

3.2 Tronchi

Descrizione breve: nome sintetico assegnato al tronco.

Descrizione: nome assegnato al tronco.

Quota 1: riferimento della prima quota di definizione del tronco. esprimibile come livello, falda, piano orizzontale alla Z specificata. [m]

Quota 2: riferimento della seconda quota di definizione del tronco. esprimibile come livello, falda, piano orizzontale alla Z specificata. [m]

Descrizione breve	Descrizione	Quota 1	Quota 2
T1	Fondazione - Copertura	Fondazione	Copertura
T2	Fondazione - Sfiore	Fondazione	Sfiore

1.5 Definizioni di carichi superficiali

Nome: nome identificativo della definizione di carico.

Valori: valori associati alle condizioni di carico.

Condizione: condizione di carico a cui sono associati i valori.

Descrizione: nome assegnato alla condizione elementare.

Valore: modulo del carico superficiale applicato alla superficie. [kN/m²]

Applicazione: modalità con cui il carico è applicato alla superficie.

Nome	Valori		
	Condizione	Valore	Applicazione
	Descrizione		
COPERTURA	Pesi strutturali	0	Verticale
	Permanenti portati	10.8	Verticale
	Variabile traffico	20	Verticale
	Spinta sismica terreno	0	Verticale
	Spinta sismica acqua	0	Verticale
	Spinta acqua	0	Verticale
PLATEA	Pesi strutturali	20	Verticale
	Permanenti portati	3.75	Verticale
	Variabile traffico	0	Verticale
	Spinta sismica terreno	0	Verticale
	Spinta sismica acqua	0	Verticale
	Spinta acqua	0	Verticale

1.6 Definizioni di carichi potenziali

Nome: nome identificativo della definizione di carico.

Valori: valori associati alle condizioni di carico.

Condizione: condizione di carico a cui sono associati i valori.

Descrizione: nome assegnato alla condizione elementare.

Valore i.: valore del carico pressorio alla quota iniziale. [kN/m²]

Quota i.: quota assoluta in cui il carico pressorio assume il valore iniziale. [m]

Valore f.: valore del carico pressorio alla quota finale. [kN/m²]

Quota f.: quota assoluta in cui il carico pressorio assume il valore finale. [m]

Nome	Valori				
	Condizione	Valore i.	Quota i.	Valore f.	Quota f.
	Descrizione				
SPINTA PARETI	Pesi strutturali	0	3.3	25.33	0
	Permanenti portati	0	3.3	0	0
	Variabile traffico	0	3.3	8.53	0
	Spinta sismica terreno	0	3.3	4.6	0
	Spinta sismica acqua	0	3.3	-1.15	0
	Spinta acqua	0	3.3	-20	0

Rappresentazione grafica modello input

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

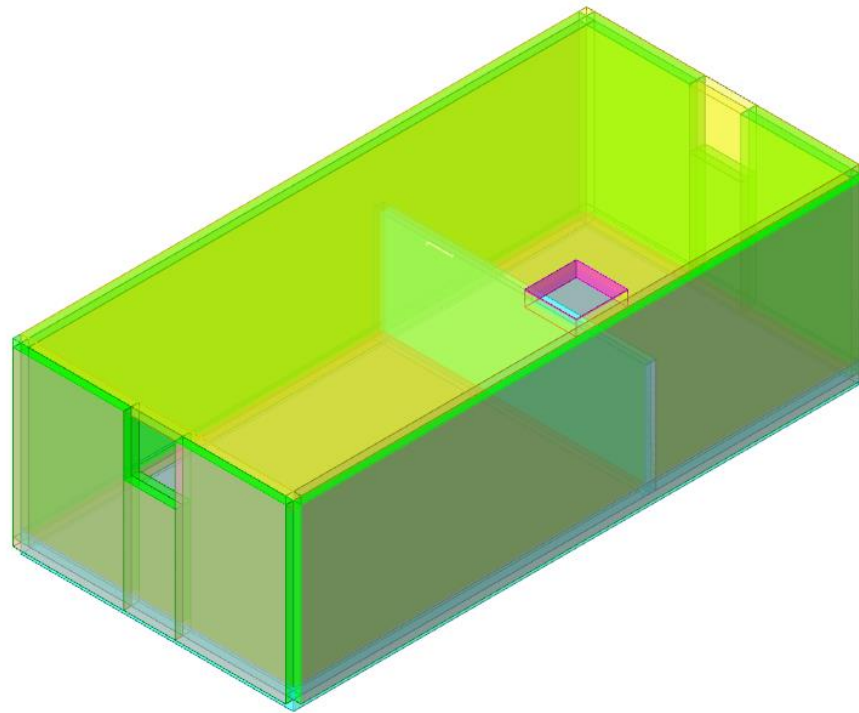


Figura 19 - Rappresentazione Grafica del Modello di Calcolo

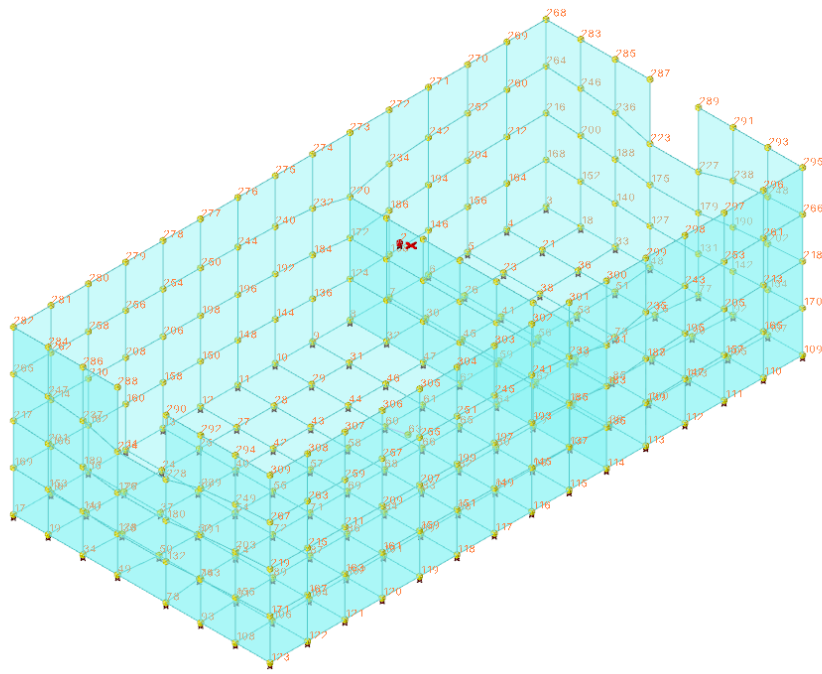


Figura 20 - Rappresentazione Grafica del Modello di Calcolo – Numerazione NODI

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

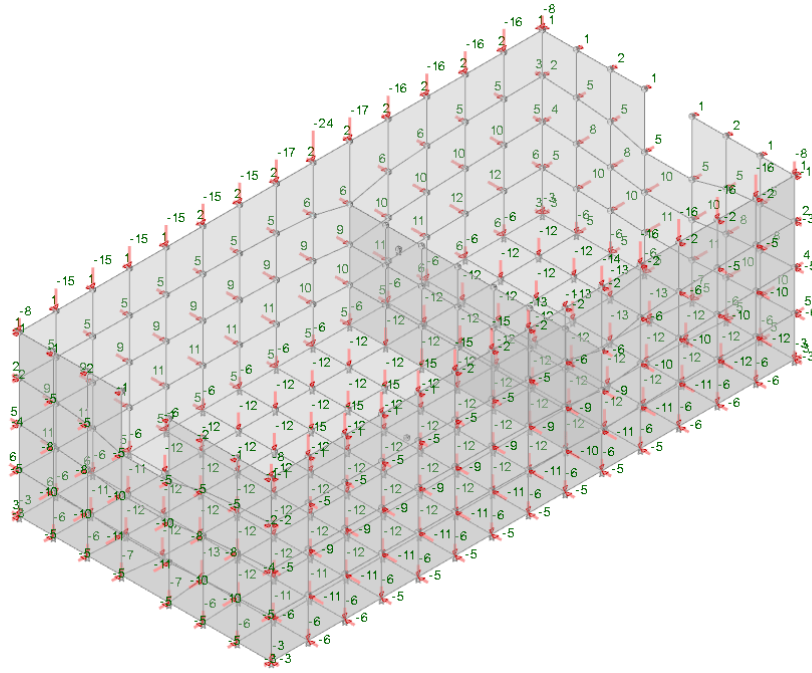


Figura 21 - Condizione carichi permanenti strutturali

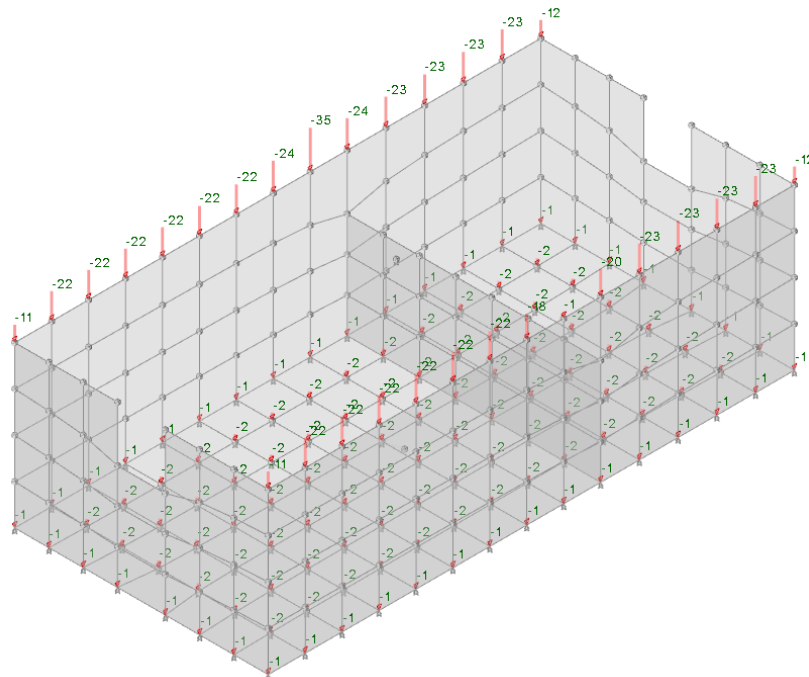


Figura 22 - Condizione carichi permanenti non strutturali

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

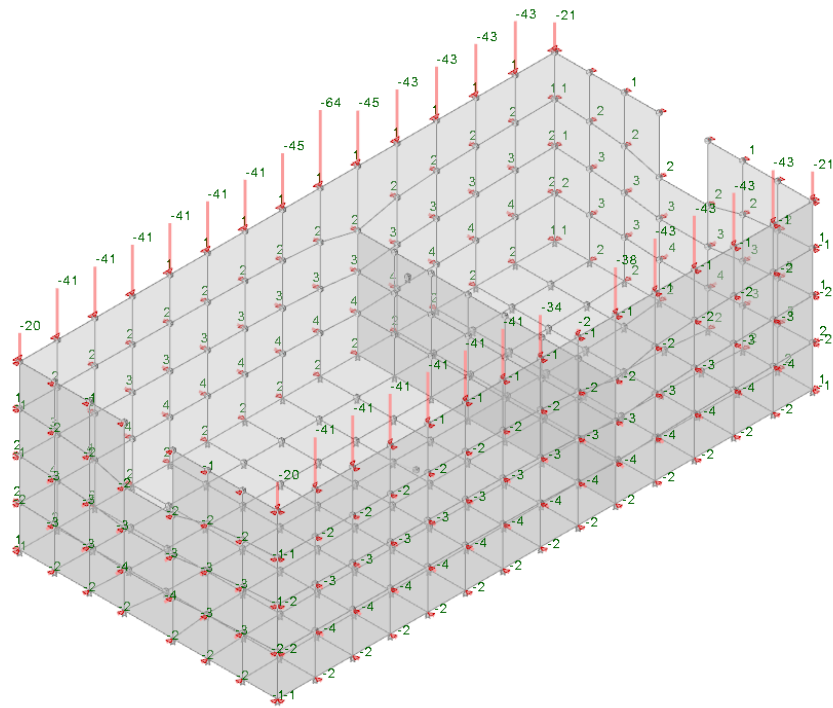


Figura 23 - Condizione sovraccarico accidentale (variabile traffico)

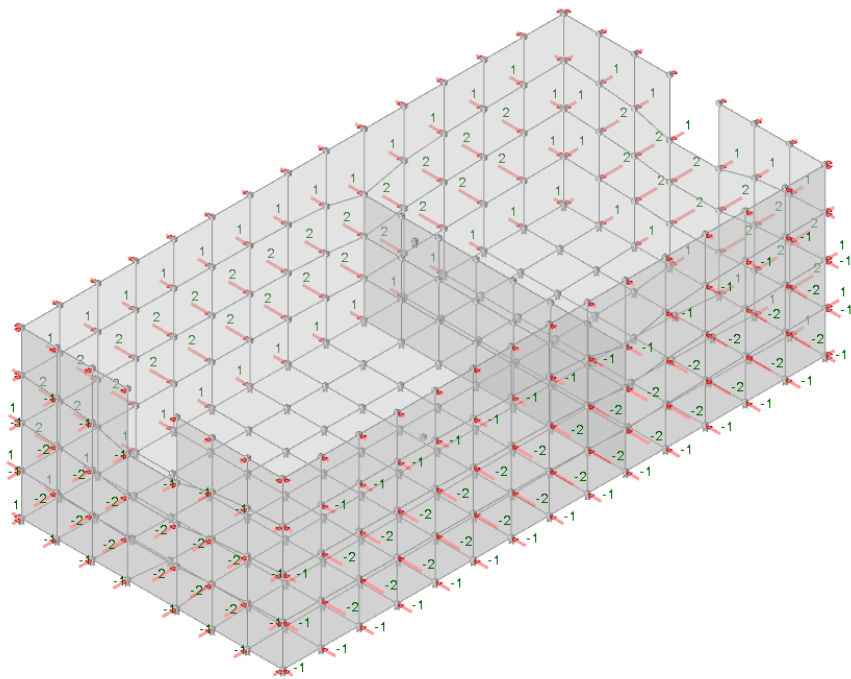


Figura 24 - Condizione spinta sismica terreno

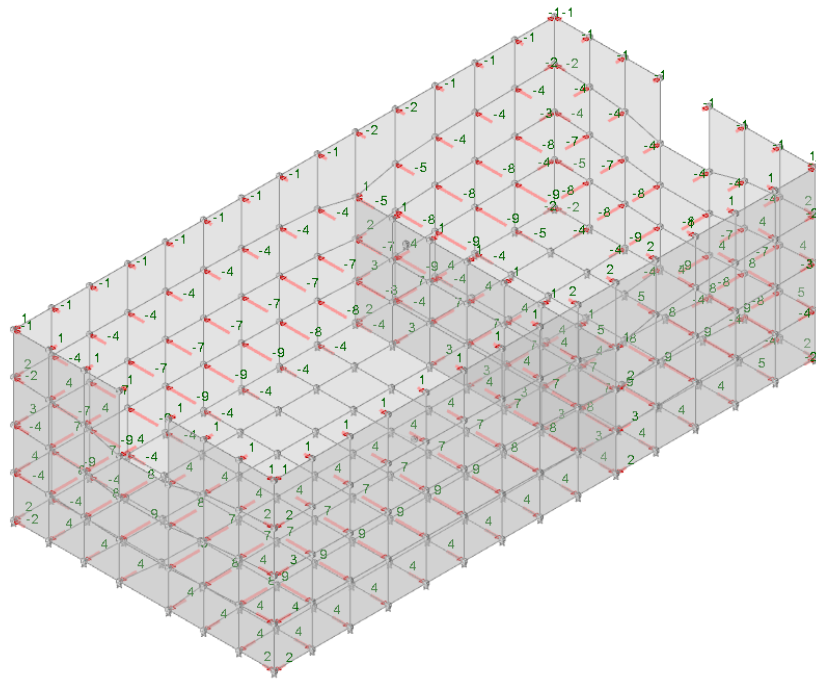
VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Figura 25 - Condizione spinta acqua

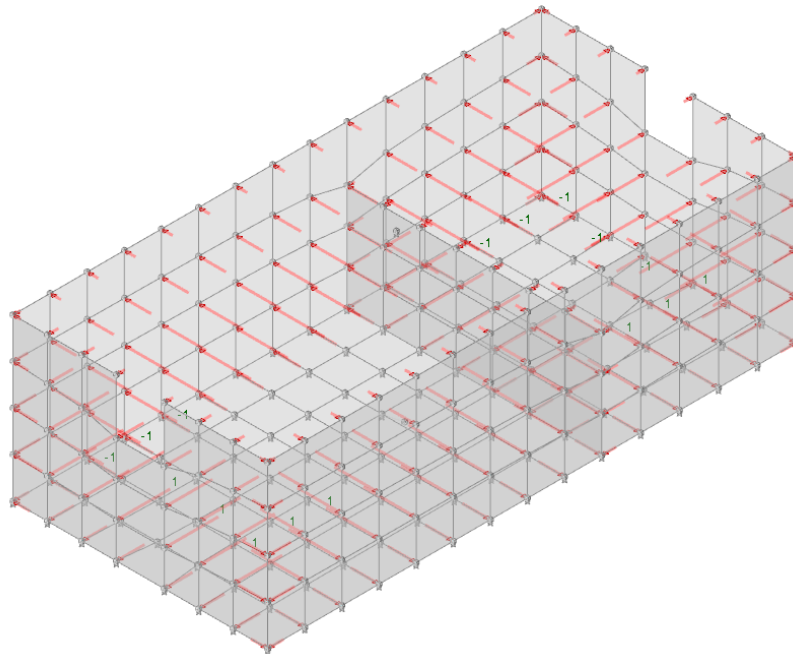


Figura 26 - Condizione spinta sismica acqua

VASCHE DI PRIMA PIOGGIA
 RELAZIONE GEOTECNICA E DI CALCOLO

6.6 MODELLAZIONE: OUTPUT

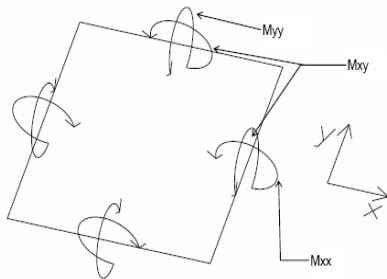
Si riportano i risultati grafici dell'analisi agli elementi finiti. I valori massimi delle caratteristiche di sollecitazione saranno utilizzati per le successive verifiche.

6.6.1 Convenzioni relative alle caratteristiche di sollecitazione

La convenzione sui segni per i parametri di sollecitazione delle aste è la seguente:

- sforzo normale $F1$ (N): viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di sforzo normale positivo (di trazione) viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- $F2$: viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di $F2$ positivo viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- $F3$: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di $F3$ positivo viene disegnato lungo l'asta dalla parte del semiasse 3 positivo;
- momento torcente $M1$ (Mt): viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di momento torcente positivo viene disegnato lungo l'asta dalla parte del semiasse 2 positivo;
- momento $M2$: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di $M2$ positivo viene disegnato dalla parte del semiasse 3 negativo;
- momento $M3$: viene rappresentato nel piano individuato dagli assi 1 e 2. Nel caso di $M3$ positivo viene disegnato dalla parte del semiasse 2 negativo.

In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione M_{xx} , M_{yy} , M_{xy} .



si definiscono:

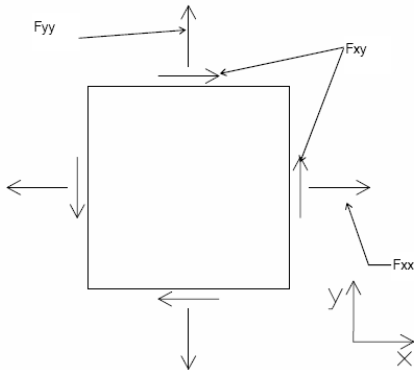
M_{xx} : momento flettente [Forza*Lunghezza/Lunghezza] agente sul bordo di normale x (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{yy} : momento flettente [Forza*Lunghezza/Lunghezza] agente sul bordo di normale y (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

M_{xy} : momento torcente [Forza*Lunghezza/Lunghezza] agente sui bordi (verso positivo indicato dalla freccia in figura).

Per quanto riguarda le sollecitazioni estensionali si faccia riferimento alla figura seguente dove per lo stesso elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione F_{xx} , F_{yy} , F_{xy} .

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO



Si definiscono:

F_{xx} : sforzo estensionale [Forza/Lunghezza] agente sul bordo di normale x (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{yy} : sforzo estensionale [Forza/Lunghezza] agente sul bordo di normale all'asse y (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

F_{xy} : sforzo di taglio [Forza/Lunghezza] agente sui bordi (verso positivo indicato dalla freccia in figura).

Vengono riportati inoltre i tagli fuori dal piano dell'elemento shell:

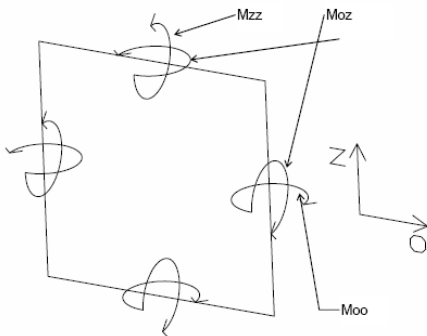
V_x : taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse x (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti);

V_y : taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse y (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti).

Gusci verticali: pareti e muri

Il sistema di riferimento nel quale sono espressi i parametri di sollecitazione è così definito: "origine appartenente al piano dell'elemento, asse O (ascisse) e z (ordinate) contenuti nel piano dell'elemento e terzo asse ortogonale al piano dell'elemento a formare una terna destrorsa". In particolare l'asse O è orizzontale e l'asse z parallelo ed equiverso con l'asse Z globale. Si sottolinea che non ha alcun interesse collocare esattamente nel piano dell'elemento la posizione dell'origine in quanto i parametri di sollecitazione sono invarianti rispetto a tale posizione.

In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione M_{oo} , M_{zz} , M_{oz} .

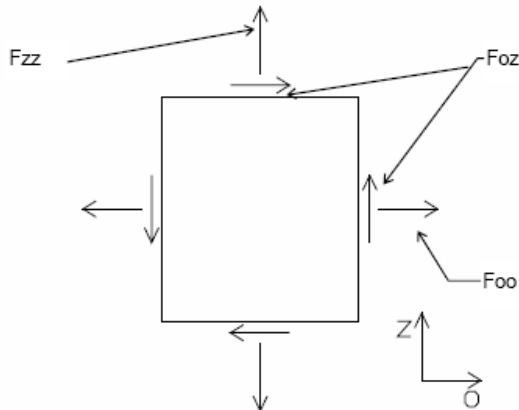


M_{oo} : momento flettente distribuito [Forza*Lunghezza/Lunghezza] applicato al bordo di normale parallela all'asse O (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

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Mzz: momento flettente distribuito [$\text{Forza} \cdot \text{Lunghezza} / \text{Lunghezza}$] applicato al bordo di normale parallela all'asse z (verso positivo indicato dalla freccia in figura che tende le fibre inferiori);

Moz: momento "torcente" distribuito [$\text{Forza} \cdot \text{Lunghezza} / \text{Lunghezza}$] applicato sui bordi (verso positivo indicato dalla freccia in figura). Per quanto riguarda le sollecitazioni estensionali si faccia riferimento alla figura seguente dove per lo stesso elemento infinitesimo di shell con indicato il sistema di riferimento i parametri di sollecitazione Foo, Fzz, Foz sono rispettivamente:



Fzz: sforzo tensionale distribuito [$\text{Forza} / \text{Lunghezza}$] applicato al bordo di normale parallela all'asse z (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

Foo: sforzo tensionale distribuito [$\text{Forza} / \text{Lunghezza}$] applicato al bordo di normale parallela all'asse O (verso positivo indicato dalla freccia in figura che mette in trazione l'elemento);

Foz: sforzo tagliante distribuito [$\text{Forza} / \text{Lunghezza}$] applicato sui bordi (verso positivo indicato dalla freccia in figura).

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

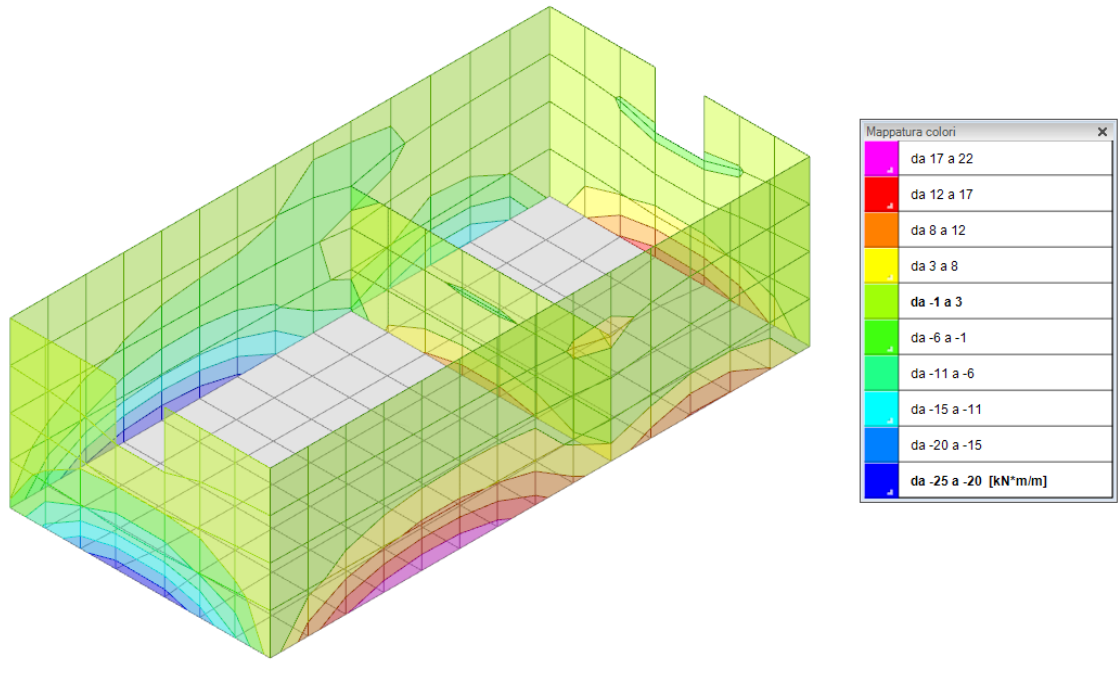


Figura 27 - Inviluppo momento flettente Mzz

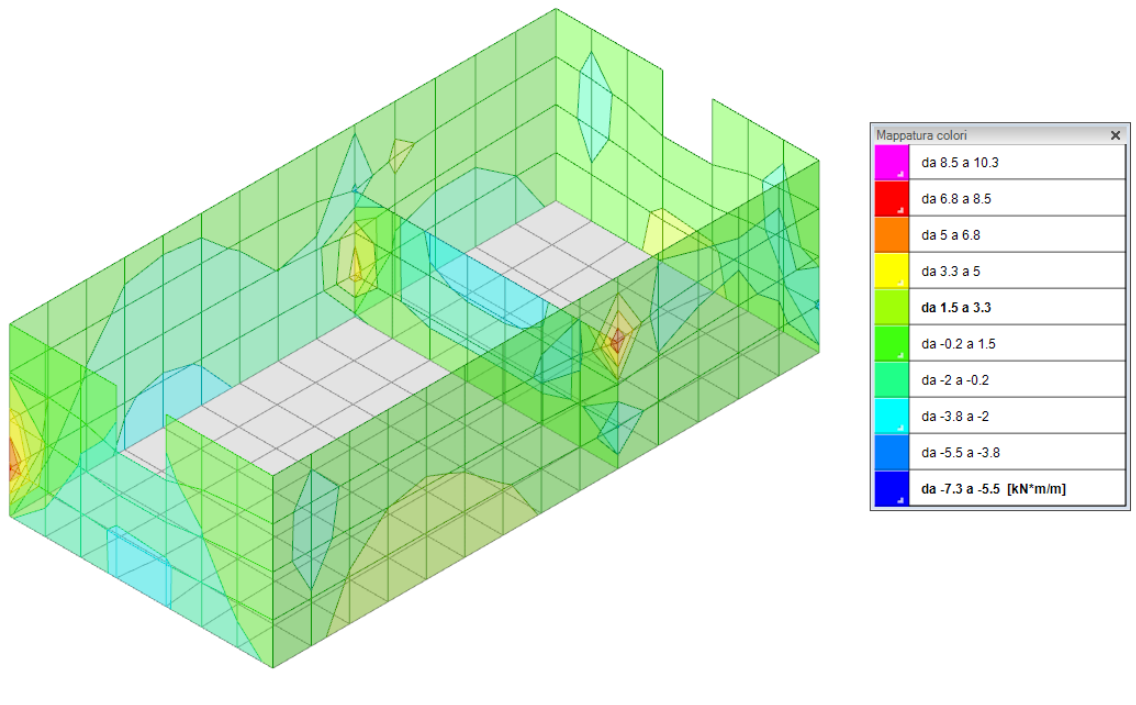


Figura 28 - Inviluppo momento flettente Moo

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

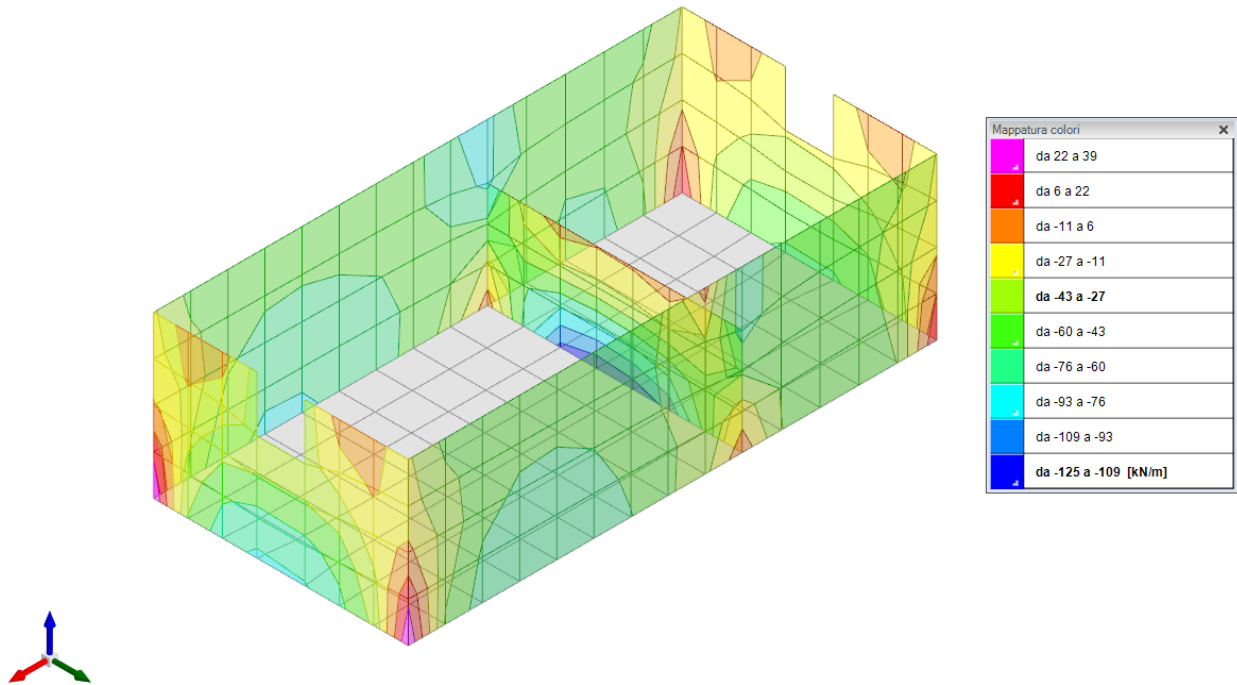


Figura 29 - Involuppo sforzo di taglio Fz

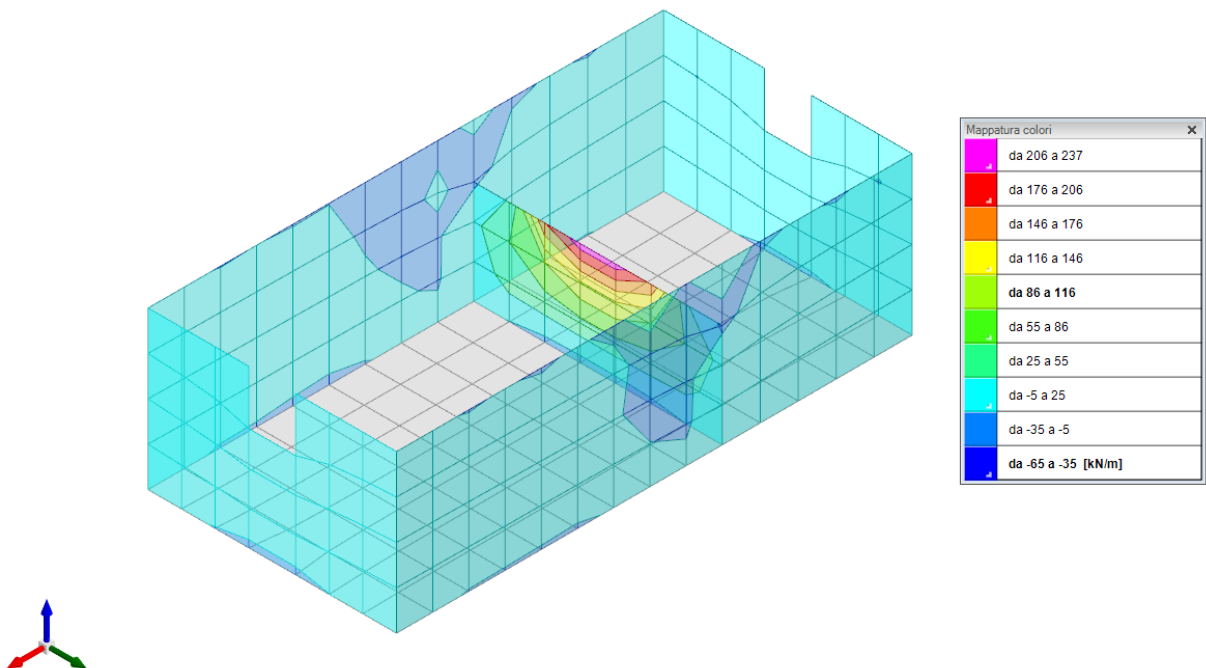


Figura 30 - Involuppo sforzo di taglio Foo

VASCHE DI PRIMA PIOGGIA
 RELAZIONE GEOTECNICA E DI CALCOLO

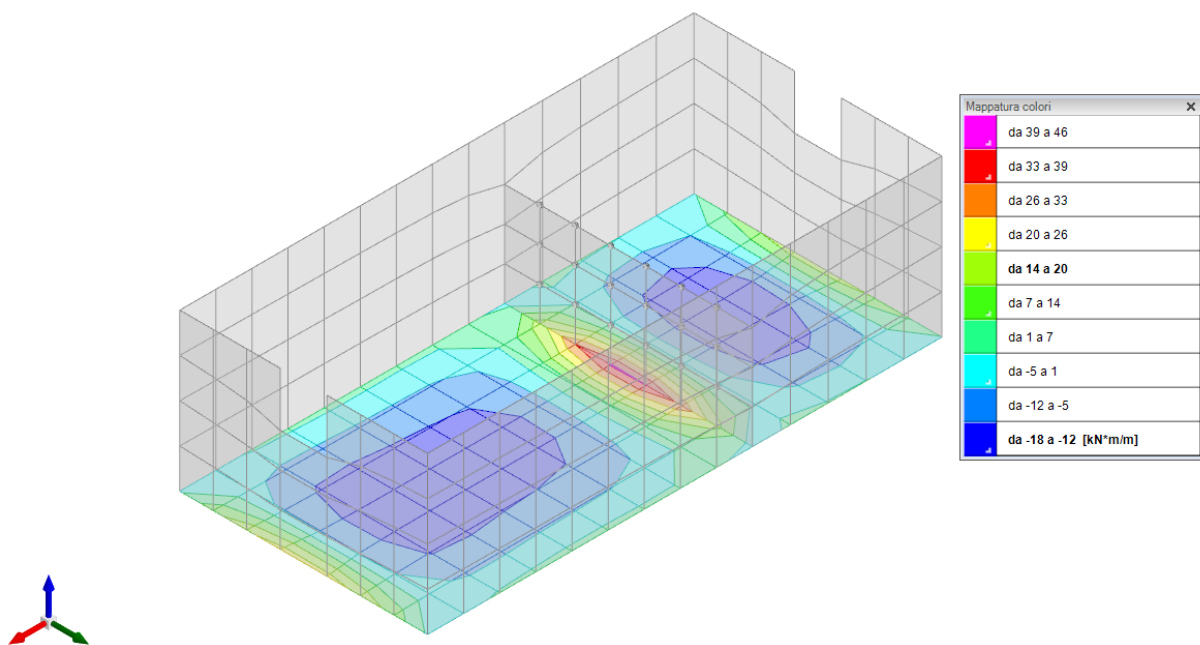


Figura 31 - Inviluppo momento flettente Mxx

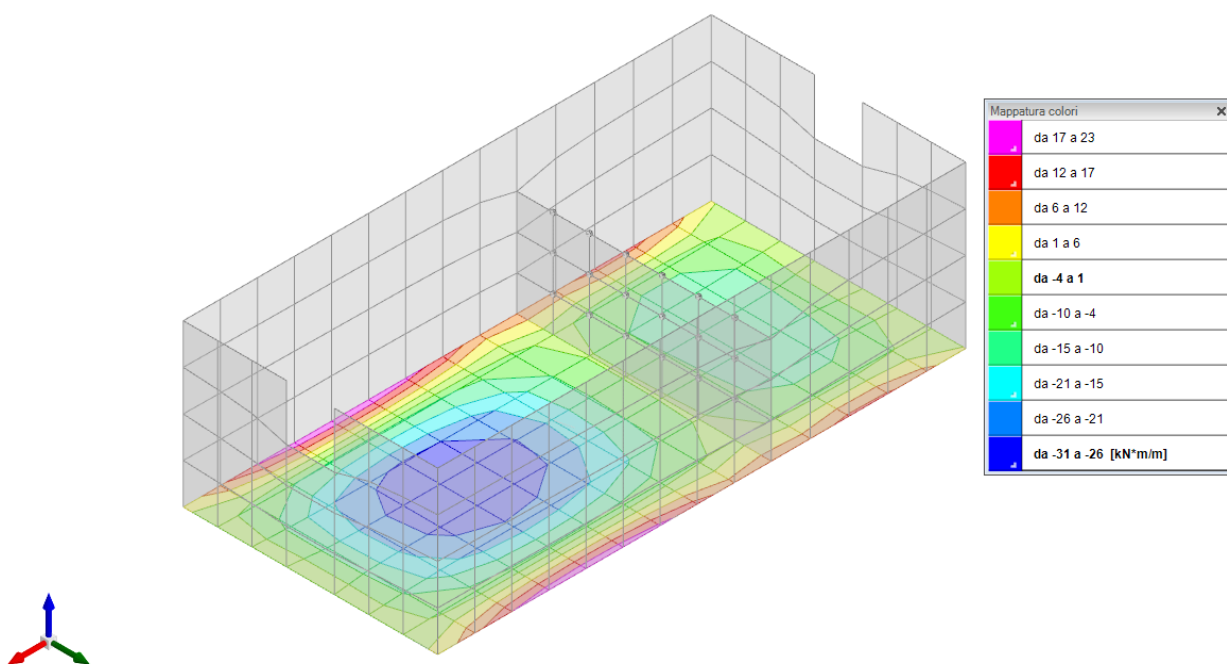


Figura 32 - Inviluppo momento flettente Myy

VASCHE DI PRIMA PIOGGIA
 RELAZIONE GEOTECNICA E DI CALCOLO

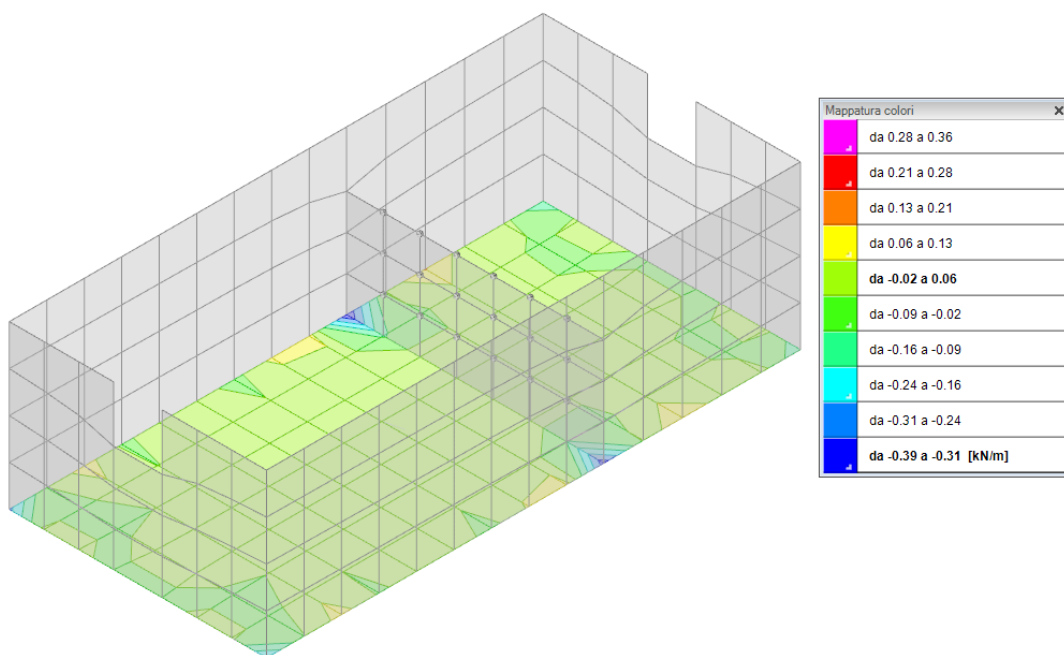


Figura 33 - Inviluppo sforzo di taglio Fxx

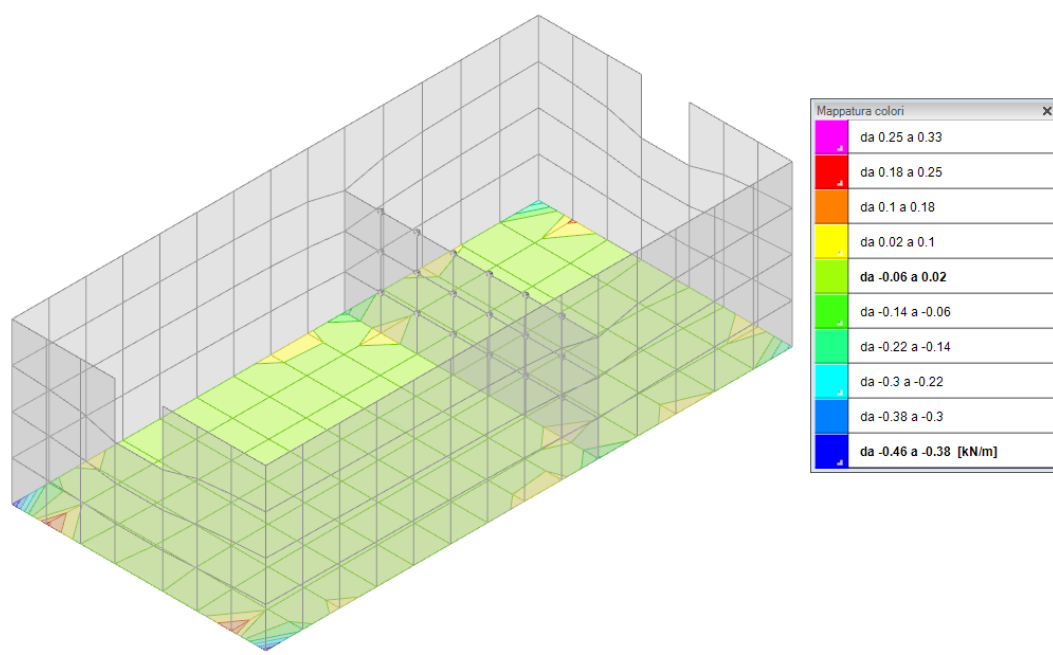


Figura 34 - Inviluppo sforzo di taglio Fyy

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

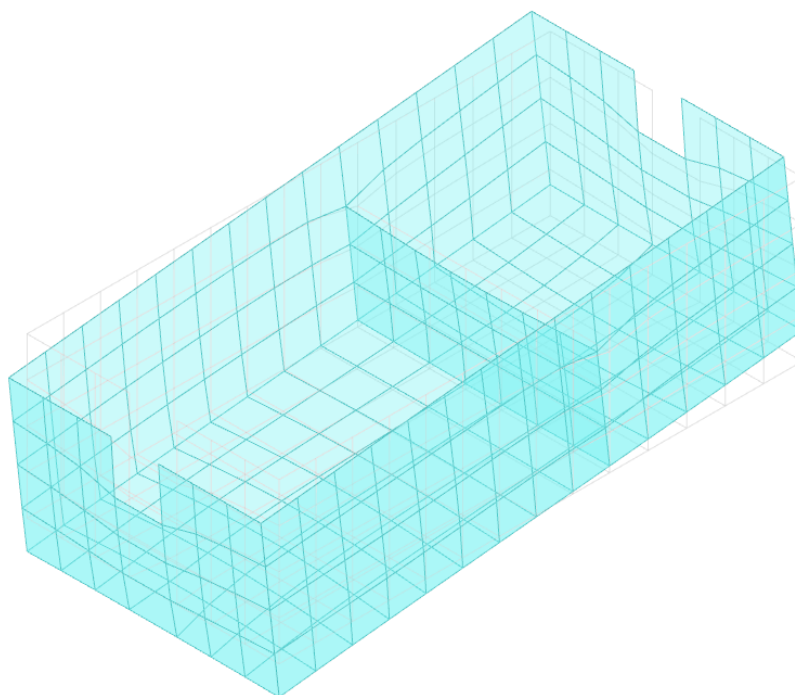


Figura 35 – Spostamenti condizione sisma X SLV

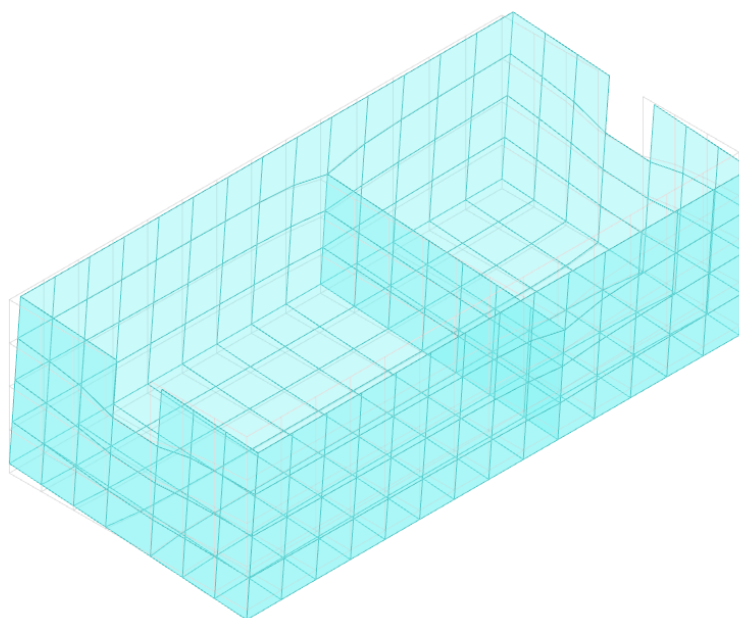


Figura 36 – Spostamenti condizione sisma Y SLV

6.7 VERIFICHE STRUTTURALI

Si riportano di seguito i tabulati di calcolo delle verifiche dei vari elementi strutturali.

6.7.1 Verifiche pareti

nod.: nodo del modello FEM

sez.: tipo di sezione (o = orizzontale, v = verticale)

B: base della sezione

H: altezza della sezione

Af+: area di acciaio dal lato B (inferiore per le piastre)

Af-: area di acciaio dal lato A (superiore per le piastre)

c+: copriferro dal lato B (inferiore per le piastre)

c-: copriferro dal lato A (superiore per le piastre)

sc: tensione sul calcestruzzo in esercizio

comb: combinazione di carico

c.s.: coefficiente di sicurezza

N: sforzo normale di calcolo

M: momento flettente di calcolo

Mu: momento flettente ultimo

Nu: sforzo normale ultimo

sf: tensione sull'acciaio in esercizio

Wk: apertura caratteristica delle fessure

Sm: distanza media fra le fessure

st: sigma a trazione nel calcestruzzo in condizioni non fessurate

fck: resistenza caratteristica cilindrica del calcestruzzo

fc'd: resistenza a compressione di calcolo del calcestruzzo

fct'd: resistenza a trazione di calcolo del calcestruzzo

Hcr: altezza critica

q.Hcr: *quota della sezione alla altezza critica

hw: altezza della parete

lw: lunghezza della parete

n.p.: numero di piani

hs: altezza dell'interpiano

Mxd: momento di progetto attorno all'asse x (fuori piano)

Myd: momento di progetto attorno all'asse y (nel piano)

NEd: sforzo normale di progetto

MEd: Momento flettente di progetto di progetto

VEd: sforzo di taglio di progetto

Ngrav.: sforzo normale dovuto ai carichi gravitazionali

NReale.: sforzo normale derivante dall'analisi

VRcd: resistenza a taglio dovuta alle bielle di calcestruzzo

epsilon: coefficiente di maggiorazione del taglio derivante dall'analisi

alfaS: $MEd/(VEd*lw)$ formula 7.4.15

At: area tesa di acciaio

roh: rapporto tra area della sezione orizzontale dell'armatura di anima e l'area della sezione di calcestruzzo

rov: rapporto tra area della sezione verticale dell'armatura di anima e l'area della sezione di calcestruzzo

VRsd: resistenza a taglio della sezione con armature

Somma(Asj)- Ai: somma delle aree delle barre verticali che attraversano la superficie di scorrimento

csi: altezza della parte compressa normalizzata all'altezza della sezione

Vsd: contributo dell'effetto spinotto delle armature verticali

Vfd: contributo della resistenza per attrito

Vid: contributo delle armature inclinate presenti alla base

VRd,s: valore di progetto della resistenza a taglio nei confronti dello scorrimento

M01: momento flettente inferiore per verifica instabilità

M02: momento flettente superiore per verifica instabilità

etot: eccentricità complessiva EC2 12.6.5.2 (12.12)

Fi: coefficiente riduttivo EC2 12.6.5.2 (12.11)

l0: lunghezza libera di inflessione

beta: coefficiente EC2 12.6.5.1 (12.9)

Nrd: resistenza di progetto EC2 12.6.5.2 (12.10)

l,lim: snellezza limite EC2 12.6.5.1 (4)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

At: area di calcestruzzo del traverso in parete con blocco cassero in legno
Vr,cls: resistenza a taglio in assenza di armatura orizzontale in parete con blocco cassero in legno
Mu: momento resistente ultimo del singolo traverso in parete con blocco cassero in legno
Hp: resistenza a trazione dell'elemento teso in parete con blocco cassero in legno
R: fattore di efficienza in parete con blocco cassero in legno
Vr,s: contributo alla resistenza a taglio della armatura orizzontale in parete con blocco cassero in legno
Vrd: resistenza a taglio per trazione del diagonale in parete con blocco cassero in legno
l: luce netta della trave di collegamento
h: altezza della trave di collegamento
b: spessore della trave di collegamento
d: altezza utile della trave di collegamento
Asi: area complessiva della armatura a X
M,plast: momenti resistenti della trave a filo appoggio
T,plast: sforzi di taglio nella trave derivanti da gerarchia delle resistenze

Parete fra le coordinate in pianta (4971;5292) (4971;4732)

da quota -40 a quota 330
 Valori in daN, cm
 C32/40: rck 400
 fyk 4500

Verifica di stato limite ultimo

nod	sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd
33	o	100	30	10.1	10.1	7.0	7.0	4.037	23 SLU	-9887	-338227	-39919	-1365568	4112	14147
	v	70	30	4.5	4.5	5.6	5.6	25.010	24 SLU	117	-17883	2918	-447246	566	9188
48	o	100	30	10.1	10.1	7.0	7.0	3.190	23 SLU	-11351	-417456	-36212	-1331766	2444	14315
	v	70	30	4.5	4.5	5.6	5.6	27.871	24 SLU	-419	-21949	-11679	-611753	368	9212
77	o	100	30	10.1	10.1	7.0	7.0	3.242	23 SLU	-11032	-409501	-35766	-1327629	2420	14278
	v	70	30	4.5	4.5	5.6	5.6	28.357	24 SLU	-367	-21106	-10419	-598512	283	9213

Combinazione rara

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c
33	o	100	30	10.1	10.1	7.0	7.0	-32.6	5 ra	-7.02E03	-2.44E05	805.1	5 ra	-7.02E03	-2.44E05	0.00999.00	13.5	0.0	1 ra	1 ra
	v	70	30	4.5	4.5	5.6	5.6	-2.7	6 ra	5.75E01	-1.26E04	131.6	6 ra	5.75E01	-1.26E04	0.00999.00	1.2	0.0	1 ra	1 ra
48	o	100	30	10.1	10.1	7.0	7.0	-40.4	5 ra	-8.08E03	-3.01E05	1025.8	5 ra	-8.08E03	-3.01E05	0.00999.00	16.8	0.0	1 ra	1 ra
	v	70	30	4.5	4.5	5.6	5.6	-3.2	6 ra	-3.19E02	-1.56E04	117.8	6 ra	-3.19E02	-1.56E04	0.00999.00	1.3	0.0	1 ra	1 ra
77	o	100	30	10.1	10.1	7.0	7.0	-39.7	5 ra	-7.86E03	-2.96E05	1010.4	5 ra	-7.86E03	-2.96E05	0.00999.00	16.5	0.0	1 ra	1 ra
	v	70	30	4.5	4.5	5.6	5.6	-3.1	6 ra	-2.82E02	-1.50E04	116.1	6 ra	-2.82E02	-1.50E04	0.00999.00	1.3	0.0	1 ra	1 ra

Combinazione frequente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c
33	o	100	30	10.1	10.1	7.0	7.0	-28.6	5 fr	-6.44E03	-2.15E05	696.2	5 fr	-6.44E03	-2.15E05	0.00	0.30	11.8	0.0	1 fr
	v	70	30	4.5	4.5	5.6	5.6	-2.3	5 fr	-8.14E01	-1.10E04	115.6	4 fr	8.63E01	-1.07E04	0.00	0.30	1.0	0.0	1 fr
48	o	100	30	10.1	10.1	7.0	7.0	-35.4	5 fr	-7.38E03	-2.64E05	885.0	5 fr	-7.38E03	-2.64E05	0.00	0.30	14.7	0.0	1 fr
	v	70	30	4.5	4.5	5.6	5.6	-2.9	5 fr	-4.19E02	-1.42E04	103.7	4 fr	-2.17E02	-1.30E04	0.00	0.30	1.1	0.0	1 fr
77	o	100	30	10.1	10.1	7.0	7.0	-34.8	5 fr	-7.20E03	-2.60E05	871.0	5 fr	-7.20E03	-2.60E05	0.00	0.30	14.4	0.0	1 fr
	v	70	30	4.5	4.5	5.6	5.6	-2.8	5 fr	-3.87E02	-1.37E04	102.6	4 fr	-1.88E02	-1.26E04	0.00	0.30	1.1	0.0	1 fr

Combinazione quasi permanente

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c
33	o	100	30	10.1	10.1	7.0	7.0	-26.4	5 q.	-5.82E03	-1.97E05	645.4	5 q.	-5.82E03	-1.97E05	0.00	0.20	10.9	0.0	1 q.
	v	70	30	4.5	4.5	5.6	5.6	-2.3	6 q.	8.63E01	-1.07E04	115.6	6 q.	8.63E01	-1.07E04	0.00	0.20	1.0	0.0	1 q.
48	o	100	30	10.1	10.1	7.0	7.0	-32.7	5 q.	-6.69E03	-2.44E05	821.1	5 q.	-6.69E03	-2.44E05	0.00	0.20	13.5	0.0	1 q.
	v	70	30	4.5	4.5	5.6	5.6	-2.7	6 q.	-2.17E02	-1.30E04	103.7	6 q.	-2.17E02	-1.30E04	0.00	0.20	1.1	0.0	1 q.
77	o	100	30	10.1	10.1	7.0	7.0	-32.1	5 q.	-6.54E03	-2.39E05	808.6	5 q.	-6.54E03	-2.39E05	0.00	0.20	13.3	0.0	1 q.
	v	70	30	4.5	4.5	5.6	5.6	-2.6	6 q.	-1.88E02	-1.26E04	102.6	6 q.	-1.88E02	-1.26E04	0.00	0.20	1.1	0.0	1 q.

Parete fra le coordinate in pianta (6071;4732) (6071;5292)

da quota -40 a quota 330
 Valori in daN, cm
 C32/40: rck 400
 fyk 4500

Verifica di stato limite ultimo

nod	sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd
34	o	100	30	10.1	10.1	7.0	7.0	3.208	23 SLU	-11598	-417989	-37201	-1340769	4666	14343
	v	70	30	4.5	4.5	5.6	5.6	16.091	24 SLU	324	-25988	5218	-418173	755	9183
49	o	100	30	10.1	10.1	7.0	7.0	2.560	23 SLU	-13813	-517203	-35359	-1323963	2763	14598
	v	70	30	4.5	4.5	5.6	5.6	16.913	24 SLU	-359	-32675	-6071	-552632	476	9220
78	o	100	30	10.1	10.1	7.0	7.0	2.583	23 SLU	-13349	-509507	-34474	-1315825	2744	14545
	v	70	30	4.5	4.5	5.6	5.6	16.948	24 SLU	-288	-31865	-4877	-540031	516	9227

Combinazione rara

nod	sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c
34	o	100	30	10.1	10.1	7.0	7.0	-40.2	5 ra	-8.21E03	-3.00E05	1011.4	5 ra	-8.21E03	-3.00E05	0.00999.00	16.7	0.0	1 ra	1 ra
	v	70	30	4.5	4.5	5.6	5.6	-3.9	6 ra	2.02E02	-1.83E04	204.5	6 ra	2.02E02	-1.83E04	0.00999.00	1.8	0.0	1 ra	1 ra
49	o	100	30	10.1	10.1	7.0	7.0	-49.9	5 ra	-9.80E03	-3.71E05	1272.4	5 ra	-9.80E03	-3.71E05	0.00999.00	20.8	0.0	1 ra	1 ra

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

v	70	30	4.5	4.5	5.6	5.6	-4.8	6	ra	-2.76E02	-2.31E04	196.4	6	ra	-2.76E02	-2.31E04	0.00999.00	2.0	0.0	1	ra
o	100	30	10.1	10.1	7.0	7.0	-49.2	5	ra	-9.48E03	-3.66E05	1263.5	5	ra	-9.48E03	-3.66E05	0.00999.00	20.6	0.0	1	ra
v	70	30	4.5	4.5	5.6	5.6	-4.7	6	ra	-2.27E02	-2.25E04	196.5	6	ra	-2.27E02	-2.25E04	0.00999.00	2.0	0.0	1	ra

Combinazione frequente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
34	o	100	30	10.1	10.1	7.0	7.0	-35.7	5	fr	-7.54E03	-2.67E05	889.4	5	fr	-7.54E03	-2.67E05	0.00	0.30	14.8	0.0	1	fr
	v	70	30	4.5	4.5	5.6	5.6	-3.3	4	fr	2.13E02	-1.55E04	178.6	4	fr	2.13E02	-1.55E04	0.00	0.30	1.5	0.0	1	fr
49	o	100	30	10.1	10.1	7.0	7.0	-44.2	5	fr	-8.97E03	-3.30E05	1115.4	5	fr	-8.97E03	-3.30E05	0.00	0.30	18.4	0.0	1	fr
	v	70	30	4.5	4.5	5.6	5.6	-4.2	5	fr	-3.83E02	-2.02E04	171.5	4	fr	-1.78E02	-1.94E04	0.00	0.30	1.7	0.0	1	fr
78	o	100	30	10.1	10.1	7.0	7.0	-43.6	5	fr	-8.70E03	-3.25E05	1107.5	5	fr	-8.70E03	-3.25E05	0.00	0.30	18.2	0.0	1	fr
	v	70	30	4.5	4.5	5.6	5.6	-4.1	5	fr	-3.40E02	-1.97E04	171.6	4	fr	-1.40E02	-1.90E04	0.00	0.30	1.7	0.0	1	fr

Combinazione quasi permanente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
34	o	100	30	10.1	10.1	7.0	7.0	-32.7	5	q.	-6.79E03	-2.44E05	818.5	5	q.	-6.79E03	-2.44E05	0.00	0.20	13.6	0.0	1	q.
	v	70	30	4.5	4.5	5.6	5.6	-3.3	6	q.	2.13E02	-1.55E04	178.6	6	q.	2.13E02	-1.55E04	0.00	0.20	1.5	0.0	1	q.
49	o	100	30	10.1	10.1	7.0	7.0	-40.5	5	q.	-8.11E03	-3.02E05	1027.6	5	q.	-8.11E03	-3.02E05	0.00	0.20	16.9	0.0	1	q.
	v	70	30	4.5	4.5	5.6	5.6	-4.1	6	q.	-1.78E02	-1.94E04	171.5	6	q.	-1.78E02	-1.94E04	0.00	0.20	1.7	0.0	1	q.
78	o	100	30	10.1	10.1	7.0	7.0	-40.0	5	q.	-7.87E03	-2.98E05	1020.9	5	q.	-7.87E03	-2.98E05	0.00	0.20	16.7	0.0	1	q.
	v	70	30	4.5	4.5	5.6	5.6	-4.0	6	q.	-1.40E02	-1.90E04	171.6	6	q.	-1.40E02	-1.90E04	0.00	0.20	1.7	0.0	1	q.

Parete a "Fondazione - Copertura"

Parete fra le coordinate in pianta (6086;5277) (4956;5277)
da quota -40 a quota 330
Valori in daN, cm
C32/40: rck 400
fyk 4500

Verifica di stato limite ultimo

nod sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd		
118	o	100	30	10.1	10.1	7.0	7.0	2.223	23	SLU	-13207	-570881	-29356	-1268914	5651	14528
	v	70	30	3.4	3.4	5.6	5.6	15.161	23	SLU	-695	-33255	-10542	-504182	203	9144
119	o	100	30	10.1	10.1	7.0	7.0	2.201	23	SLU	-13616	-579001	-29973	-1274525	5722	14575
	v	70	30	3.4	3.4	5.6	5.6	14.008	23	SLU	-597	-34085	-8364	-477471	163	9146
159	o	100	30	10.1	10.1	7.0	7.0	13.691	10	SLU	-7599	-140419	-104030	-1922466	5721	14585
	v	100	30	5.7	5.7	5.6	5.6	13.786	24	SLU	257	-41104	3543	-566644	191	12974

Combinazione rara

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c			
118	o	100	30	10.1	10.1	7.0	7.0	-55.6	5	ra	-9.39E03	-4.11E05	1483.2	5	ra	-9.39E03	-4.11E05	0.00999.00	23.5	0.0	1	ra
	v	70	30	3.4	3.4	5.6	5.6	-5.5	5	ra	-4.96E02	-2.38E04	232.1	5	ra	-4.96E02	-2.38E04	0.00999.00	2.0	0.0	1	ra
119	o	100	30	10.1	10.1	7.0	7.0	-56.3	5	ra	-9.68E03	-4.17E05	1495.4	5	ra	-9.68E03	-4.17E05	0.00999.00	23.8	0.0	1	ra
	v	70	30	3.4	3.4	5.6	5.6	-5.7	5	ra	-4.27E02	-2.43E04	250.0	5	ra	-4.27E02	-2.43E04	0.00999.00	2.1	0.0	1	ra
159	o	100	30	10.1	10.1	7.0	7.0	-13.8	6	ra	-9.44E03	-1.19E05	167.1	4	ra	-6.30E03	-9.90E04	0.00999.00	4.6	0.0	1	ra
	v	100	30	5.7	5.7	5.6	5.6	-4.5	6	ra	-3.83E01	-2.88E04	231.9	6	ra	1.34E02	-2.79E04	0.00999.00	1.9	0.0	1	ra

Combinazione frequente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
118	o	100	30	10.1	10.1	7.0	7.0	-48.9	5	fr	-8.55E03	-3.62E05	1292.0	5	fr	-8.55E03	-3.62E05	0.00	0.30	20.6	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-5.0	5	fr	-4.47E02	-2.14E04	209.4	5	fr	-4.47E02	-2.14E04	0.00	0.30	1.8	0.0	1	fr
119	o	100	30	10.1	10.1	7.0	7.0	-49.6	5	fr	-8.82E03	-3.68E05	1304.6	5	fr	-8.82E03	-3.68E05	0.00	0.30	20.9	0.0	1	fr
	v	70	30	3.4	3.4	5.6	5.6	-5.2	5	fr	-3.83E02	-2.20E04	226.5	5	fr	-3.83E02	-2.20E04	0.00	0.30	1.9	0.0	1	fr
159	o	100	30	10.1	10.1	7.0	7.0	-13.2	4	fr	-7.65E03	-1.11E05	161.8	4	fr	-7.65E03	-1.11E05	0.00	0.30	4.7	0.0	1	fr
	v	100	30	5.7	5.7	5.6	5.6	-4.2	4	fr	1.87E01	-2.65E04	222.2	4	fr	1.95E02	-2.60E04	0.00	0.30	1.7	0.0	1	fr

Combinazione quasi permanente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c				
118	o	100	30	10.1	10.1	7.0	7.0	-45.0	5	q.	-7.75E03	-3.33E05	1193.7	5	q.	-7.75E03	-3.33E05	0.00	0.20	19.0	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-4.6	5	q.	-4.06E02	-1.96E04	191.1	5	q.	-4.06E02	-1.96E04	0.00	0.20	1.6	0.0	1	q.
119	o	100	30	10.1	10.1	7.0	7.0	-45.6	5	q.	-7.98E03	-3.38E05	1204.7	5	q.	-7.98E03	-3.38E05	0.00	0.20	19.2	0.0	1	q.
	v	70	30	3.4	3.4	5.6	5.6	-4.7	5	q.	-3.49E02	-2.00E04	206.2	5	q.	-3.49E02	-2.00E04	0.00	0.20	1.7	0.0	1	q.
159	o	100	30	10.1	10.1	7.0	7.0	-13.2	6	q.	-7.65E03	-1.11E05	167.1	4	q.	-6.30E03	-9.90E04	0.00	0.20	4.7	0.0	1	q.
	v	100	30	5.7	5.7	5.6	5.6	-4.2	6	q.	1.87E01	-2.65E04	222.2	6	q.	1.95E02	-2.60E04	0.00	0.20	1.7	0.0	1	q.

Parete a "Fondazione - Copertura"

Parete fra le coordinate in pianta (4956;4747) (6086;4747)
da quota -40 a quota 330
Valori in daN, cm
C32/40: rck 400
fyk 4500

Verifica di stato limite ultimo

nod sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd		
12	o	100	30	10.1	10.1	7.0	7.0	2.206	23	SLU	-14947	-590185	-32979	-1302158	5732	14729
	v	70	30	3.4	3.4	5.6	5.6	15.532	23	SLU	-821	-34114	-12750	-529860	221	9171
13	o	100	30	10.1	10.1	7.0	7.0	2.182	23	SLU	-15228	-597823	-33225	-1304412	5801	14761
	v	70	30	3.4	3.4	5.6	5.6	14.469	24	SLU	-582	-33047	-8421	-478156	162	9152
158	o	100	30	10.1	10.1	7.0	7.0	13.512	10	SLU	-8211	-146364	-110947	-1977724	5800	14761
	v	100	30	5.7	5.7	5.6	5.6	13.566	24	SLU	129	-43461	1750	-589581	183	12990

Combinazione rara

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c			
12	o	100	30	10.1	10.1	7.0	7.0	-57.2	5	ra	-1.06E04	-4.25E05	1485.4	5	ra	-1.06E04	-4.25E05	0.00999.00	24.0	0.0	1	ra
	v	70	30	3.4	3.4	5.6	5.6	-5.7	5	ra	-6.47E02	-2.48E04	225.3	5	ra	-5.89E02	-2.43E04	0.00999.00	2.0	0.0	1	ra
13	o	100	30	10.1	10.1	7.0	7.0	-57.9	5	ra	-1.08E04	-4.30E05	1500.5	5	ra	-1.08E04	-4.30E05	0.00999.00	24.2	0.0	1	ra

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

158	v	70	30	3.4	3.4	5.6	5.6	-5.8	5	ra	-6.42E02	-2.53E04	241.0	5	ra	-5.50E02	-2.51E04	0.00999	0.00	2.1	0.0	1	ra	
	o	100	30	10.1	10.1	7.0	7.0	-14.7	6	ra	-1.03E04	-1.27E05	167.5	4	ra	-6.77E03	-1.04E05	0.00999	0.00	4.9	0.0	1	ra	
	v	100	30	5.7	5.7	5.6	5.6	-4.7	6	ra	-2.99E02	-3.04E04	236.3	6	ra	4.61E01	-2.95E04	0.00999	0.00	1.9	0.0	1	ra	
Combinazione frequente																								
	nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
	12	o	100	30	10.1	10.1	7.0	7.0	-50.3	5	fr	-9.60E03	-3.74E05	1293.9	5	fr	-9.60E03	-3.74E05	0.00	0.30	21.0	0.0	1	fr
		v	70	30	3.4	3.4	5.6	5.6	-5.1	5	fr	-5.80E02	-2.23E04	203.5	5	fr	-5.30E02	-2.20E04	0.00	0.30	1.8	0.0	1	fr
	13	o	100	30	10.1	10.1	7.0	7.0	-51.0	5	fr	-9.79E03	-3.79E05	1309.2	5	fr	-9.79E03	-3.79E05	0.00	0.30	21.3	0.0	1	fr
		v	70	30	3.4	3.4	5.6	5.6	-5.3	5	fr	-5.71E02	-2.29E04	218.9	5	fr	-4.89E02	-2.27E04	0.00	0.30	1.9	0.0	1	fr
	158	o	100	30	10.1	10.1	7.0	7.0	-13.9	4	fr	-8.28E03	-1.17E05	162.8	4	fr	-8.28E03	-1.17E05	0.00	0.30	4.9	0.0	1	fr
		v	100	30	5.7	5.7	5.6	5.6	-4.3	4	fr	-1.77E02	-2.78E04	225.5	4	fr	1.29E02	-2.72E04	0.00	0.30	1.8	0.0	1	fr
Combinazione quasi permanente																								
	nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
	12	o	100	30	10.1	10.1	7.0	7.0	-46.2	5	q.	-8.65E03	-3.43E05	1195.4	5	q.	-8.65E03	-3.43E05	0.00	0.20	19.3	0.0	1	q.
		v	70	30	3.4	3.4	5.6	5.6	-4.7	5	q.	-5.20E02	-2.03E04	184.4	5	q.	-4.85E02	-2.00E04	0.00	0.20	1.6	0.0	1	q.
	13	o	100	30	10.1	10.1	7.0	7.0	-46.8	5	q.	-8.82E03	-3.48E05	1208.6	5	q.	-8.82E03	-3.48E05	0.00	0.20	19.6	0.0	1	q.
		v	70	30	3.4	3.4	5.6	5.6	-4.8	5	q.	-5.11E02	-2.08E04	197.4	5	q.	-4.54E02	-2.06E04	0.00	0.20	1.7	0.0	1	q.
	158	o	100	30	10.1	10.1	7.0	7.0	-13.9	6	q.	-8.28E03	-1.17E05	167.5	4	q.	-6.77E03	-1.04E05	0.00	0.20	4.9	0.0	1	q.
		v	100	30	5.7	5.7	5.6	5.6	-4.3	6	q.	-1.77E02	-2.78E04	225.5	6	q.	1.29E02	-2.72E04	0.00	0.20	1.8	0.0	1	q.

Parete a "Fondazione - Sfiore"

Parete fra le coordinate in pianta (5376;5292) (5376;4732)
da quota -40 a quota 200
Valori in daN, cm
C32/40: rck 400
fyk 4500

Verifica di stato limite ultimo

nod sez	B	H	Af+	Af-	c+	c-	c.s.	comb	N	M	Nu	Mu	Ved	Vcd		
177	o	100	20	5.7	5.7	6.6	6.6	29.616	4	SLU	-1696	23047	-50230	682559	545	8244
	v	100	20	3.9	3.9	5.5	5.5	1.111	24	SLU	24716	29142	27459	32376	89	8271
178	o	100	20	5.7	5.7	6.6	6.6	29.285	4	SLU	-1659	23039	-48591	674678	550	8314
	v	100	20	3.9	3.9	5.5	5.5	1.114	24	SLU	24645	29138	27459	32464	89	8271
220	o	65	20	3.4	3.4	6.6	6.6	26.168	24	SLU	-8492	-5139	-222213	-134465	178	5454
	v	50	20	2.7	2.7	6.5	6.5	2.660	4	SLU	839	-63963	2231	-170112	836	3861

Combinazione rara

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wlim	st	Sm(mm)	c				
177	o	100	20	5.7	5.7	6.6	6.6	-4.7	4	ra	-1.74E03	1.50E04	44.2	4	ra	-1.74E03	1.50E04	0.00999	0.00	1.4	0.0	1	ra
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	ra	7.66E03	-2.02E03	2702.7	6	ra	1.69E04	1.93E04	0.00999	0.00	11.1	0.0	1	ra
178	o	100	20	5.7	5.7	6.6	6.6	-4.7	4	ra	-1.70E03	1.50E04	47.0	4	ra	-1.70E03	1.50E04	0.00999	0.00	1.4	0.0	1	ra
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	ra	8.44E03	-2.02E03	2696.4	6	ra	1.69E04	1.93E04	0.00999	0.00	11.1	0.0	1	ra
220	o	65	20	3.4	3.4	6.6	6.6	-5.0	6	ra	-5.95E03	-3.39E03	-62.1	5	ra	-5.81E03	7.90E01	0.00999	0.00	0.0	0.0	1	ra
	v	50	20	2.7	2.7	6.5	6.5	-34.8	4	ra	-3.23E02	-4.17E04	1183.7	4	ra	-3.23E02	-4.17E04	0.00999	0.00	12.0	0.0	1	ra

Combinazione frequente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
177	o	100	20	5.7	5.7	6.6	6.6	-4.3	2	fr	-1.74E03	1.42E04	35.5	2	fr	-1.74E03	1.42E04	0.00	0.30	1.3	0.0	1	fr
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	fr	7.66E03	-2.02E03	2478.4	4	fr	1.51E04	1.97E04	0.00	0.30	10.3	0.0	1	fr
178	o	100	20	5.7	5.7	6.6	6.6	-4.3	2	fr	-1.69E03	1.41E04	38.1	2	fr	-1.69E03	1.41E04	0.00	0.30	1.3	0.0	1	fr
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	fr	8.44E03	-2.02E03	2473.6	4	fr	1.50E04	1.97E04	0.00	0.30	10.3	0.0	1	fr
220	o	65	20	3.4	3.4	6.6	6.6	-4.2	4	fr	-4.82E03	-3.33E03	-56.2	5	fr	-5.26E03	1.15E02	0.00	0.30	0.0	0.0	1	fr
	v	50	20	2.7	2.7	6.5	6.5	-32.6	2	fr	-4.50E02	-3.93E04	1083.3	2	fr	-4.50E02	-3.93E04	0.00	0.30	11.2	0.0	1	fr

Combinazione quasi permanente

nod sez	B	H	Af+	Af-	c+	c-	sc	c	N	M	sf	c	N	M	Wk(mm)	Wklim	st	Sm(mm)	c				
177	o	100	20	5.7	5.7	6.6	6.6	-4.7	4	q.	-1.74E03	1.50E04	44.2	4	q.	-1.74E03	1.50E04	0.00	0.20	1.4	0.0	1	q.
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	q.	7.66E03	-2.02E03	2478.4	6	q.	1.51E04	1.97E04	0.00	0.20	10.3	0.0	1	q.
178	o	100	20	5.7	5.7	6.6	6.6	-4.7	4	q.	-1.70E03	1.50E04	47.0	4	q.	-1.70E03	1.50E04	0.00	0.20	1.4	0.0	1	q.
	v	100	20	3.9	3.9	5.5	5.5	0.0	1	q.	8.44E03	-2.02E03	2473.6	6	q.	1.50E04	1.97E04	0.00	0.20	10.3	0.0	1	q.
220	o	65	20	3.4	3.4	6.6	6.6	-4.2	6	q.	-4.82E03	-3.33E03	-49.9	5	q.	-4.68E03	1.42E02	0.00	0.20	0.0	0.0	1	q.
	v	50	20	2.7	2.7	6.5	6.5	-34.8	4	q.	-3.23E02	-4.17E04	1183.7	4	q.	-3.23E02	-4.17E04	0.00	0.20	12.0	0.0	1	q.

6.7.2 Verifiche platea C.A.

Nodo: indice del nodo di verifica

Dir.: direzione della sezione di verifica

B: base della sezione rettangolare di verifica [m]

H: altezza della sezione rettangolare di verifica [m]

A. sup.: area barre armatura superiori [m²]

C. sup.: distanza media delle barre superiori dal bordo superiore della sezione [m]

A. inf.: area barre armatura inferiori [m²]

C. inf.: distanza media delle barre inferiori dal bordo inferiore della sezione [m]

Comb.: combinazione di verifica

M: momento flettente [kN*m]

N: sforzo normale [kN]

Mu: momento flettente ultimo [kN*m]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Nu: sforzo normale ultimo [kN]

c.s.: coefficiente di sicurezza

Verifica: stato di verifica

A. st.: area staffe su interasse [m]

A. sag.: area sagomati su interasse [m]

Ved: taglio agente [kN]

Vrd: taglio resistente [kN]

Vrdc: resistenza di calcolo a taglio per elementi privi di armature trasversali [kN]

Vrsd: resistenza di calcolo a taglio trazione [kN]

Vrdc: resistenza di calcolo a taglio compressione [kN]

cotgθ: cotangente dell'inclinazione dei puntoni di calcestruzzo rispetto all'asse dell'elemento

Asl: area longitudinale tesa nella combinazione di verifica di Ved [m²]

σc: tensione nel calcestruzzo [kN/m²]

σlim: tensione limite [kN/m²]

Es/Ec: coefficiente di omogenizzazione

σf: tensione nell'acciaio d'armatura [kN/m²]

Le unità di misura delle verifiche elencate nel capitolo sono in [m, kN] ove non espressamente specificato.

Platea a "Fondazione"

Verifiche condotte secondo D.M. 17-01-18 (N.T.C.)

Caratteristiche dei materiali

Acciaio: B450C Fyk 450000

Calcestruzzo: C32/40 Rck 40000

Verifiche nei nodi

Verifiche SLU flessione nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	Mu	Nu	c.s.	Verifica
62	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	84.5608	-0.02	134.0404	-0.03	1.5851	Si
64	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	82.8409	-0.02	134.0395	-0.03	1.618	Si
47	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	68.6383	0.07	134.0134	0.14	1.9525	Si
79	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLU 24	64.5908	0.06	134.0143	0.13	2.0748	Si
13	X	1	0.4	0.001005	0.074	0.001005	0.074	SLU 23	59.8377	0.02	135.5596	0.06	2.2655	Si

Verifiche SLU taglio nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	A. st.	Comb.	Ved	N	Vrd	Vrdc	Vrsd	Asl	c.s.	Verifica
13	X	100	40	10.05	7.4	10.05	7.4	0	SLU 23	-10355	2	15656	15656	95170	10.053	1.512	Si
25	X	100	40	10.05	7.4	10.05	7.4	0	SLU 23	-10355	-2	15656	15656	95170	10.053	1.512	Si
12	X	100	40	10.05	7.4	10.05	7.4	0	SLU 23	-10182	3	15656	15656	95170	10.053	1.5377	Si
27	X	100	40	10.05	7.4	10.05	7.4	0	SLU 23	-10181	-2	15656	15656	95170	10.053	1.5377	Si
24	X	100	40	10.05	7.4	10.05	7.4	0	SLU 23	-9846	1	15656	15656	95170	10.053	1.5901	Si

Verifiche SLE tensione calcestruzzo nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	σc	σlim	Es/Ec	Verifica
62	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE QP 6	50.8633	-0.01	-1712	14940	15	Si
64	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE QP 6	49.973	-0.01	-1682	14940	15	Si
62	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	59.5312	-0.01	-2004	19920	15	Si
64	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	58.3481	-0.01	-1964	19920	15	Si
47	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE QP 6	41.2303	0.04	-1388	14940	15	Si

Verifiche SLE tensione acciaio nei nodi

Nodo	Dir.	B	H	A. sup.	C. sup.	A. inf.	C. inf.	Comb.	M	N	σf	σlim	Es/Ec	Verifica
62	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	59.5312	-0.01	21341	360000	15	Si
64	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	58.3481	-0.01	20917	360000	15	Si
47	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	48.2308	0.05	17292	360000	15	Si
79	Y	1	0.4	0.001005	0.058	0.001005	0.058	SLE RA 6	45.4468	0.04	16294	360000	15	Si
13	X	1	0.4	0.001005	0.074	0.001005	0.074	SLE RA 5	43.0226	0.02	13991	360000	15	Si

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

6.8 CAPACITÀ PORTANTE DEL TERRENO

6.8.1 Valutazione della costante di sottofondo

La rigidezza delle molle, attraverso la quale viene schematizzata l'interazione terreno-struttura, viene calcolata utilizzando un coefficiente di sottofondo pari a 65000 kN/m^3 .

Tale valore è stato valutato mediante la metodologia di Joseph E. Bowles, che permette di stimare la costante di Winkler verticale per fondazioni superficiali rettangolari sulla base della capacità portante (carico ultimo) della fondazione, calcolata tramite la formula di Hansen, con la seguente formula:

$$k = 40 \times q_{lim}$$

dove la resistenza ultima del terreno corrisponde ad un cedimento $w = 2.5 \text{ cm}$, limite per le condizioni di esercizio di una struttura.

In relazione al valore di capacità portante calcolato nei paragrafi successivi si ottiene: $k = 40 \times 1614 = 64581 \text{ kN/m}^3$. Pertanto in sede di modellazione è stato assunto un valore della costante di sottofondo pari a 65000 kN/m^3 .

6.8.2 Verifica della capacità portante del complesso terreno-fondazione

Per il calcolo del carico limite della fondazione si utilizza la formula di Brinch-Hansen. La verifica viene condotta allo stato limite ultimo secondo l'Approccio di progetto 2:

- Combo 1 : A1 + M1 + R3

Le fondazioni delle vasche di questa tipologia, in accordo con i profili geotecnici, poggiano in parte sullo strato riconducibile al litotipo UG1 (cfr. paragrafo 2), pertanto la verifica della capacità portante viene eseguita considerando un suolo di fondazione con le caratteristiche di questa litologia.

I calcoli per la valutazione della pressione limite di progetto sono riepilogati nelle tabelle di seguito:

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

AZIONI IN TESTA ALLA FONDAZIONE

$F_x =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione X (Direzione parallela alla base)
$F_y =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione Y (Direzione parallela alla lunghezza)
$F_z =$	<input type="text" value="0,00"/>	kN	Forza in direzione verticale (>0 se di compressione)
$M_x =$	<input type="text" value="0,00"/>	kNm	Momento in direzione X
$M_y =$	<input type="text" value="0,00"/>	kNm	Momento in direzione Y

CARATTERISTICHE FONDAZIONE

$B =$	<input type="text" value="5,60"/>	m	Base
$L =$	<input type="text" value="11,30"/>	m	Lunghezza
$H =$	<input type="text" value="0,40"/>	m	Altezza
$D =$	<input type="text" value="3,70"/>	m	Profondità piano di posa
$\alpha =$	<input type="text" value="0"/>	°	Inclinazione del piano di posa

Considera peso proprio fondazione

$\gamma_o =$	<input type="text" value="25,00"/>	kNm ³	Peso per unità di volume fondazione
$P_o =$	<input type="text" value="0,00"/>	kN	Peso proprio plinto

AZIONI DALLA BASE DELLA FONDAZIONE

Considera momenti di trasporto

$F_{xd} =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione X
$F_{yd} =$	<input type="text" value="0,00"/>	kN	Forza di taglio in direzione Y
$F_{zd} =$	<input type="text" value="0,00"/>	kN	Forza in direzione verticale (>0 se di compressione)
$M_{xd} =$	<input type="text" value="0,00"/>	kNm	Momento in direzione X
$M_{yd} =$	<input type="text" value="0,00"/>	kNm	Momento in direzione Y
$V =$	<input type="text" value="0,00"/>	kN	Componente verticale del carico
$H =$	<input type="text" value="0,00"/>	kN	Componente orizzontale del carico
$\theta_v =$	<input type="text" value="0,00"/>	°	Inclinazione del carico rispetto alla verticale
$\theta_h =$	<input type="text" value="90,00"/>	°	Inclinazione del carico orizzontale rispetto alla direzione della lunghezza
$e_x =$	<input type="text" value="0,00"/>	m	Eccentricità in direzione X
$e_y =$	<input type="text" value="0,00"/>	m	Eccentricità in direzione Y

CARATTERISTICHE FONDAZIONE RIDOTTA

$B' =$	<input type="text" value="5,60"/>	m	Base ridotta
$L' =$	<input type="text" value="11,30"/>	m	Lunghezza ridotta
$A' =$	<input type="text" value="63,28"/>		Area ridotta

PARAMETRI DEL TERRENO

$\gamma =$	<input type="text" value="17"/>	kNm ³	Peso per unità di volume del terreno di fondazione
$\varphi =$	<input type="text" value="24"/>	°	Angolo di attrito
$c =$	<input type="text" value="10"/>	kNm ²	Coesione efficace
$c_u =$	<input type="text" value="0"/>	kNm ²	Coesione non drenata
$\gamma_r =$	<input type="text" value="25"/>	kNm ³	Peso per unità di volume del terreno di riempimento laterale
$K_o =$	<input type="text" value="2,371"/>		Coefficiente di spinta passiva
$q =$	<input type="text" value="92,50"/>	kNm ²	Pressione litostatica alla profondità del piano di posa

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

PARAMETRI DI PORTANZA DELLA FONDAZIONE (BRINCH-HANSEN)

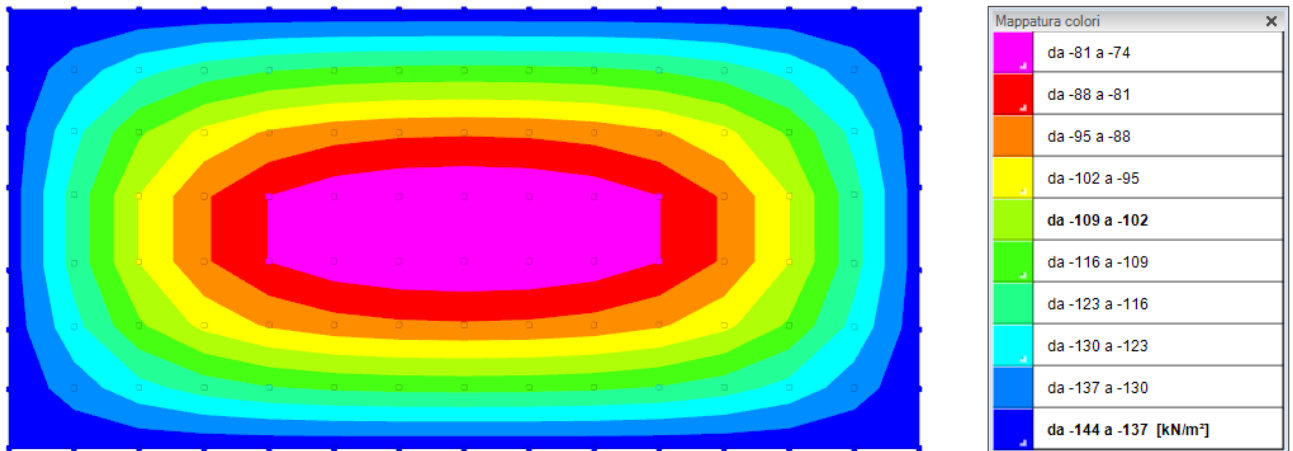
k=	0,66	Fattore di profondità
m_b =	1,67	Parametro di forma per carico agente in direzione della base
m_l =	1,33	Parametro di forma per carico agente in direzione della lunghezza
m=	1,67	Parametro di forma complessivo
N_c =	19,32	Fattori di capacità portante
N_q =	9,60	
N_γ =	7,66	
s_c =	1,22	Fattori di forma
s_q =	1,20	
s_γ =	0,85	
b_c =	1,00	Fattori di inclinazione del piano di posa
b_q =	1,00	
b_γ =	1,00	
i_c =	1,00	Fattori di inclinazione del carico
i_q =	1,00	
i_γ =	1,00	

PRESSIONI LIMITE ED AMMISSIBILI

Condizioni drenate		
F.S.=	2,3	Fattore di sicurezza
q_{LIM} =	1614,529 kN/m ²	Pressione limite
$q_{R,D}$ =	701,97 kN/m ²	Pressione resistente di progetto

La verifica della capacità portante del complesso terreno fondazione viene effettuata confrontando le pressioni esercitate dalla struttura sul terreno, ottenute dall'analisi ad elementi finiti, con la pressione resistente limite precedentemente determinata. I valori massimi delle pressioni sul terreno sono riportati graficamente nello schema seguente:

VASCHE DI PRIMA PIOGGIA
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Essendo la pressione sul terreno inferiore a quella limite di progetto la verifica risulta soddisfatta.

**VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO**

7. OPERE PROVVISORIALI

7.1 GEOMETRIA DELLE OPERE

Nei successivi paragrafi sono riportate le analisi e le verifiche statiche delle opere provvisorie da realizzare per gli scavi di alcune delle vasche di prima pioggia, costituite da palancolati metallici infissi nel terreno, con lo scopo sia di garantire la stabilità dello scavo sia la protezione dello stesso nei confronti delle acque di falda.

Sono state previste palancole con sezione PU28 in acciaio S275, di lunghezza pari a 7.00 m, in funzione della profondità di scavo, come riportato di seguito:

- Palancolato VPP1 – L=7.00 m, $h_{scavo} = 4.05$ m;
- Palancolato VPP3 – L=7.00 m, $h_{scavo} = 2.95$ m;
- Palancolato VPP5 – L=7.00 m, $h_{scavo} = 3.80$ m;
- Palancolato VPP6 – L=7.00 m, $h_{scavo} = 3.80$ m;
- Palancolato VPP8 – L=7.00 m, $h_{scavo} = 3.80$ m;

Ai fini dei calcoli si analizza la sezione con altezza di scavo maggiore, che si può considerare rappresentativa di tutti i casi presenti, essendo in condizioni più gravose, che corrisponde al palancolato relativo alla vasca di prima pioggia VPP1 (L=7.00 m, $h_{scavo} = 4.05$ m).

Il riepilogo dei risultati dei calcoli di verifica è riportato nei successivi paragrafi.

Trattandosi di opere a carattere provvisorio, le analisi e le verifiche sono eseguite in condizioni non sismiche, come previsto dalle NTC 2018.

Per i tabulati di calcolo completi si rimanda agli allegati in "Appendice A".

7.2 CARATTERIZZAZIONE GEOTECNICA TERRENI

Si riportano i parametri di resistenza e deformabilità assunti nel calcolo in accordo con i risultati dei sondaggi riportati nella relazione geotecnica (cfr. paragrafo 2). La geometria delle stratigrafie di calcolo sono riportate nel paragrafo relativo alla modellazione numerica.

Da 0.00 a -2.40	UG0 – Riporti, coperture antropiche, colmate
Da -2.40 a -6.90	UG2 – Argille e limi molto poco consistenti
Da -6.90 a -8.20	UG3 – Sabbie limose mediamente addensate
Da -8.20 a -14.20	UG2 – Argille e limi molto poco consistenti
Da -14.20 a -16.15	UG3 – Sabbie limose mediamente addensate

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Strato di Terreno	Terreno	γ dry kN/m ³	γ sat kN/m ³	ϕ' °	c' kPa	Modulo Elastico	Kvc kN/m ³	Kur kN/m ³
1	UG0	18.5	18.5	35	0	Winkler	3143.04	9429.13
2	UG2	19.5	19.5	25	30	Winkler	3143.04	9429.13
3	UG3	20	20	32	0	Winkler	3143.04	9429.13
4	UG2	19.5	19.5	25	30	Winkler	3143.04	9429.13
5	UG3	20	20	32	0	Winkler	3143.04	9429.13

7.3 MODELLAZIONE NUMERICA

L'analisi stato tenso-deformativo e le verifiche strutturali della palancolata sono state eseguite mediante il software di calcolo PARATIEPLUS, programma non lineare agli elementi finiti per l'analisi di strutture di sostegno flessibili.

Si è considerato un comportamento piano nelle deformazioni, analizzando una striscia di parete di larghezza unitaria.

Si riportano di seguito i modelli di calcolo adottati per ciascuna paratia analizzata.

Nelle modellazioni è implementata la seguente successione di step:

Step 1: Condizione Geostatica – è definito il profilo del terreno ed i carichi superficiali.

Step 2: Scavo per il raggiungimento del fondo scavo provvisorio.

Tipo : POLYLINE

Punti

(-25;-0.3)
(-20;-0.3)
(-19;-0.23)
(-17.86;-0.76)
(-14.55;-2.89)
(-12.2;-3)
(-6.8;-0.67)
(-2.4;-1.18)
(0;-0.44)
(1.45;0.15)
(11.85;0.1)
(20;0)
(27;0)
(30;-30)
(-30;-30)

OCR : 1

Tipo : POLYLINE

Punti

(-25;-2.4)
(-20;-2.4)
(0;-2.4)
(20;-2.4)
(27;-2.4)
(30;-30)
(-30;-30)

OCR : 1

Tipo : POLYLINE

Punti

(-25;-6.9)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

(-20;-6.9)
(0;-6.9)
(20;-6.9)
(27;-6.9)
(30;-30)
(-30;-30)

OCR : 1

Tipo : POLYLIN

Punti

(-25;-8.2)
(-20;-8.2)
(0;-8.2)
(20;-8.2)
(27;-8.2)
(27;-11)
(-25;-11)

OCR : 1

Tipo : POLYLIN

Punti

(-25;-14.2)
(-20;-14.2)
(0;-14.2)
(20;-14.2)
(27;-14.2)
(27;-11)
(-25;-11)

OCR : 1

3. Descrizione Pareti

X : 0 m

Quota in alto : -0.1 m

Quota di fondo : -7.1 m

Muro di sinistra

Sezione : pal

Area equivalente : 0.02161 m

Inerzia equivalente : 0.0006 m⁴/m

Profilo palancola : PU_28

4. Fasi di Calcolo

Stage 1

Scavo

Muro di sinistra

Lato monte : -0.44 m

Lato valle : -0.44 m

Linea di scavo di sinistra (Irregolare)

(-25;-0.3)
(-20;-0.3)
(-19;-0.23)
(-18.5;-0.5)
(-14.55;-2.89)
(-12.2;-3)
(-6.8;-0.67)
(-2.4;-1.18)
(0;-0.44)

Linea di scavo di destra (Irregolare)

(0;-0.44)
(1.45;0.15)
(11.85;0.1)
(20;0)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

(27;0)

Carichi

Carico lineare in superficie : SurfaceSurcharge
X iniziale : 1.45 m
X finale : 18 m
Pressione iniziale : 20 kPa
Pressione finale : 20 kPa

Stage 2
Scavo

Muro di sinistra

Lato monte : -0.44 m
Lato valle : -4.05 m

Linea di scavo di sinistra (Irregolare)

(-25;-4.05)
(-6;-4.05)
(-3.16;-4.05)
(0;-4.05)

Linea di scavo di destra (Irregolare)

(0;-0.44)
(1.45;0.15)
(11.85;0.1)
(20;0)
(27;0)

Carichi

Carico lineare in superficie : SurfaceSurcharge
X iniziale : 1.45 m
X finale : 18 m
Pressione iniziale : 20 kPa
Pressione finale : 20 kPa

Elementi strutturali

Paratia : WallElement_New

X : 0 m
Quota in alto : -0.1 m
Quota di fondo : -7.1 m
Sezione : pal

7.4 ANALISI DEI CARICHI

7.4.1 Combinazioni di carico

Le verifiche di resistenza allo stato limite ultimo sono state effettuate considerando le seguenti combinazioni di carico:

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

tenendo conto dei coefficienti parziali riportati nelle tabelle 6.2.I, 6.2.II e 6.5.I delle NTC2018 e riportate nelle tabelle seguenti.

VASCHE DI PRIMA PIOGGIA
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		Coefficiente γ_F	EQU	A1 STR	A2 GEO
Carichi permanenti	favorevoli	γ_{G1}	0,9	1,0	1,0
	sfavorevoli		1,1	1,3	1,0
Carichi permanenti non strutturali ⁽¹⁾	favorevoli	γ_{G2}	0,0	0,0	0,0
	sfavorevoli		1,5	1,5	1,3
Carichi variabili	favorevoli	γ_{Q1}	0,0	0,0	0,0
	sfavorevoli		1,5	1,5	1,3

⁽¹⁾Nel caso in cui i carichi permanenti non strutturali (ad es. carichi permanenti portati) siano compiutamente definiti si potranno adottare per essi gli stessi coefficienti validi per le azioni permanenti.

Tabella 5: Coefficienti parziali per le azioni o per l'effetto delle azioni (Tab.6.2.I NTC2018)

PARAMETRO	GRANDEZZA ALLA QUALE APPLICARE IL COEFFICIENTE PARZIALE	COEFFICIENTE PARZIALE γ_M	(M1)	(M2)
Tangente dell'angolo di resistenza al taglio	$\tan \phi'_k$	γ_ϕ	1,0	1,25
Coesione efficace	c'_k	γ_c	1,0	1,25
Resistenza non drenata	c_{uk}	γ_{cu}	1,0	1,4
Peso dell'unità di volume	γ	γ_r	1,0	1,0

Tabella 6: Coefficienti parziali per i parametri geotecnici del terreno (Tab.6.2.II NTC2018)

Nelle verifiche per il dimensionamento geotecnico del palancolato (GEO) si considera lo sviluppo di meccanismi di collasso determinati dalla mobilitazione della resistenza del terreno e in particolare dal raggiungimento delle condizioni di equilibrio limite nel terreno interagente con la paratia. L'analisi è stata condotta con la Combinazione 2 (A2+M2+R1), in cui i parametri di resistenza del terreno sono ridotti tramite i coefficienti parziali M2 e le azioni sono amplificate tramite i coefficienti parziali A2.

Nelle verifiche strutturali (STR) si considerano gli stati limite ultimi per raggiungimento della resistenza degli elementi strutturali. Le analisi sono condotte in accordo sia con la Combinazione 1 (A1+M1+R1), in cui i parametri di resistenza del terreno (M1) sono unitari e le azioni sono amplificate mediante i coefficienti parziali A, che con la Combinazione 2 (A2+M2+R1), in cui i parametri di resistenza del terreno sono ridotti tramite i coefficienti parziali M2 e le azioni sono amplificate tramite i coefficienti parziali A2.

Per gli spostamenti si considera, inoltre, la combinazione SLE (rara, frequente e quasi permanente), in cui tutti i fattori parziali di sicurezza sono unitari (azioni e resistenze caratteristiche).

Le combinazioni di carico impiegate nelle analisi sono riepilogate di seguito.

Coefficienti A

Nome	Carichi Permanenti Sfavorevoli	Carichi Permanenti Favorevoli	Carichi Variabili Sfavorevoli	Carichi Variabili Favorevoli	Pressioni Acqua Lato Monte	Pressioni Acqua Lato Valle	Carichi Permanenti Destabilizzanti	Carichi Permanenti Stabilizzanti	Carichi Variabili Destabilizzanti	Carichi Permanenti Destabilizzanti	Carichi Permanenti Stabilizzanti	Carichi Variabili Destabilizzanti
Simbolo	γ_G	γ_G	γ_Q	γ_Q	γ_G	γ_G	γ_{Gdst}	γ_{Gstb}	γ_{Qdst}	γ_{Gdst}	γ_{Gstb}	γ_{Qdst}
NTC2018: SLE	1	1	1	1	1	1	1	1	1	1	1	1
NTC2018: A1+M1+R1	1,3	1	1,5	1	1,3	1	1	1	1	1,3	0,9	1
NTC2018: A2+M2+R1	1	1	1,3	1	1	1	1	1	1	1,3	0,9	1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Coefficienti M

Nome	Parziale su $\tan(\phi')$	Parziale su c'	Parziale su S_u	Parziale su q_u	Parziale su peso specifico
Simbolo	γ_ϕ	γ_c	γ_{cu}	γ_{qu}	γ_γ
NTC2018: SLE	1	1	1	1	1
NTC2018: A1+M1+R1	1	1	1	1	1
NTC2018: A2+M2+R1	1.25	1.25	1.4	1	1

Coefficienti R

Nome	Parziale resistenza terreno (es. K_p)	Parziale resistenza tiranti permanenti	Parziale resistenza Tiranti temporanei	Parziale elementi strutturali
Simbolo	γ_{Re}	γ_{ap}	γ_{at}	
NTC2018: SLE	1	1	1	1
NTC2018: A1+M1+R1	1	1.2	1.1	1
NTC2018: A2+M2+R1	1	1.2	1.1	1

Per tenere conto della circolazione di veicoli al tetto dello scavo, si considera un sovraccarico pari a 20 kN/m².

7.5 RISULTATI DELLE ANALISI

Nei paragrafi seguenti si riportano i risultati delle analisi condotte per il modello implementato, con le indicazioni dei valori massimi delle sollecitazioni flettenti e taglianti e delle rispettive profondità. I valori riportati sono relativi all'analisi al metro lineare.

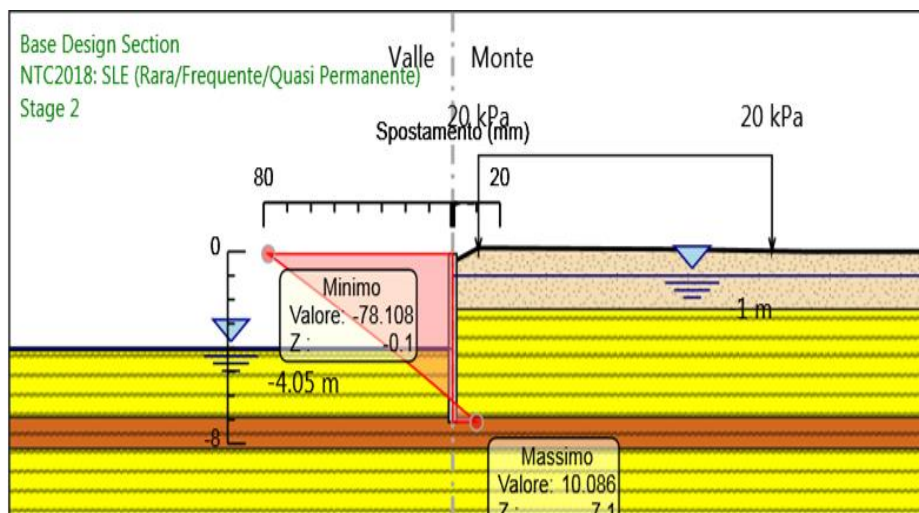


Figura 37 – SLE – Involuppo spostamenti

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

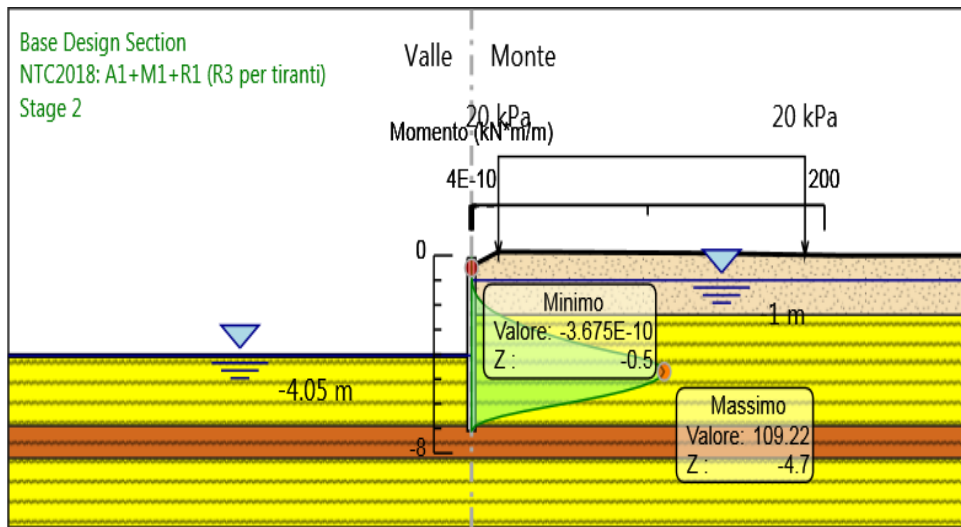


Figura 38 – SLU (A1-M1-R1) – Involuppo momento flettente

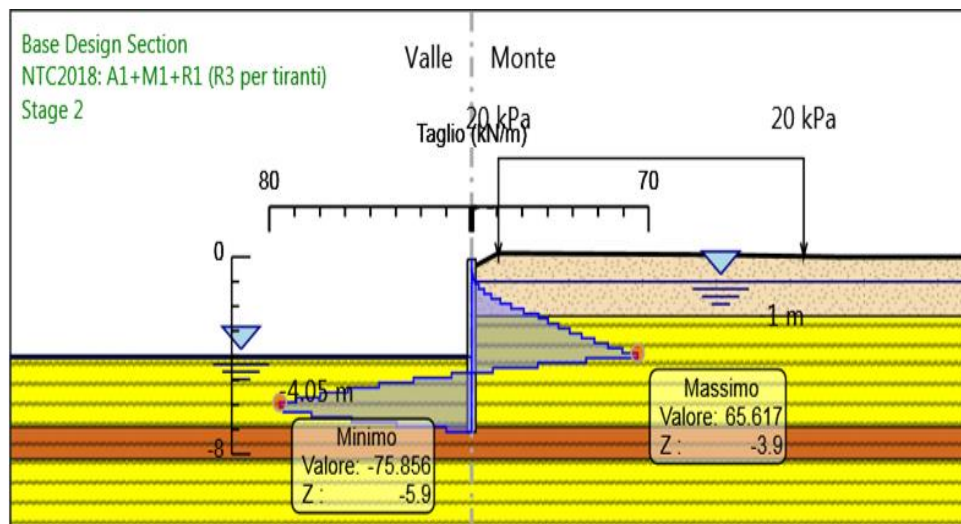


Figura 39 – SLU (A1-M1-R1) – Involuppo taglio

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

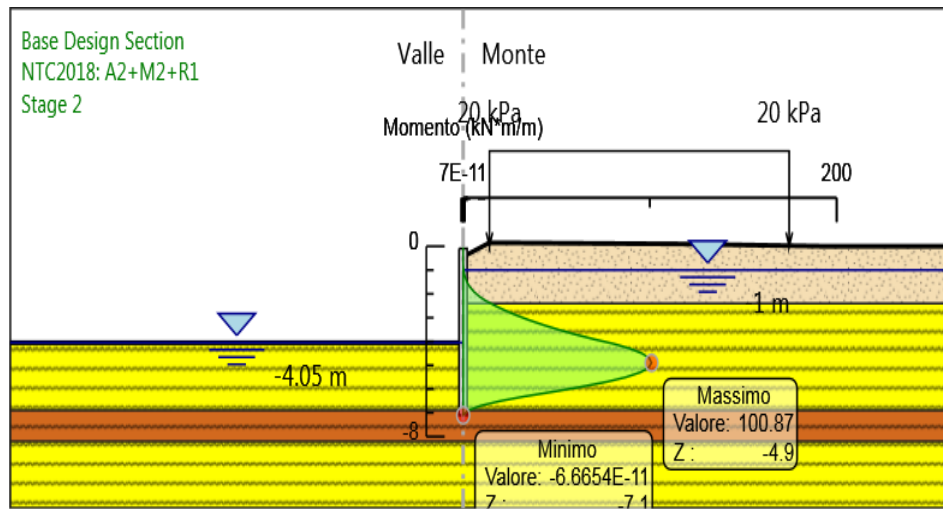


Figura 40 – SLU (A2-M2-R2) – Involuppo momento flettente

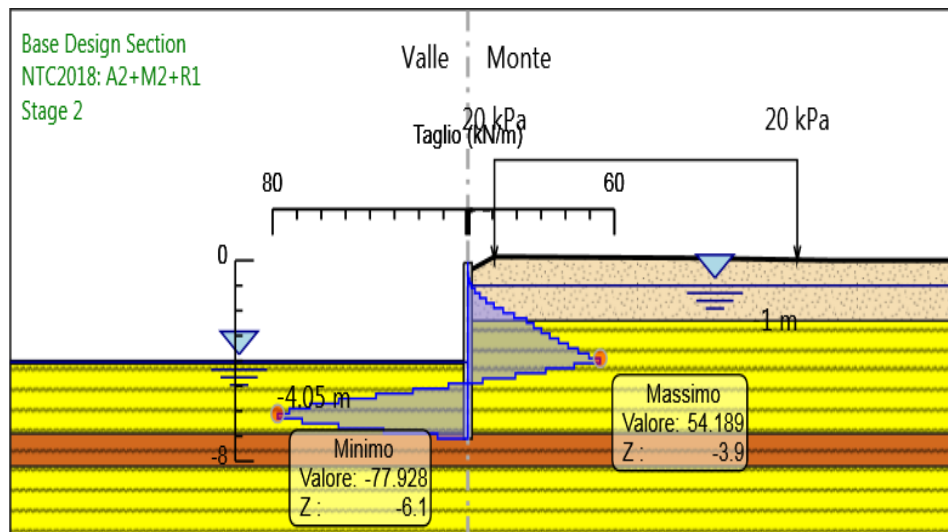


Figura 41 – SLU (A2-M2-R2) – Involuppo taglio

7.6 VERIFICHE GEOTECNICHE

Le verifiche geotecniche sono svolte valutando il coefficiente di sicurezza in termini di rapporto di mobilitazione della spinta passiva, cioè come rapporto tra spinta passiva mobilitata al piede della paratia e la spinta passiva mobilitabile. La verifica è soddisfatta se tale rapporto è inferiore all'unità.

Max. Rapporto Spinte (Efficace/Passiva): 0.6

Combinazione GEO (A2-M2-R1)

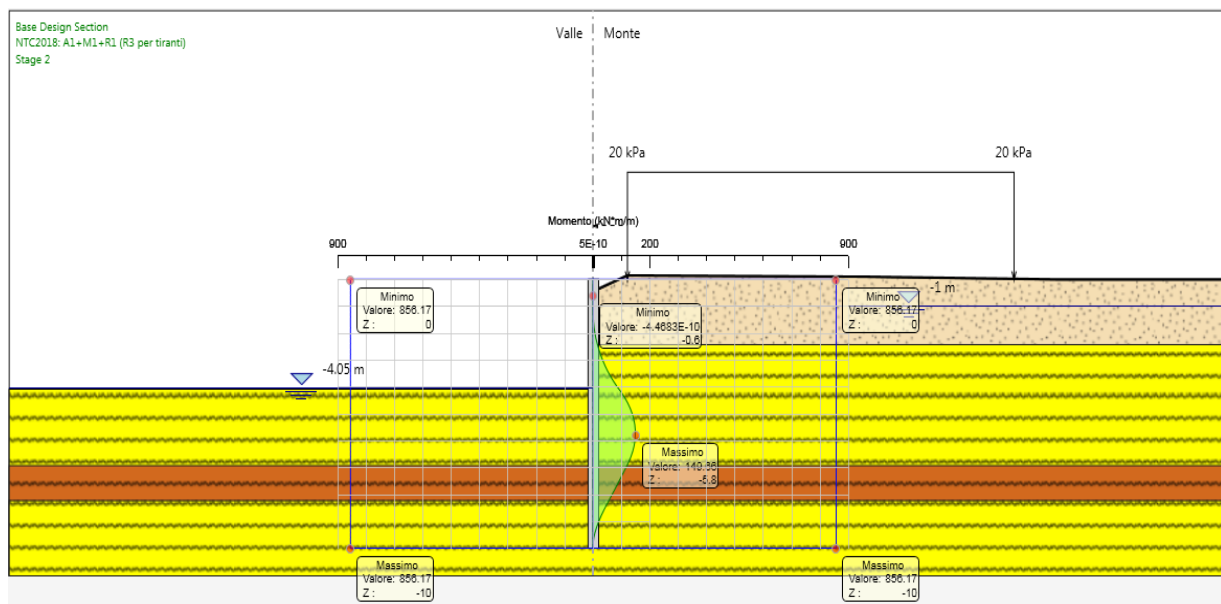
VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

7.7 VERIFICHE STRUTTURALI

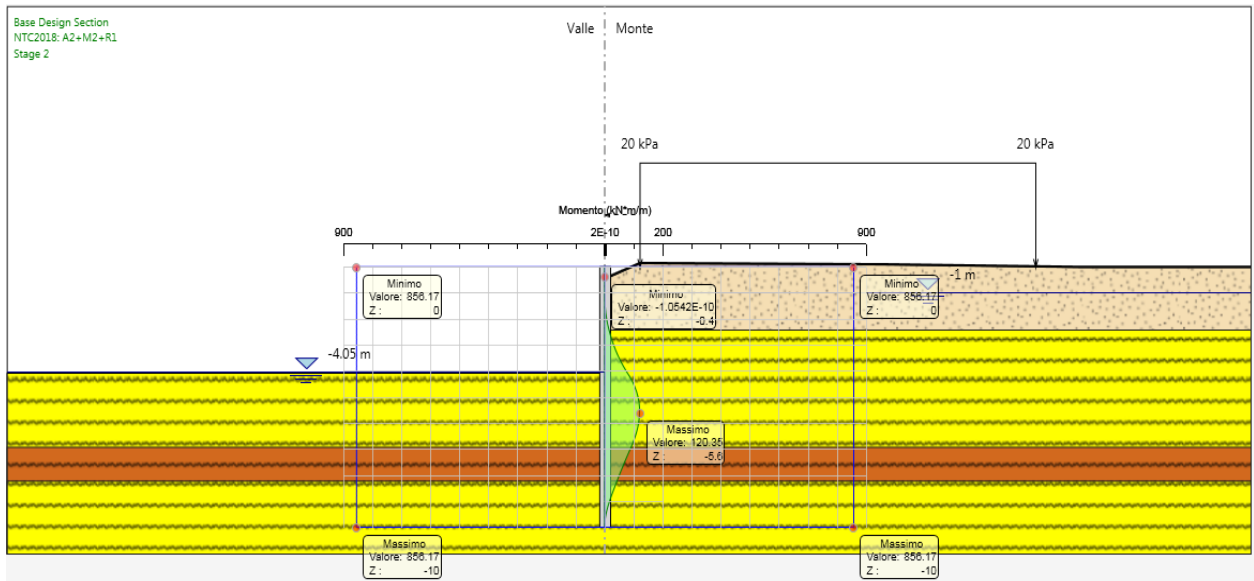
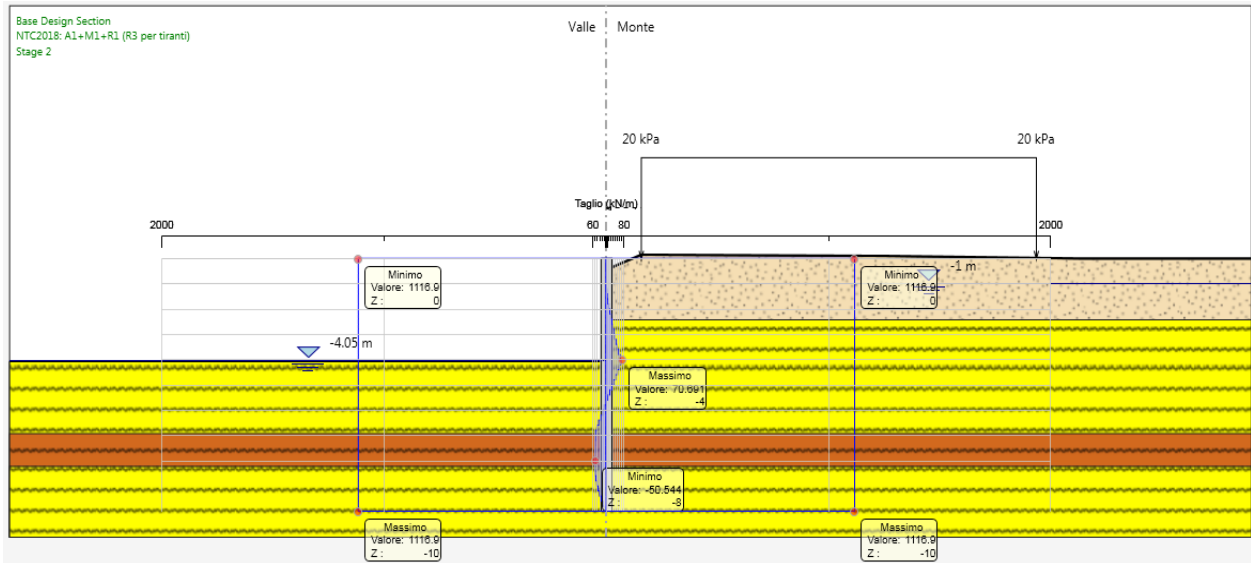
Il palancolato è previsto con profili PU28 in acciaio S275.

Si riporta di seguito il confronto tra le sollecitazioni massime agenti, di momento flettente e taglio, e le capacità resistenti nell'involuppo allo SLU per entrambe le combinazioni considerate, per ciascuna paratia analizzata.

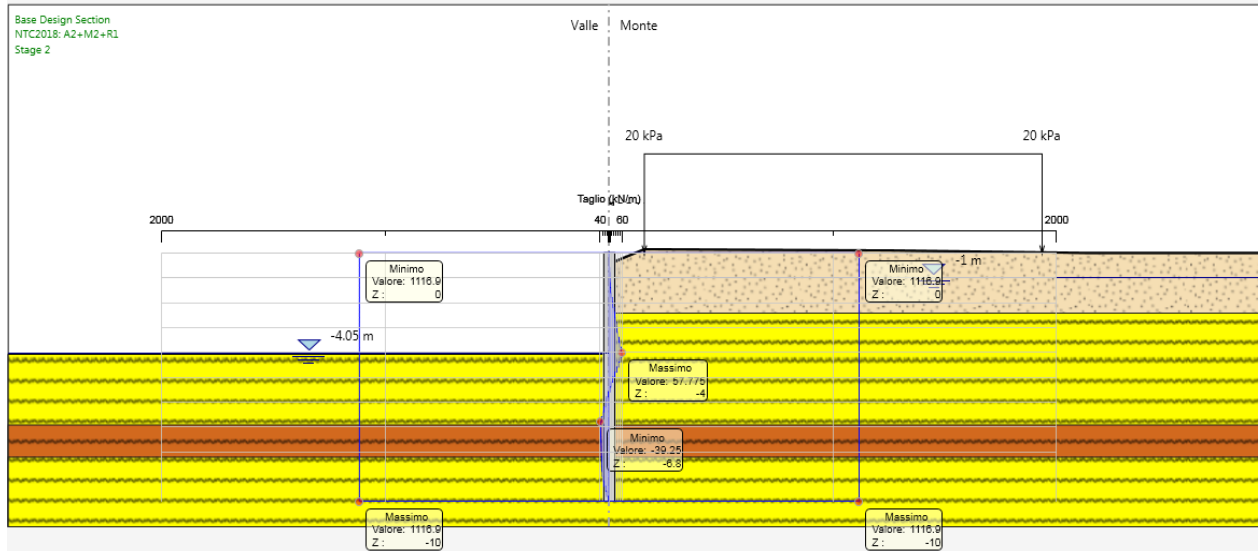
Essendo le sollecitazioni inferiori alle resistenze, le verifiche risultano soddisfatte.



VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO



VASCHE DI PRIMA PIOGGIA
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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

APPENDICE "A" – TABULATI DI CALCOLO OPERE PROVVISORIALI

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

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

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)	Tipo Risultato: SpostamentoMuro: LEFT	Z (m)	Spostamento (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		-8.8	0
Stage 1		-9	0
Stage 1		-9.2	0
Stage 1		-9.4	0
Stage 1		-9.6	0
Stage 1		-9.8	0
Stage 1		-10	0

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

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)	Risultati ParatiaMuro: LEFT	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

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati ParatiaMuro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
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	-8.8	0	0
Stage 1	-9	0	0
Stage 1	-9.2	0	0
Stage 1	-9.4	0	0
Stage 1	-9.6	0	0
Stage 1	-9.8	0	0
Stage 1	-10	0	0

5.1.3. Tabella Spostamento NTC2018: SLE (Rara/Frequente/Quasi Permanente) - LEFT Stage: Stage 2
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Tipo Risultato: SpostamentoMuro: LEFT

Stage	Z (m)	Spostamento (mm)
Stage 2	0	-32.14
Stage 2	-0.2	-31.18
Stage 2	-0.4	-30.22
Stage 2	-0.6	-29.27
Stage 2	-0.8	-28.31
Stage 2	-1	-27.35
Stage 2	-1.2	-26.4
Stage 2	-1.4	-25.44
Stage 2	-1.6	-24.48
Stage 2	-1.8	-23.53
Stage 2	-2	-22.57
Stage 2	-2.2	-21.62
Stage 2	-2.4	-20.67
Stage 2	-2.6	-19.72
Stage 2	-2.8	-18.78
Stage 2	-3	-17.84
Stage 2	-3.2	-16.91
Stage 2	-3.4	-16
Stage 2	-3.6	-15.09
Stage 2	-3.8	-14.2
Stage 2	-4	-13.32
Stage 2	-4.2	-12.46
Stage 2	-4.4	-11.63
Stage 2	-4.6	-10.82
Stage 2	-4.8	-10.04
Stage 2	-5	-9.29
Stage 2	-5.2	-8.57
Stage 2	-5.4	-7.88
Stage 2	-5.6	-7.23
Stage 2	-5.8	-6.61
Stage 2	-6	-6.03
Stage 2	-6.2	-5.47
Stage 2	-6.4	-4.96
Stage 2	-6.6	-4.47
Stage 2	-6.8	-4.01
Stage 2	-7	-3.58
Stage 2	-7.2	-3.18
Stage 2	-7.4	-2.81
Stage 2	-7.6	-2.45
Stage 2	-7.8	-2.12
Stage 2	-8	-1.8
Stage 2	-8.2	-1.5
Stage 2	-8.4	-1.21
Stage 2	-8.6	-0.93
Stage 2	-8.8	-0.66
Stage 2	-9	-0.4
Stage 2	-9.2	-0.14
Stage 2	-9.4	0.11
Stage 2	-9.6	0.37
Stage 2	-9.8	0.62
Stage 2	-10	0.87

5.1.4. Tabella Risultati Paratia NTC2018: SLE (Rara/Frequente/Quasi Permanente) - Left Wall - Stage: Stage 2
Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente) Risultati ParatiaMuro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	0	0	0
Stage 2	-0.2	0	0
Stage 2	-0.2	0	0
Stage 2	-0.4	0	0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Design Assumption: NTC2018: SLE (Rara/Frequente/Quasi Permanente)			
Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-0.4	0	0
Stage 2	-0.6	0	0
Stage 2	-0.6	0	0
Stage 2	-0.8	0.05	0.23
Stage 2	-1	0.19	0.74
Stage 2	-1.2	0.5	1.54
Stage 2	-1.4	1.08	2.9
Stage 2	-1.6	2.04	4.8
Stage 2	-1.8	3.49	7.26
Stage 2	-2	5.55	10.28
Stage 2	-2.2	8.32	13.87
Stage 2	-2.4	11.93	18.02
Stage 2	-2.6	16.09	20.82
Stage 2	-2.8	20.88	23.93
Stage 2	-3	26.35	27.35
Stage 2	-3.2	32.57	31.08
Stage 2	-3.4	39.59	35.12
Stage 2	-3.6	47.48	39.47
Stage 2	-3.8	56.31	44.13
Stage 2	-4	66.13	49.1
Stage 2	-4.2	77	54.38
Stage 2	-4.4	86.47	47.35
Stage 2	-4.6	94.56	40.42
Stage 2	-4.8	101.28	33.61
Stage 2	-5	106.66	26.91
Stage 2	-5.2	110.72	20.3
Stage 2	-5.4	113.48	13.78
Stage 2	-5.6	114.94	7.31
Stage 2	-5.8	115.12	0.9
Stage 2	-6	114.02	-5.49
Stage 2	-6.2	111.65	-11.87
Stage 2	-6.4	108	-18.26
Stage 2	-6.6	103.06	-24.69
Stage 2	-6.8	96.89	-30.86
Stage 2	-7	89.68	-36.02
Stage 2	-7.2	82.36	-36.61
Stage 2	-7.4	74.93	-37.15
Stage 2	-7.6	67.4	-37.64
Stage 2	-7.8	59.79	-38.09
Stage 2	-8	52.08	-38.52
Stage 2	-8.2	44.31	-38.88
Stage 2	-8.4	36.62	-38.41
Stage 2	-8.6	29.23	-36.99
Stage 2	-8.8	22.3	-34.64
Stage 2	-9	16.02	-31.39
Stage 2	-9.2	10.57	-27.26
Stage 2	-9.4	6.11	-22.27
Stage 2	-9.6	2.8	-16.58
Stage 2	-9.8	0.73	-10.36
Stage 2	-10	0	-3.63

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

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

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

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
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	-8.8	0	0
Stage 1	-9	0	0
Stage 1	-9.2	0	0
Stage 1	-9.4	0	0
Stage 1	-9.6	0	0
Stage 1	-9.8	0	0
Stage 1	-10	0	0

5.2.2. 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 ParatiaMuro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	0	0	0
Stage 2	-0.2	0	0
Stage 2	-0.2	0	0
Stage 2	-0.4	0	0
Stage 2	-0.4	0	0
Stage 2	-0.6	0	0
Stage 2	-0.6	0	0
Stage 2	-0.8	0.06	0.3
Stage 2	-1	0.25	0.96
Stage 2	-1.2	0.65	2.01
Stage 2	-1.4	1.41	3.76
Stage 2	-1.6	2.65	6.24
Stage 2	-1.8	4.54	9.43
Stage 2	-2	7.21	13.36
Stage 2	-2.2	10.82	18.03
Stage 2	-2.4	15.51	23.43
Stage 2	-2.6	20.92	27.07
Stage 2	-2.8	27.14	31.11
Stage 2	-3	34.25	35.56
Stage 2	-3.2	42.34	40.41
Stage 2	-3.4	51.47	45.66
Stage 2	-3.6	61.73	51.31
Stage 2	-3.8	73.2	57.37
Stage 2	-4	85.97	63.83
Stage 2	-4.2	100.11	70.69
Stage 2	-4.4	112.42	77.96
Stage 2	-4.6	122.93	85.63
Stage 2	-4.8	131.67	93.7
Stage 2	-5	138.66	102.17
Stage 2	-5.2	143.94	111.04
Stage 2	-5.4	147.52	120.21
Stage 2	-5.6	149.42	129.68
Stage 2	-5.8	149.66	139.45
Stage 2	-6	148.23	149.52
Stage 2	-6.2	145.15	159.89
Stage 2	-6.4	140.4	170.56
Stage 2	-6.6	133.98	181.53
Stage 2	-6.8	125.95	192.8
Stage 2	-7	116.59	204.37
Stage 2	-7.2	107.07	216.24
Stage 2	-7.4	97.41	228.41
Stage 2	-7.6	87.62	240.88
Stage 2	-7.8	77.72	253.65
Stage 2	-8	67.71	266.72
Stage 2	-8.2	57.6	280.09
Stage 2	-8.4	47.61	293.76
Stage 2	-8.6	37.99	307.73
Stage 2	-8.8	28.99	321.99
Stage 2	-9	20.83	336.54
Stage 2	-9.2	13.74	351.39
Stage 2	-9.4	7.95	366.54
Stage 2	-9.6	3.64	381.99
Stage 2	-9.8	0.94	397.74
Stage 2	-10	0	413.79

5.3. Risultati NTC2018: A2+M2+R1

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

Design Assumption: NTC2018: A2+M2+R1 Risultati ParatiaMuro: 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

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Design Assumption: NTC2018: A2+M2+R1 Risultati ParatiaMuro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
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	-8.8	0	0
Stage 1	-9	0	0
Stage 1	-9.2	0	0
Stage 1	-9.4	0	0
Stage 1	-9.6	0	0
Stage 1	-9.8	0	0
Stage 1	-10	0	0

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

Design Assumption: NTC2018: A2+M2+R1 Risultati ParatiaMuro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	0	0	0
Stage 2	-0.2	0	0
Stage 2	-0.2	0	0
Stage 2	-0.4	0	0
Stage 2	-0.4	0	0
Stage 2	-0.6	0	0
Stage 2	-0.6	0	0
Stage 2	-0.8	0.06	0.31
Stage 2	-1	0.26	1
Stage 2	-1.2	0.68	2.09
Stage 2	-1.4	1.44	3.78
Stage 2	-1.6	2.65	6.07
Stage 2	-1.8	4.44	8.97
Stage 2	-2	6.94	12.5
Stage 2	-2.2	10.27	16.65
Stage 2	-2.4	14.56	21.42
Stage 2	-2.6	19.4	24.22
Stage 2	-2.8	24.87	27.33
Stage 2	-3	31.02	30.75
Stage 2	-3.2	37.91	34.48
Stage 2	-3.4	45.62	38.52
Stage 2	-3.6	54.19	42.87
Stage 2	-3.8	63.69	47.53
Stage 2	-4	74.19	52.5
Stage 2	-4.2	85.75	57.77
Stage 2	-4.4	95.58	49.14
Stage 2	-4.6	103.71	40.68
Stage 2	-4.8	110.19	32.4
Stage 2	-5	115.05	24.3
Stage 2	-5.2	118.32	16.36
Stage 2	-5.4	120.06	8.7
Stage 2	-5.6	120.35	1.45
Stage 2	-5.8	119.28	-5.38
Stage 2	-6	116.91	-11.83
Stage 2	-6.2	113.32	-17.94
Stage 2	-6.4	108.58	-23.72

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```

38 : BEAM WallElement New 28707 LeftWall_32 -10 0 s275_115 0.19777 00 00 0
39 : STRIP LeftWall_32 1 2 1.45 16.55 0 20 45
40 : STEP Stage1_31
41 : CHANGE UG0_2_10_L_0 U-FRICT=35 LeftWall_32
42 : CHANGE UG0_2_10_L_0 D-FRICT=35 LeftWall_32
43 : CHANGE UG0_2_10_L_0 U-KA=0.357 LeftWall_32
44 : CHANGE UG0_2_10_L_0 U-KP=8.037 LeftWall_32
45 : CHANGE UG0_2_10_L_0 D-KA=0.235 LeftWall_32
46 : CHANGE UG0_2_10_L_0 D-KP=2.873 LeftWall_32
47 : CHANGE UG2_4_11_L_0 U-FRICT=25 LeftWall_32
48 : CHANGE UG2_4_11_L_0 D-FRICT=25 LeftWall_32
49 : CHANGE UG2_4_11_L_0 U-KA=0.478 LeftWall_32
50 : CHANGE UG2_4_11_L_0 U-KP=3.675 LeftWall_32
51 : CHANGE UG2_4_11_L_0 D-KA=0.352 LeftWall_32
52 : CHANGE UG2_4_11_L_0 D-KP=2.645 LeftWall_32
53 : CHANGE UG3_4271_12_L_0 U-FRICT=32 LeftWall_32
54 : CHANGE UG3_4271_12_L_0 D-FRICT=32 LeftWall_32
55 : CHANGE UG3_4271_12_L_0 U-KA=0.35 LeftWall_32
56 : CHANGE UG3_4271_12_L_0 U-KP=5.446 LeftWall_32
57 : CHANGE UG3_4271_12_L_0 D-KA=0.272 LeftWall_32
58 : CHANGE UG3_4271_12_L_0 D-KP=3.754 LeftWall_32
59 : CHANGE UG2_4_26346_L_0 U-FRICT=25 LeftWall_32
60 : CHANGE UG2_4_26346_L_0 D-FRICT=25 LeftWall_32
61 : CHANGE UG2_4_26346_L_0 U-KA=0.454 LeftWall_32
62 : CHANGE UG2_4_26346_L_0 U-KP=3.542 LeftWall_32
63 : CHANGE UG2_4_26346_L_0 D-KA=0.369 LeftWall_32
64 : CHANGE UG2_4_26346_L_0 D-KP=2.509 LeftWall_32
65 : CHANGE UG0_2_10_L_0 U-COHE=0 LeftWall_32
66 : CHANGE UG0_2_10_L_0 U-ADHES=0 LeftWall_32
67 : CHANGE UG0_2_10_L_0 D-COHE=0 LeftWall_32
68 : CHANGE UG0_2_10_L_0 D-ADHES=0 LeftWall_32
69 : CHANGE UG2_4_11_L_0 U-COHE=30 LeftWall_32
70 : CHANGE UG2_4_11_L_0 U-ADHES=0 LeftWall_32
71 : CHANGE UG2_4_11_L_0 D-COHE=30 LeftWall_32
72 : CHANGE UG2_4_11_L_0 D-ADHES=0 LeftWall_32
73 : CHANGE UG3_4271_12_L_0 U-COHE=0 LeftWall_32
74 : CHANGE UG3_4271_12_L_0 U-ADHES=0 LeftWall_32
75 : CHANGE UG3_4271_12_L_0 D-COHE=0 LeftWall_32
76 : CHANGE UG3_4271_12_L_0 D-ADHES=0 LeftWall_32
77 : CHANGE UG2_4_26346_L_0 U-COHE=30 LeftWall_32
78 : CHANGE UG2_4_26346_L_0 U-ADHES=0 LeftWall_32
79 : CHANGE UG2_4_26346_L_0 D-COHE=30 LeftWall_32
80 : CHANGE UG2_4_26346_L_0 D-ADHES=0 LeftWall_32
81 : SETWALL LeftWall_32
82 : GEOM -0.44 -0.44
83 : SURCHARGE 0 0 0 0
84 : WATER -1 0 -10 0 0
85 : ENDSTEP
86 : STEP Stage2_28513
87 : CHANGE UG0_2_10_L_0 D-KA=0.271 LeftWall_32
88 : CHANGE UG0_2_10_L_0 D-KP=5.879 LeftWall_32
89 : CHANGE UG2_4_11_L_0 D-KA=0.406 LeftWall_32
90 : CHANGE UG2_4_11_L_0 D-KP=3.222 LeftWall_32
91 : CHANGE UG3_4271_12_L_0 D-KA=0.307 LeftWall_32
92 : CHANGE UG3_4271_12_L_0 D-KP=4.845 LeftWall_32
93 : CHANGE UG2_4_26346_L_0 D-KA=0.406 LeftWall_32
94 : CHANGE UG2_4_26346_L_0 D-KP=3.222 LeftWall_32
95 : SETWALL LeftWall_32
96 : GEOM -0.44 -4.05
97 : SURCHARGE 0 0 0 0
98 : WATER -1 3.05 -10 0 0
99 : ADD WallElement_New_28707
100 : ENDSTEP

```

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|                                     PARATIEPLUS (TM)   NLS ENGINE RELEASE 2018.1   FULL VERSION   *Build date:Jun 29, 2018*
|
|                                     NewProject.BaseDesignSection_28.Nominal_64
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|
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```

N O D A L P O I N T D A T A

NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE			
1	0.0000	0.0000	/	2	0.0000	-0.20000	/	3	0.0000	-0.40000	/	4	0.0000	-0.60000	/
5	0.0000	-0.80000	/	6	0.0000	-1.0000	/	7	0.0000	-1.2000	/	8	0.0000	-1.4000	/
9	0.0000	-1.6000	/	10	0.0000	-1.8000	/	11	0.0000	-2.0000	/	12	0.0000	-2.2000	/
13	0.0000	-2.4000	/	14	0.0000	-2.6000	/	15	0.0000	-2.8000	/	16	0.0000	-3.0000	/
17	0.0000	-3.2000	/	18	0.0000	-3.4000	/	19	0.0000	-3.6000	/	20	0.0000	-3.8000	/
21	0.0000	-4.0000	/	22	0.0000	-4.2000	/	23	0.0000	-4.4000	/	24	0.0000	-4.6000	/
25	0.0000	-4.8000	/	26	0.0000	-5.0000	/	27	0.0000	-5.2000	/	28	0.0000	-5.4000	/
29	0.0000	-5.6000	/	30	0.0000	-5.8000	/	31	0.0000	-6.0000	/	32	0.0000	-6.2000	/
33	0.0000	-6.4000	/	34	0.0000	-6.6000	/	35	0.0000	-6.8000	/	36	0.0000	-7.0000	/
37	0.0000	-7.2000	/	38	0.0000	-7.4000	/	39	0.0000	-7.6000	/	40	0.0000	-7.8000	/
41	0.0000	-8.0000	/	42	0.0000	-8.2000	/	43	0.0000	-8.4000	/	44	0.0000	-8.6000	/
45	0.0000	-8.8000	/	46	0.0000	-9.0000	/	47	0.0000	-9.2000	/	48	0.0000	-9.4000	/

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

49 0.0000 -9.6000 / 50 0.0000 -9.8000 / 51 0.0000 -10.0000 /

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                NewProject.BaseDesignSection_28.Nominal_64  |
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+-----+

```

ELEMENT GROUP NO. 1

0_L 5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0

.....
.....2D PLASTIC SOIL.....
.....

element group behaviour throughout stage analysis

stage status

```

-----
1 active
2 active

```

material set no. 1

prop(1) angle 0.00000
prop(2) layer as foreseen 1.00000

material set no. 2

prop(1) angle 0.00000
prop(2) layer as foreseen 2.00000

material set no. 3

prop(1) angle 0.00000
prop(2) layer as foreseen 3.00000

material set no. 4

prop(1) angle 0.00000
prop(2) layer as foreseen 4.00000

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	2.000
2	2	1	0.2000	0.000	0.000	0.000	2.000
3	3	1	0.2000	0.000	0.000	0.000	2.000
4	4	1	0.2000	0.000	0.000	0.000	2.000
5	5	1	0.2000	0.000	0.000	0.000	2.000
6	6	1	0.2000	0.000	0.000	0.000	2.000
7	7	1	0.2000	0.000	0.000	0.000	2.000
8	8	1	0.2000	0.000	0.000	0.000	2.000
9	9	1	0.2000	0.000	0.000	0.000	2.000
10	10	1	0.2000	0.000	0.000	0.000	2.000
11	11	1	0.2000	0.000	0.000	0.000	2.000
12	12	1	0.2000	0.000	0.000	0.000	2.000
13	13	2	0.2000	0.000	0.000	0.000	2.000
14	14	2	0.2000	0.000	0.000	0.000	2.000
15	15	2	0.2000	0.000	0.000	0.000	2.000
16	16	2	0.2000	0.000	0.000	0.000	2.000
17	17	2	0.2000	0.000	0.000	0.000	2.000
18	18	2	0.2000	0.000	0.000	0.000	2.000
19	19	2	0.2000	0.000	0.000	0.000	2.000
20	20	2	0.2000	0.000	0.000	0.000	2.000
21	21	2	0.2000	0.000	0.000	0.000	2.000
22	22	2	0.2000	0.000	0.000	0.000	2.000
23	23	2	0.2000	0.000	0.000	0.000	2.000
24	24	2	0.2000	0.000	0.000	0.000	2.000
25	25	2	0.2000	0.000	0.000	0.000	2.000
26	26	2	0.2000	0.000	0.000	0.000	2.000
27	27	2	0.2000	0.000	0.000	0.000	2.000
28	28	2	0.2000	0.000	0.000	0.000	2.000
29	29	2	0.2000	0.000	0.000	0.000	2.000
30	30	2	0.2000	0.000	0.000	0.000	2.000
31	31	2	0.2000	0.000	0.000	0.000	2.000
32	32	2	0.2000	0.000	0.000	0.000	2.000
33	33	2	0.2000	0.000	0.000	0.000	2.000
34	34	2	0.2000	0.000	0.000	0.000	2.000
35	35	2	0.2000	0.000	0.000	0.000	2.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

36	36	3	0.2000	0.000	0.000	0.000	2.000
37	37	3	0.2000	0.000	0.000	0.000	2.000
38	38	3	0.2000	0.000	0.000	0.000	2.000
39	39	3	0.2000	0.000	0.000	0.000	2.000
40	40	3	0.2000	0.000	0.000	0.000	2.000
41	41	3	0.2000	0.000	0.000	0.000	2.000
42	42	3	0.2000	0.000	0.000	0.000	2.000
43	43	4	0.2000	0.000	0.000	0.000	2.000
44	44	4	0.2000	0.000	0.000	0.000	2.000
45	45	4	0.2000	0.000	0.000	0.000	2.000
46	46	4	0.2000	0.000	0.000	0.000	2.000
47	47	4	0.2000	0.000	0.000	0.000	2.000
48	48	4	0.2000	0.000	0.000	0.000	2.000
49	49	4	0.2000	0.000	0.000	0.000	2.000
50	50	4	0.2000	0.000	0.000	0.000	2.000
51	51	4	0.1000	0.000	0.000	0.000	2.000

```

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018* |
|                NewProject.BaseDesignSection_28.Nominal_64 |
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-----

```

ELEMENT GROUP NO. 2

```

0_R
_5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0

```

.....2D PLASTIC SOIL

element group behaviour throughout stage analysis

stage status

```

-----
1 active
2 active

```

material set no. 1

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 1.00000

```

material set no. 2

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 2.00000

```

material set no. 3

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 3.00000

```

material set no. 4

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 4.00000

```

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	1.000
2	2	1	0.2000	0.000	0.000	0.000	1.000
3	3	1	0.2000	0.000	0.000	0.000	1.000
4	4	1	0.2000	0.000	0.000	0.000	1.000
5	5	1	0.2000	0.000	0.000	0.000	1.000
6	6	1	0.2000	0.000	0.000	0.000	1.000
7	7	1	0.2000	0.000	0.000	0.000	1.000
8	8	1	0.2000	0.000	0.000	0.000	1.000
9	9	1	0.2000	0.000	0.000	0.000	1.000
10	10	1	0.2000	0.000	0.000	0.000	1.000
11	11	1	0.2000	0.000	0.000	0.000	1.000
12	12	1	0.2000	0.000	0.000	0.000	1.000
13	13	2	0.2000	0.000	0.000	0.000	1.000
14	14	2	0.2000	0.000	0.000	0.000	1.000
15	15	2	0.2000	0.000	0.000	0.000	1.000
16	16	2	0.2000	0.000	0.000	0.000	1.000
17	17	2	0.2000	0.000	0.000	0.000	1.000
18	18	2	0.2000	0.000	0.000	0.000	1.000
19	19	2	0.2000	0.000	0.000	0.000	1.000
20	20	2	0.2000	0.000	0.000	0.000	1.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

16	16	17	1	0.000	0.000	0.1978	0.000	0.000
17	17	18	1	0.000	0.000	0.1978	0.000	0.000
18	18	19	1	0.000	0.000	0.1978	0.000	0.000
19	19	20	1	0.000	0.000	0.1978	0.000	0.000
20	20	21	1	0.000	0.000	0.1978	0.000	0.000
21	21	22	1	0.000	0.000	0.1978	0.000	0.000
22	22	23	1	0.000	0.000	0.1978	0.000	0.000
23	23	24	1	0.000	0.000	0.1978	0.000	0.000
24	24	25	1	0.000	0.000	0.1978	0.000	0.000
25	25	26	1	0.000	0.000	0.1978	0.000	0.000
26	26	27	1	0.000	0.000	0.1978	0.000	0.000
27	27	28	1	0.000	0.000	0.1978	0.000	0.000
28	28	29	1	0.000	0.000	0.1978	0.000	0.000
29	29	30	1	0.000	0.000	0.1978	0.000	0.000
30	30	31	1	0.000	0.000	0.1978	0.000	0.000
31	31	32	1	0.000	0.000	0.1978	0.000	0.000
32	32	33	1	0.000	0.000	0.1978	0.000	0.000
33	33	34	1	0.000	0.000	0.1978	0.000	0.000
34	34	35	1	0.000	0.000	0.1978	0.000	0.000
35	35	36	1	0.000	0.000	0.1978	0.000	0.000
36	36	37	1	0.000	0.000	0.1978	0.000	0.000
37	37	38	1	0.000	0.000	0.1978	0.000	0.000
38	38	39	1	0.000	0.000	0.1978	0.000	0.000
39	39	40	1	0.000	0.000	0.1978	0.000	0.000
40	40	41	1	0.000	0.000	0.1978	0.000	0.000
41	41	42	1	0.000	0.000	0.1978	0.000	0.000
42	42	43	1	0.000	0.000	0.1978	0.000	0.000
43	43	44	1	0.000	0.000	0.1978	0.000	0.000
44	44	45	1	0.000	0.000	0.1978	0.000	0.000
45	45	46	1	0.000	0.000	0.1978	0.000	0.000
46	46	47	1	0.000	0.000	0.1978	0.000	0.000
47	47	48	1	0.000	0.000	0.1978	0.000	0.000
48	48	49	1	0.000	0.000	0.1978	0.000	0.000
49	49	50	1	0.000	0.000	0.1978	0.000	0.000
50	50	51	1	0.000	0.000	0.1978	0.000	0.000

```

-----+-----
                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018*
                |
                |
                |               NewProject.BaseDesignSection_28.Nominal_64
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                |
                +-----+-----

```

```

NO. OF NODAL LOADS (NLOAD) ..... 0
NO. OF LOAD CURVES (NLCUR) ..... 4
MAXIMUM POINTS/LCURVE (NPTM)..... 5

```

```

-----+-----
                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018*
                |
                |
                |               NewProject.BaseDesignSection_28.Nominal_64
                |               Exe Time : 1 April 2019      17:23:04
                |
                +-----+-----

```

L O A D D A T A

```

LOAD FUNCTION NUMBER = 1
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
1.20000	0.0000E+00
3.00000	0.0000E+00

```

LOAD FUNCTION NUMBER = 2
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
2.20000	0.0000E+00
3.00000	0.0000E+00

```

LOAD FUNCTION NUMBER = 3

```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
3.00000	0.1000E+01

LOAD FUNCTION NUMBER = 4
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
3.00000	0.1000E+01

NO. OF DISTRIBUTED LOAD CARDS 0

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
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+-----+

```

L O A D B A L A N C E

STEP	1	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	1	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000

LOAD INPUT SECTION COMPLETED

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
|                Exe Time : 1 April 2019  17:23:04
+-----+

```

NO. OF LAYERS 4
NO. OF DATA PER LAYER..... 100

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
|                Exe Time : 1 April 2019  17:23:04
+-----+

```

LAYER DESCRIPTORS FOR STEP NO. 1

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)
ITEM NO.	5	GAMMAD	>= 18.5000	(BOTH WALLS)
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)
ITEM NO.	7	GAMMAW	>= 10.0000	(BOTH WALLS)
ITEM NO.	9	U-FRICT	>= 35.0000	(BOTH WALLS)
ITEM NO.	10	U-KA	>= 0.35700	WALL NO. 1
ITEM NO.	11	U-KP	>= 8.0370	WALL NO. 1
ITEM NO.	12	KO-NC	>= 0.50000	(BOTH WALLS)
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 35.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.23500	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.8730	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.47800	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.6750	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.35200	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.6450	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 20.000	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 10.000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.35000	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.4460	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.27200	WALL NO.	1
ITEM NO.	61	D-KP	>= 3.7540	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 11.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -8.2000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.45400	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.5420	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.36900	WALL NO.	1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO. 61<math>\lt;math>D-KP <math>= 2.5090 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

LAYER DESCRIPTORS FOR STEP NO. 2

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 8.0000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 18.500 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 8.5000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 35.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.35700 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 8.0370 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.50000 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-03 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 35.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.27100 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 5.8790 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-03 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 9.0000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= -2.4000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 19.500 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 9.5000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 8<math>\lt;math>U-COHE <math>= 30.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 25.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.47800 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 3.6750 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.53100 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-06 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 58<math>\lt;math>D-COHE <math>= 30.000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 25.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.40600 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 3.2220 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 10.000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= -6.9000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 20.000 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 10.000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 32.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.35000 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 5.4460 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.53100 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-06 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 32.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.30700 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 4.8450 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 11.000 (BOTH WALLS)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```

QS_ON_THE_EXCAVATION_SIDE      0.000      0.000
ZQS                             0.000     -0.9990E+30
ZCUT                            0.000      0.000
BALANCE LEVEL FOR PORE PRESSURES -10.00    -10.00
WATER_BEHAVIOUR_FLAG (LINING OPT) 0.000      0.000
PORE_UPDATE_FLAG               0.000      0.000
PORE_TAB._FLAG (gt.0= use tabs)  0.000      0.000
lateral thrusts reduction elevatio 0.000      0.000
Downhill reduction factor for effe  0.000      0.000
Downhill reduction factor for pore  0.000      0.000
Uphill reduction factor for effect  0.000      0.000
Uphill reduction factor for pore p  0.000      0.000
SEISMIC HORIZONTAL ACCEL. Kh [g]   0.000      0.000
UPHILL VERTICAL ACCEL. Kv_uh [g]   0.000      0.000
DOWNHILL VERTICAL ACCEL.Kv_dh [g]  0.000      0.000
UPHILL BETA ANGLE (SLOPE) [deg]    0.000      0.000
UPHILL DELTA/PHI RATIO             0.000      0.000
DOWNHILL BETA ANGLE (SLOPE) [deg]  0.000      0.000
DOWNHILL DELTA/PHI RATIO           0.000      0.000
DYN.WATER BEHAVIOUR               0.000      0.000
Excess pore pressure RATIO Ru      0.000      0.000
SEISMIC PRESSURE LOWER VALUE       0.000      0.000
SEISMIC PRESSURE UPPER VALUE       0.000      0.000
SEISMIC PRESSURE LOWER LEVEL       0.000      0.000
SEISMIC PRESSURE UPPER LEVEL       0.000      0.000

```

-----end of step 2

LEFT-HAND WALL

```

LOWER LEVEL      -10.00000
UPPER LEVEL      0.00000

```

RIGHT-HAND WALL

```

LOWER LEVEL      -10.00000
UPPER LEVEL      0.00000

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```

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
|                Exe Time : 1 April 2019  17:23:04
|
-----

```

INITIAL STRESS TABLES

SECTION

NUMBER OF DEFINED TABLES 1

INPUT DATA FOR INITIAL STRESS SET NO. 1
PERTAINING SOIL ELEMENTS AT Y-COORD 0.0000

ACTIVATION TIME 1.0000
END TIME (TIME BEYOND WHICH IT IS REMOVED) 2.0000

TYPE BOUSSINESQ

```

HORIZONTAL DISTANCE (DY)      1.4500000000000000
FOUNDATION WIDTH (B)         16.5500000000000000
ZETA-F.....                 0.0000000000000000E+000
Q-F.....                     20.0000000000000000
BETA.....                    45.0000000000000000
BEHAVIOUR (0=FREE, 1=REFLECTING) 0.0000000000000000E+000

```

ELEMENT GROUPS BACKUP AREA CAN STAY IN CORE AT
POSITION 2718

NO. OF D.P.W FOR THIS AREA 6023
MAX NO. OF D.P.W. AVAILABLE 81920
** MAX NO OF ITERATIONS SET TO 40

```

ITER  0  RNORM = 0.000  RMNORM= 0.000
        RINORM=0.2710E+05  RIMNOR= 0.000
        RENORM=0.6311E-28  REMNOR= 0.000  RATIO =0.4825E-16  TOLER =0.1000E-03  CONVERGED !
        RFMAX = 28.33  RMMAX = 0.000
        RTSMAL=0.1000E-03  RMSMAL= 0.000
        RDT =0.2710E+05  RDR = 0.000
        RATIOOT=0.4825E-16  RATIOOR= 0.000
        MAX UN=0.3553E-14  IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
        MIN UN=-.3553E-14  IEQ= 67 NODE 34 DOF 1 Y-DISPL.F

```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

NO. OF CONTACT CONSTRAINT VIOLATIONS 0

```

ITER      1  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.2710E+05 RIMNOR= 0.000
            RENORM=0.6311E-28 REMNOR= 0.000      RATIO =0.4825E-16 TOLER =0.1000E-03      CONVERGED !
            RFMAX = 28.33      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.2710E+05 RDR = 0.000
            RATIOI=0.4825E-16 RATIOI= 0.000
            MAX UN=0.3553E-14 IEQ= 89 NODE      45 DOF      1 Y-DISPL.F
            MIN UN=-.3553E-14 IEQ= 67 NODE      34 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0
    
```

```

ITER      2  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.2710E+05 RIMNOR= 0.000
            RENORM=0.6311E-28 REMNOR= 0.000      RATIO =0.4825E-16 TOLER =0.1000E-03      CONVERGED !
            RFMAX = 28.33      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.2710E+05 RDR = 0.000
            RATIOI=0.4825E-16 RATIOI= 0.000
            MAX UN=0.3553E-14 IEQ= 89 NODE      45 DOF      1 Y-DISPL.F
            MIN UN=-.3553E-14 IEQ= 67 NODE      34 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0
    
```

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
|                Exe Time : 1 April 2019      17:23:04
+-----+
    
```

New Project

SOLUTION REACHED USING 2 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 1 (AT TIME 1.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

Y-DISPL.F X-ROT. F
(02) (04) (

ALL NODAL POINTS HAVE ZERO DISPLACEMENT COMPONENTS

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.Nominal_64
|                Exe Time : 1 April 2019      17:23:04
+-----+
    
```

New Project

STRESS RESULTS FOR GROUP NO. 1

0_L :
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-1.000	0.000	
4 D	1.161	0.000	2.960	5.803	2.960	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-0.8000	0.000	
5 D	1.733	0.000	6.660	8.667	6.660	8.667	V-C	3143.	-1.000	0.000	
1.000	1.000	8.667	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-1.200	2.000	
6 D	2.259	0.000	10.36	11.29	10.36	11.29	V-C	3143.	-1.200	2.000	
1.000	1.000	11.29	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-1.200	2.000	
7 D	2.942	0.000	12.06	12.71	12.06	12.71	V-C	3143.	-1.200	2.000	
1.000	1.000	14.71	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-1.200	2.000	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

8 D	3.593	0.000	13.76	13.96	13.76	13.96	V-C	3143.	-1.400	4.000
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0					
9 D	4.217	0.000	15.46	15.08	15.46	15.08	V-C	3143.	-1.600	6.000
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0					
10 D	4.822	0.000	17.16	16.11	17.16	16.11	V-C	3143.	-1.800	8.000
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0					
11 D	5.412	0.000	18.86	17.06	18.86	17.06	V-C	3143.	-2.000	10.00
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0					
12 D	5.991	0.000	20.56	17.95	20.56	17.95	V-C	3143.	-2.200	12.00
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0					
13 D	6.700	0.000	22.26	19.50	22.26	19.50	V-C	3143.	-2.400	14.00
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0					
14 D	7.297	0.000	24.16	20.48	24.16	20.48	V-C	3143.	-2.600	16.00
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0					
15 D	7.889	0.000	26.06	21.45	26.06	21.45	V-C	3143.	-2.800	18.00
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0					
16 D	8.478	-2.8259E-18	27.96	22.39	27.96	22.39	V-C	3143.	-3.000	20.00
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0					
17 D	9.065	-2.8259E-18	29.86	23.32	29.86	23.32	V-C	3143.	-3.200	22.00
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0					
18 D	9.649	0.000	31.76	24.25	31.76	24.25	V-C	3143.	-3.400	24.00
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0					
19 D	10.23	-2.8259E-18	33.66	25.16	33.66	25.16	V-C	3143.	-3.600	26.00
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0					
20 D	10.81	0.000	35.56	26.07	35.56	26.07	V-C	3143.	-3.800	28.00
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0					
21 D	11.40	0.000	37.46	26.98	37.46	26.98	V-C	3143.	-4.000	30.00
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0					
22 D	11.98	0.000	39.36	27.88	39.36	27.88	V-C	3143.	-4.200	32.00
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0					
23 D	12.56	0.000	41.26	28.78	41.26	28.78	V-C	3143.	-4.400	34.00
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0					
24 D	13.14	0.000	43.16	29.68	43.16	29.68	V-C	3143.	-4.600	36.00
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0					
25 D	13.72	0.000	45.06	30.58	45.06	30.58	V-C	3143.	-4.800	38.00
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0					
26 D	14.30	0.000	46.96	31.48	46.96	31.48	V-C	3143.	-5.000	40.00
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0					
27 D	14.87	0.000	48.86	32.37	48.86	32.37	V-C	3143.	-5.200	42.00
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0					
28 D	15.45	-2.8259E-18	50.76	33.27	50.76	33.27	V-C	3143.	-5.400	44.00
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0					
29 D	16.03	0.000	52.66	34.17	52.66	34.17	V-C	3143.	-5.600	46.00
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0					
30 D	16.61	0.000	54.56	35.07	54.56	35.07	V-C	3143.	-5.800	48.00
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0					
31 D	17.19	0.000	56.46	35.97	56.46	35.97	V-C	3143.	-6.000	50.00
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0					
32 D	17.77	0.000	58.36	36.87	58.36	36.87	V-C	3143.	-6.200	52.00
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0					
33 D	18.35	0.000	60.26	37.77	60.26	37.77	V-C	3143.	-6.400	54.00
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0					
34 D	18.93	5.6518E-18	62.16	38.67	62.16	38.67	V-C	3143.	-6.600	56.00
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0					
35 D	19.51	0.000	64.06	39.57	64.06	39.57	V-C	3143.	-6.800	58.00
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0					
36 D	20.10	0.000	66.01	40.50	66.01	40.50	V-C	3143.	-7.000	60.00
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0					
37 D	20.69	0.000	68.01	41.46	68.01	41.46	V-C	3143.	-7.200	62.00
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0					
38 D	21.28	0.000	70.01	42.42	70.01	42.42	V-C	3143.	-7.400	64.00
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0					
39 D	21.88	0.000	72.01	43.38	72.01	43.38	V-C	3143.	-7.600	66.00
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0					
40 D	22.47	0.000	74.01	44.35	74.01	44.35	V-C	3143.	-7.800	68.00
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0					
41 D	23.06	0.000	76.01	45.31	76.01	45.31	V-C	3143.	-8.000	70.00
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0					
42 D	23.66	0.000	78.01	46.28	78.01	46.28	V-C	3143.	-8.200	72.00
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0					
43 D	24.24	0.000	79.91	47.19	79.91	47.19	V-C	3143.	-8.400	74.00
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0					
44 D	24.82	-5.6518E-18	81.81	48.11	81.81	48.11	V-C	3143.	-8.600	76.00
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0					
45 D	25.40	-5.6518E-18	83.71	49.02	83.71	49.02	V-C	3143.	-8.800	78.00
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0					
46 D	25.99	0.000	85.61	49.94	85.61	49.94	V-C	3143.	-9.000	80.00
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0					
47 D	26.57	0.000	87.51	50.86	87.51	50.86	V-C	3143.	-9.200	82.00
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0					
48 D	27.16	0.000	89.41	51.79	89.41	51.79	V-C	3143.	-9.400	84.00
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
49 D	27.74	0.000	91.31	52.71	91.31	52.71	V-C	3143.	-9.600	86.00
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0					
50 D	28.33	5.6518E-18	93.21	53.63	93.21	53.63	V-C	3143.	-9.800	88.00
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0					
51 D	14.46	0.000	95.11	54.56	95.11	54.56	V-C	3143.	-10.00	90.00
1.000	1.000	144.6	0.000	0.000	UG2_4_26346_L_0					

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                NewProject.BaseDesignSection_28.Nominal_64  |
|                Exe Time : 1 April 2019  17:23:04  |
|                -----  |

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New Project

STRESS RESULTS FOR GROUP NO. 2

O_R :
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4 D	1.161	0.000	3.208	5.803	3.208	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UGO_2_10_L_0						
5 D	1.733	0.000	7.177	8.667	7.177	8.667	V-C	3143.	-0.8000	0.000	
1.000	1.000	8.667	0.000	0.000	UGO_2_10_L_0						
6 D	2.259	0.000	11.23	11.29	11.23	11.29	V-C	3143.	-1.000	0.000	
1.000	1.000	11.29	0.000	0.000	UGO_2_10_L_0						
7 D	2.942	0.000	13.33	12.71	13.33	12.71	V-C	3143.	-1.200	2.000	
1.000	1.000	14.71	0.000	0.000	UGO_2_10_L_0						
8 D	3.593	0.000	15.47	13.96	15.47	13.96	V-C	3143.	-1.400	4.000	
1.000	1.000	17.96	0.000	0.000	UGO_2_10_L_0						
9 D	4.217	0.000	17.60	15.08	17.60	15.08	V-C	3143.	-1.600	6.000	
1.000	1.000	21.08	0.000	0.000	UGO_2_10_L_0						
10 D	4.822	0.000	19.94	16.11	19.94	16.11	V-C	3143.	-1.800	8.000	
1.000	1.000	24.11	0.000	0.000	UGO_2_10_L_0						
11 D	5.412	0.000	22.29	17.06	22.29	17.06	V-C	3143.	-2.000	10.00	
1.000	1.000	27.06	0.000	0.000	UGO_2_10_L_0						
12 D	5.991	0.000	24.56	17.95	24.56	17.95	V-C	3143.	-2.200	12.00	
1.000	1.000	29.95	0.000	0.000	UGO_2_10_L_0						
13 D	6.700	0.000	26.76	19.50	26.76	19.50	V-C	3143.	-2.400	14.00	
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0						
14 D	7.297	0.000	29.10	20.48	29.10	20.48	V-C	3143.	-2.600	16.00	
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0						
15 D	7.889	0.000	31.97	21.45	31.97	21.45	V-C	3143.	-2.800	18.00	
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0						
16 D	8.478	2.8259E-18	34.18	22.39	34.18	22.39	V-C	3143.	-3.000	20.00	
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0						
17 D	9.065	2.8259E-18	36.37	23.32	36.37	23.32	V-C	3143.	-3.200	22.00	
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0						
18 D	9.649	0.000	38.53	24.25	38.53	24.25	V-C	3143.	-3.400	24.00	
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0						
19 D	10.23	2.8259E-18	40.66	25.16	40.66	25.16	V-C	3143.	-3.600	26.00	
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0						
20 D	10.81	0.000	43.20	26.07	43.20	26.07	V-C	3143.	-3.800	28.00	
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0						
21 D	11.40	0.000	45.28	26.98	45.28	26.98	V-C	3143.	-4.000	30.00	
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0						
22 D	11.98	0.000	47.35	27.88	47.35	27.88	V-C	3143.	-4.200	32.00	
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0						
23 D	12.56	0.000	49.40	28.78	49.40	28.78	V-C	3143.	-4.400	34.00	
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0						
24 D	13.14	0.000	51.79	29.68	51.79	29.68	V-C	3143.	-4.600	36.00	
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0						
25 D	13.72	0.000	53.81	30.58	53.81	30.58	V-C	3143.	-4.800	38.00	
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0						
26 D	14.30	0.000	55.82	31.48	55.82	31.48	V-C	3143.	-5.000	40.00	
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0						
27 D	14.87	0.000	57.82	32.37	57.82	32.37	V-C	3143.	-5.200	42.00	
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0						
28 D	15.45	2.8259E-18	59.82	33.27	59.82	33.27	V-C	3143.	-5.400	44.00	
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0						
29 D	16.03	0.000	62.10	34.17	62.10	34.17	V-C	3143.	-5.600	46.00	
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0						
30 D	16.61	0.000	64.08	35.07	64.08	35.07	V-C	3143.	-5.800	48.00	
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0						
31 D	17.19	0.000	66.05	35.97	66.05	35.97	V-C	3143.	-6.000	50.00	
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0						
32 D	17.77	0.000	68.02	36.87	68.02	36.87	V-C	3143.	-6.200	52.00	
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

27 -8.5701450E-03 3.5153355E-03
28 -7.8835723E-03 3.3497125E-03
29 -7.2304677E-03 3.1809737E-03
30 -6.6112638E-03 3.0110211E-03
31 -6.0260141E-03 2.8417464E-03
32 -5.4743969E-03 2.6750368E-03
33 -4.9557054E-03 2.5127785E-03
34 -4.4688624E-03 2.3568669E-03
35 -4.0124114E-03 2.2091636E-03
36 -3.5845382E-03 2.0713415E-03
37 -3.1831613E-03 1.9442505E-03
38 -2.8061136E-03 1.8280558E-03
39 -2.4512024E-03 1.7229101E-03
40 -2.1162037E-03 1.6289525E-03
41 -1.7988669E-03 1.5463129E-03
42 -1.4969162E-03 1.4751087E-03
43 -1.2080621E-03 1.4153239E-03
44 -9.3004390E-04 1.3666800E-03
45 -6.6068586E-04 1.3286198E-03
46 -3.9794699E-04 1.3003148E-03
47 -1.3998231E-04 1.2806744E-03
48 1.1481059E-04 1.2683514E-03
49 3.6774088E-04 1.2617679E-03
50 6.1978185E-04 1.2591648E-03
51 8.7154962E-04 1.2586287E-03

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection 28.Nominal_64
|                Exe Time : 1 April 2019  17:23:04
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New Project

STRESS RESULTS FOR GROUP NO. 1

0_L :
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-1.000	0.000	
4	0.000	--	--	--	--	--	REMOVED	--	-1.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-1.400	0.000	
5	0.000	--	--	--	--	--	REMOVED	--	-1.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-1.800	0.000	
6	0.000	--	--	--	--	--	REMOVED	--	-2.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-2.200	0.000	
7	0.000	--	--	--	--	--	REMOVED	--	-2.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-2.600	0.000	
8	0.000	--	--	--	--	--	REMOVED	--	-2.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-3.000	0.000	
9	0.000	--	--	--	--	--	REMOVED	--	-3.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-3.400	0.000	
10	0.000	--	--	--	--	--	REMOVED	--	-3.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
11	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
12	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
13	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
14	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
15	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
16	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
17	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
18	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			
19	0.000	--	--	--	--	--	REMOVED	--			
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--			

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

20	0.000	--	--	--	--	--	REMOVED	--	-3.800	0.000
1.000	1.000	0.000	0.000	0.000	0.000	not available				
21	0.000	--	--	--	--	--	REMOVED	--	-4.000	0.000
1.000	1.000	0.000	0.000	0.000	0.000	not available				
22 D	12.62	1.2463E-02	1.087	61.24	39.36	61.24	V-C	3143.	-4.200	1.838
1.000	1.000	63.08	0.000	0.000	UG2_4_11_L_0					
23 D	12.83	1.1629E-02	2.537	59.84	41.26	59.84	V-C	3143.	-4.400	4.288
1.000	1.000	64.13	0.000	0.000	UG2_4_11_L_0					
24 D	13.02	1.0821E-02	3.987	58.37	43.16	58.37	V-C	3143.	-4.600	6.738
1.000	1.000	65.11	0.000	0.000	UG2_4_11_L_0					
25 D	13.22	1.0040E-02	5.437	56.93	45.06	56.93	V-C	3143.	-4.800	9.188
1.000	1.000	66.12	0.000	0.000	UG2_4_11_L_0					
26 D	13.44	9.2894E-03	6.887	55.54	46.96	55.54	V-C	3143.	-5.000	11.64
1.000	1.000	67.18	0.000	0.000	UG2_4_11_L_0					
27 D	13.66	8.5701E-03	8.337	54.23	48.86	54.23	V-C	3143.	-5.200	14.09
1.000	1.000	68.32	0.000	0.000	UG2_4_11_L_0					
28 D	13.91	7.8836E-03	9.787	53.01	50.76	53.01	V-C	3143.	-5.400	16.54
1.000	1.000	69.55	0.000	0.000	UG2_4_11_L_0					
29 D	14.17	7.2305E-03	11.24	51.88	52.66	51.88	V-C	3143.	-5.600	18.99
1.000	1.000	70.87	0.000	0.000	UG2_4_11_L_0					
30 D	14.46	6.6113E-03	12.69	50.85	54.56	50.85	V-C	3143.	-5.800	21.44
1.000	1.000	72.28	0.000	0.000	UG2_4_11_L_0					
31 D	14.76	6.0260E-03	14.14	49.91	56.46	49.91	V-C	3143.	-6.000	23.89
1.000	1.000	73.80	0.000	0.000	UG2_4_11_L_0					
32 D	15.08	5.4744E-03	15.59	49.08	58.36	49.08	V-C	3143.	-6.200	26.34
1.000	1.000	75.42	0.000	0.000	UG2_4_11_L_0					
33 D	15.43	4.9557E-03	17.04	48.35	60.26	48.35	V-C	3143.	-6.400	28.79
1.000	1.000	77.14	0.000	0.000	UG2_4_11_L_0					
34 D	15.79	4.4689E-03	18.49	47.71	62.16	47.71	V-C	3143.	-6.600	31.24
1.000	1.000	78.95	0.000	0.000	UG2_4_11_L_0					
35 D	16.17	4.0124E-03	19.94	47.17	64.06	47.17	V-C	3143.	-6.800	33.69
1.000	1.000	80.86	0.000	0.000	UG2_4_11_L_0					
36 D	16.58	3.5845E-03	21.44	46.74	66.01	46.74	V-C	3143.	-7.000	36.14
1.000	1.000	82.88	0.000	0.000	UG3_4271_12_L_0					
37 D	17.00	3.1832E-03	22.99	46.43	68.01	46.43	V-C	3143.	-7.200	38.59
1.000	1.000	85.02	0.000	0.000	UG3_4271_12_L_0					
38 D	17.45	2.8061E-03	24.54	46.19	70.01	46.19	V-C	3143.	-7.400	41.04
1.000	1.000	87.23	0.000	0.000	UG3_4271_12_L_0					
39 D	17.90	2.4512E-03	26.09	46.01	72.01	46.01	V-C	3143.	-7.600	43.49
1.000	1.000	89.50	0.000	0.000	UG3_4271_12_L_0					
40 D	18.37	2.1162E-03	27.63	45.90	74.01	45.90	V-C	3143.	-7.800	45.94
1.000	1.000	91.84	0.000	0.000	UG3_4271_12_L_0					
41 D	18.85	1.7989E-03	29.18	45.85	76.01	45.85	V-C	3143.	-8.000	48.39
1.000	1.000	94.24	0.000	0.000	UG3_4271_12_L_0					
42 D	19.14	1.4969E-03	30.73	44.86	78.01	46.33	UL-RL	9429.	-8.200	50.84
1.000	1.000	95.70	0.000	0.000	UG3_4271_12_L_0					
43 D	19.27	1.2081E-03	32.18	43.08	79.91	47.19	UL-RL	9429.	-8.400	53.29
1.000	1.000	96.37	0.000	0.000	UG2_4_26346_L_0					
44 D	19.41	9.3004E-04	33.63	41.29	81.81	48.11	UL-RL	9429.	-8.600	55.74
1.000	1.000	97.03	0.000	0.000	UG2_4_26346_L_0					
45 D	19.55	6.6069E-04	35.08	39.58	83.71	49.02	UL-RL	9429.	-8.800	58.19
1.000	1.000	97.77	0.000	0.000	UG2_4_26346_L_0					
46 D	19.71	3.9795E-04	36.53	37.93	85.61	49.94	UL-RL	9429.	-9.000	60.64
1.000	1.000	98.57	0.000	0.000	UG2_4_26346_L_0					
47 D	19.88	1.3998E-04	37.98	36.33	87.51	50.86	UL-RL	9429.	-9.200	63.09
1.000	1.000	99.42	0.000	0.000	UG2_4_26346_L_0					
48 D	20.06	-1.1481E-04	39.43	34.76	89.41	51.79	UL-RL	9429.	-9.400	65.54
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
49 D	20.24	-3.6774E-04	40.88	33.20	91.31	52.71	UL-RL	9429.	-9.600	67.99
1.000	1.000	101.2	0.000	0.000	UG2_4_26346_L_0					
50 D	20.42	-6.1978E-04	42.33	31.65	93.21	53.63	UL-RL	9429.	-9.800	70.44
1.000	1.000	102.1	0.000	0.000	UG2_4_26346_L_0					
51 D	10.30	-8.7155E-04	43.78	30.10	95.11	54.56	UL-RL	9429.	-10.00	72.89
1.000	1.000	103.0	0.000	0.000	UG2_4_26346_L_0					

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018* |
|                NewProject.BaseDesignSection_28.Nominal_64 |
|                Exe Time : 1 April 2019  17:23:04 |
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New Project

STRESS RESULTS FOR GROUP NO. 2

O_R :
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL *	FORCE	DISPL-Y	VERTICAL-P	HORIZON.-P	MAX-V-P	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
FACTOR	UFACTOR	Peq	Su_a	Su_p	LAYER						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	-0.2000	0.000
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000
1.000	1.000	0.000	0.000	0.000	not available	--	REMOVED	--	0.000	0.000
3	0.000	--	--	--	--	--	REMOVED	--	-0.6000	0.000
1.000	1.000	0.000	0.000	0.000	not available	3.208	ACTIVE	0.000	-0.6000	0.000
4 D	0.2291	-2.9268E-02	3.208	1.145	3.208	5.803	UG0_2_10_L_0	0.000	-0.8000	0.000
1.000	1.000	1.145	0.000	0.000	7.177	8.667	UG0_2_10_L_0	0.000	-1.000	0.000
5 D	0.5124	-2.8311E-02	7.177	2.562	7.177	11.29	UG0_2_10_L_0	0.000	-1.200	2.000
1.000	1.000	2.562	0.000	0.000	11.23	12.71	UG0_2_10_L_0	0.000	-1.400	3.999
6 D	0.8016	-2.7353E-02	11.23	4.008	4.008	13.33	UG0_2_10_L_0	0.000	-1.600	5.999
1.000	1.000	4.008	0.000	0.000	13.33	15.09	UG0_2_10_L_0	0.000	-1.800	7.998
7 D	1.352	-2.6396E-02	13.33	4.760	4.760	16.11	UG0_2_10_L_0	0.000	-2.000	9.998
1.000	1.000	6.760	0.000	0.000	15.47	17.96	UG0_2_10_L_0	0.000	-2.200	12.00
8 D	1.904	-2.5439E-02	15.47	5.521	5.521	19.50	UG0_2_10_L_0	0.000	-2.400	14.00
1.000	1.000	9.520	0.000	0.000	22.30	20.77	UG0_2_10_L_0	0.000	-2.600	15.55
9 D	2.457	-2.4483E-02	17.60	6.284	6.284	21.93	UG2_4_11_L_0	0.000	-2.800	17.10
1.000	1.000	12.28	0.000	0.000	24.57	23.11	UG2_4_11_L_0	0.000	-3.000	18.65
10 D	3.023	-2.3527E-02	19.94	7.118	7.118	24.28	UG2_4_11_L_0	0.000	-3.200	20.20
1.000	1.000	15.12	0.000	0.000	26.77	25.44	UG2_4_11_L_0	0.000	-3.400	21.75
11 D	3.592	-2.2572E-02	22.30	7.960	7.960	26.60	UG2_4_11_L_0	0.000	-3.600	23.30
1.000	1.000	17.96	0.000	0.000	43.37	27.75	UG2_4_11_L_0	0.000	-4.000	26.40
12 D	4.154	-2.1619E-02	24.57	8.770	8.770	28.89	UG2_4_11_L_0	0.000	-4.200	27.95
1.000	1.000	20.77	0.000	0.000	46.36	30.03	UG2_4_11_L_0	0.000	-4.400	29.50
13 D	2.799	-2.0668E-02	26.77	0.000	0.000	31.17	UG2_4_11_L_0	0.000	-4.600	31.05
1.000	1.000	14.00	0.000	0.000	38.17	32.31	UG2_4_11_L_0	0.000	-4.800	32.60
14 D	3.109	-1.9721E-02	29.55	0.000	0.000	33.45	UG2_4_11_L_0	0.000	-5.000	34.15
1.000	1.000	15.55	0.000	0.000	40.78	34.58	UG2_4_11_L_0	0.000	-5.200	35.69
15 D	3.419	-1.8779E-02	32.87	0.000	0.000	35.72	UG2_4_11_L_0	0.000	-5.400	37.24
1.000	1.000	17.10	0.000	0.000	43.37	36.86	UG2_4_11_L_0	0.000	-5.600	38.79
16 D	3.729	-1.7842E-02	35.54	0.000	0.000	37.99	UG2_4_11_L_0	0.000	-5.800	40.34
1.000	1.000	18.65	0.000	0.000	64.13	39.13	UG2_4_11_L_0	0.000	-6.000	41.89
17 D	4.039	-1.6914E-02	38.17	0.000	0.000	40.27	UG2_4_11_L_0	0.000	-6.200	43.44
1.000	1.000	20.20	0.000	0.000	66.57	41.41	UG2_4_11_L_0	0.000	-6.400	44.99
18 D	4.349	-1.5995E-02	40.78	0.000	0.000	42.55	UG2_4_11_L_0	0.000	-6.600	46.54
1.000	1.000	21.75	0.000	0.000	61.67	43.69	UG2_4_11_L_0	9429.	-6.800	48.09
19 D	4.659	-1.5089E-02	43.37	0.000	0.000	44.83	UG2_4_11_L_0	9429.	-7.000	49.64
1.000	1.000	23.30	0.000	0.000	66.57	46.00	UG2_4_11_L_0	0.000	-7.200	51.19
20 D	4.969	-1.4196E-02	46.36	0.000	0.000	47.20	UG3_4271_12_L_0	0.000	-7.400	52.74
1.000	1.000	24.85	0.000	0.000	69.31	48.40	UG3_4271_12_L_0	0.000	-7.600	54.29
21 D	5.279	-1.3319E-02	48.89	0.000	0.000	49.60	UG3_4271_12_L_0	0.000	-7.800	55.84
1.000	1.000	26.40	0.000	0.000	69.31	50.80	UG3_4271_12_L_0	0.000	-8.000	57.39
22 D	5.589	-1.2463E-02	51.40	0.000	0.000	52.01	UG3_4271_12_L_0	9429.	-8.200	58.94
1.000	1.000	27.95	0.000	0.000	71.73	53.21	UG3_4271_12_L_0	9429.	-8.400	60.49
23 D	5.899	-1.1629E-02	53.90	0.000	0.000	54.36	UG2_4_26346_L_0	0.000	-8.600	62.04
1.000	1.000	29.50	0.000	0.000	81.65	55.52	UG2_4_26346_L_0	9429.		
24 D	6.209	-1.0821E-02	56.75	0.000	0.000	40.27	UG2_4_11_L_0	0.000		
1.000	1.000	31.05	0.000	0.000	61.67	41.41	UG2_4_11_L_0	0.000		
25 D	6.519	-1.0040E-02	59.21	0.000	0.000	42.55	UG2_4_11_L_0	0.000		
1.000	1.000	32.60	0.000	0.000	61.67	43.69	UG2_4_11_L_0	0.000		
26 D	6.829	-9.2894E-03	61.67	0.000	0.000	44.83	UG2_4_11_L_0	0.000		
1.000	1.000	34.15	0.000	0.000	64.13	46.00	UG2_4_11_L_0	0.000		
27 D	7.139	-8.5701E-03	64.13	0.000	0.000	47.20	UG2_4_11_L_0	0.000		
1.000	1.000	35.69	0.000	0.000	66.57	48.40	UG2_4_11_L_0	0.000		
28 D	7.449	-7.8836E-03	66.57	0.000	0.000	49.60	UG2_4_11_L_0	0.000		
1.000	1.000	37.24	0.000	0.000	69.31	50.80	UG2_4_11_L_0	0.000		
29 D	7.759	-7.2305E-03	69.31	0.000	0.000	52.01	UG3_4271_12_L_0	0.000		
1.000	1.000	38.79	0.000	0.000	71.73	53.21	UG3_4271_12_L_0	0.000		
30 D	8.069	-6.6113E-03	71.73	0.000	0.000	54.36	UG2_4_11_L_0	0.000		
1.000	1.000	40.34	0.000	0.000	81.65	55.52	UG2_4_11_L_0	0.000		
31 D	8.379	-6.0260E-03	74.15	0.000	0.000	40.27	UG2_4_11_L_0	0.000		
1.000	1.000	41.89	0.000	0.000	61.67	41.41	UG2_4_11_L_0	0.000		
32 D	8.689	-5.4744E-03	76.57	0.000	0.000	42.55	UG2_4_11_L_0	0.000		
1.000	1.000	43.44	0.000	0.000	61.67	43.69	UG2_4_11_L_0	0.000		
33 D	8.999	-4.9557E-03	78.99	0.000	0.000	44.83	UG2_4_11_L_0	0.000		
1.000	1.000	44.99	0.000	0.000	64.13	46.00	UG2_4_11_L_0	0.000		
34 D	9.619	-4.4689E-03	81.65	1.553	1.553	47.20	UG2_4_11_L_0	0.000		
1.000	1.000	48.10	0.000	0.000	64.13	48.40	UG2_4_11_L_0	0.000		
35 D	11.02	-4.0124E-03	84.05	6.999	6.999	49.60	UG2_4_11_L_0	0.000		
1.000	1.000	55.09	0.000	0.000	66.57	50.80	UG2_4_11_L_0	0.000		
36 D	15.98	-3.5845E-03	86.50	30.27	30.27	52.01	UG3_4271_12_L_0	0.000		
1.000	1.000	79.92	0.000	0.000	69.31	53.21	UG3_4271_12_L_0	0.000		
37 D	16.47	-3.1832E-03	88.99	31.15	31.15	54.36	UG3_4271_12_L_0	0.000		
1.000	1.000	82.34	0.000	0.000	69.31	55.52	UG3_4271_12_L_0	0.000		
38 D	16.95	-2.8061E-03	91.49	32.02	32.02	50.80	UG3_4271_12_L_0	0.000		
1.000	1.000	84.76	0.000	0.000	81.65	53.21	UG3_4271_12_L_0	0.000		
39 D	17.45	-2.4512E-03	94.19	32.97	32.97	54.36	UG2_4_26346_L_0	0.000		
1.000	1.000	87.26	0.000	0.000	81.65	55.52	UG2_4_26346_L_0	0.000		
40 D	17.94	-2.1162E-03	96.68	33.84	33.84	52.01	UG2_4_26346_L_0	0.000		
1.000	1.000	89.68	0.000	0.000	81.65	53.21	UG2_4_26346_L_0	0.000		
41 D	18.49	-1.7989E-03	99.16	35.04	35.04	54.36	UG2_4_26346_L_0	0.000		
1.000	1.000	92.44	0.000	0.000	81.65	55.52	UG2_4_26346_L_0	0.000		
42 D	19.61	-1.4969E-03	101.6	39.10	39.10	50.80	UG2_4_26346_L_0	0.000		
1.000	1.000	98.04	0.000	0.000	81.65	53.21	UG2_4_26346_L_0	0.000		
43 D	20.69	-1.2081E-03	104.0	42.97	42.97	54.36	UG2_4_26346_L_0	0.000		
1.000	1.000	103.5	0.000	0.000	81.65	55.52	UG2_4_26346_L_0	0.000		
44 D	21.76	-9.3004E-04	106.6	46.75	46.75	52.01	UG2_4_26346_L_0	0.000		
1.000	1.000	108.8	0.000	0.000	81.65	53.21	UG2_4_26346_L_0	0.000		

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

45 D	22.81	-6.6069E-04	109.0	50.45	109.0	56.68	UL-RL	9429.	-8.800	63.59
1.000	1.000	114.0	0.000	0.000	UG2_4_26346_L_0					
46 D	23.84	-3.9795E-04	111.3	54.08	111.3	57.83	UL-RL	9429.	-9.000	65.14
1.000	1.000	119.2	0.000	0.000	UG2_4_26346_L_0					
47 D	24.87	-1.3998E-04	113.7	57.67	113.7	58.99	UL-RL	9429.	-9.200	66.69
1.000	1.000	124.4	0.000	0.000	UG2_4_26346_L_0					
48 D	25.74	1.1481E-04	116.3	60.46	116.3	60.54	UL-RL	9429.	-9.400	68.24
1.000	1.000	128.7	0.000	0.000	UG2_4_26346_L_0					
49 D	26.45	3.6774E-04	118.6	62.44	118.6	62.49	UL-RL	9429.	-9.600	69.79
1.000	1.000	132.2	0.000	0.000	UG2_4_26346_L_0					
50 D	27.15	6.1978E-04	121.0	64.41	121.0	64.43	UL-RL	9429.	-9.800	71.34
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
51 D	13.93	8.7155E-04	123.4	66.38	123.4	66.38	V-C	3143.	-10.00	72.89
1.000	1.000	139.3	0.000	0.000	UG2_4_26346_L_0					

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|                                     PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                                     NewProject.BaseDesignSection_28.Nominal_64
|                                     Exe Time : 1 April 2019  17:23:04
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New Project

STRESS RESULTS FOR GROUP NO. 3

WallElement_New_28707

ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50
CURRENT TIME IS 2.0000

WALL2D ELEMENT

EL	TA	TB	MA	MB
1	4.95675E-10	-4.95675E-10	4.93756E-11	1.47409E-10
2	-1.46940E-10	1.46940E-10	-1.12731E-10	1.63574E-10
3	-1.60725E-10	1.60725E-10	-1.93610E-10	3.29688E-10
4	-0.22908	0.22908	-3.43714E-10	-4.58157E-02
5	-0.74148	0.74148	4.58157E-02	-0.19411
6	-1.5431	1.5431	0.19411	-0.50274
7	-2.8950	2.8950	0.50274	-1.0817
8	-4.7991	4.7991	1.0817	-2.0416
9	-7.2558	7.2558	2.0416	-3.4927
10	-10.279	10.279	3.4927	-5.5485
11	-13.871	13.871	5.5485	-8.3227
12	-18.024	18.024	8.3227	-11.927
13	-20.823	20.823	11.927	-16.092
14	-23.933	23.933	16.092	-20.879
15	-27.352	27.352	20.879	-26.349
16	-31.081	31.081	26.349	-32.565
17	-35.121	35.121	32.565	-39.590
18	-39.470	39.470	39.590	-47.484
19	-44.129	44.129	47.484	-56.309
20	-49.098	49.098	56.309	-66.129
21	-54.377	54.377	66.129	-77.005
22	-47.351	47.351	77.005	-86.475
23	-40.425	40.425	86.475	-94.560
24	-33.612	33.612	94.560	-101.28
25	-26.908	26.908	101.28	-106.66
26	-20.300	20.300	106.66	-110.72
27	-13.775	13.775	110.72	-113.48
28	-7.3147	7.3147	113.48	-114.94
29	-0.90021	0.90021	114.94	-115.12
30	5.4878	-5.4878	115.12	-114.02
31	11.869	-11.869	114.02	-111.65
32	18.264	-18.264	111.65	-108.00
33	24.693	-24.693	108.00	-103.06
34	30.864	-30.864	103.06	-96.886
35	36.017	-36.017	96.886	-89.682
36	36.611	-36.611	89.682	-82.360
37	37.146	-37.146	82.360	-74.931
38	37.638	-37.638	74.931	-67.403
39	38.087	-38.087	67.403	-59.786
40	38.519	-38.519	59.786	-52.082
41	38.880	-38.880	52.082	-44.306
42	38.413	-38.413	44.306	-36.624
43	36.993	-36.993	36.624	-29.225
44	34.641	-34.641	29.225	-22.297
45	31.388	-31.388	22.297	-16.019
46	27.258	-27.258	16.019	-10.568
47	22.269	-22.269	10.568	-6.1138
48	16.578	-16.578	6.1138	-2.7982
49	10.363	-10.363	2.7982	-0.72560
50	3.6279	-3.6279	0.72560	1.16529E-12

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.Nominal_64
Exe Time : 1 April 2019  17:23:04
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F I N A L I N C R E M E N T A L A N A L Y S I S
S U M M A R Y

STEP		NO. OF ITERATIONS
1	CONVERGENCE :YES	2
2	CONVERGENCE :YES	6

END OF PROCESS FOR PROBLEM
New Project
NONLINEAR SOLUTION CPU TIME 0.03 [sec]
DATABASE CREATION CPU TIME..... 0.08 [sec]

7.2. Design Assumption : NTC2018: SLE (Rara/Frequente/Quasi Permanente) - File di Paratie - File di output (.out)

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PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.NTC2018SLE RaraFrequenteQuasiPermanente_1116
Exe Time : 1 April 2019  17:23:05
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*
* PARATIE PLUS Non-Linear Spring Engine
*
* AN ELASTOPLASTIC FINITE ELEMENT PROGRAM
* FOR FLEXIBLE EARTH-RETAINING STRUCTURES
*
* Written by Ce.A.S. s.r.l. (ITALY)
* with the scientific supervision of
* Roberto Nova - full professor SOIL MECHANICS
* at Politecnico di Milano (ITALY)
*
*****
*
* RELEASE  2018.1  *Build date:Jun 29, 2018*
*
* Ce.A.S.  S.R.L  CENTRO DI ANALISI STRUTTURALE
* VIALE GIUSTINIANO 10
* 20129 M I L A N O (ITALIA)
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*
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*****

```

JOB : NewProject.BaseDesignSection_28.NTC2018SLE RaraFrequenteQuasiPermanente_1116

```

STARTING
ACCEPTED <FILE,GENW >
ACCEPTED <FILE,PLOTTER,BINARY >
ACCEPTED <SOLVE TOTAL STRESS >
ACCEPTED <PARAM ITEMAX 40 >
ACCEPTED <CONTROL HINGES 0 0.0001 0.001 >

```

```

*****
*
* WARNING : PORE PRESSURES ARE AUTOMATICALLY COMPUTED
* BY THE PROGRAM.
*****

```

PRELIMINARY OPERATIONS CPU TIME 0.00 [sec]

```

-----
PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.NTC2018SLE RaraFrequenteQuasiPermanente_1116
Exe Time : 1 April 2019  17:23:05
-----

```


VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

INPUT FILE HAS BEEN GENERATED BY WALGEN PROGRAM

New Project

```

NO. OF NODAL POINTS (NUMNP) ..... 51
NO. OF COORDINATES (NCOORD)..... 2
NO. OF NODE DOFS (NDOF)..... 2
NO. OF EQUATIONS (NEQ)..... 102
NO. OF CONSTRAINTS CARDS (NVINC)..... 0
NO. OF ELEMENT GROUPS (NEG)..... 3
NO. OF SOLUTION STEPS (NSTE)..... 2
NO. OF ELEMENT SETS ATTACHED TO SLAVE NODES ... 0
NO. OF RECORD FROM WALGEN ..... 100
NO. OF LONG NAMES (LASTNAME) ..... 13
LENGTH UNIT CHOICE ..... 3 (M )
FORCE UNIT CHOICE ..... 3 (KN )
MAX PORE PRESSURE TABLE LENGTH..... 1
NO. OF ELEMENT GROUPS REQUIRING ADD. SLIP DOF . 0
  
```

IDOFA (01) = 2 Y-DISPL.F
IDOFA (02) = 4 X-ROT. F

RELEVANT ITEMS UNITS

```

STRESSES                kPa
Y-DISPLACEMENTS        m
ROTATIONS                RADIANS
BEAM AND SLAB MOMENTS   kN*m/m
BEAM SHEAR FORCES       kN/m
ANCHOR FORCES           kN/m
AXIAL FORCES IN TRUSSES kN/m
AXIAL FORCES SPRINGS    kN/m
Y-REACTIONS             kN/m
X-MOMENT REACTIONS      kN*m/m
ETC.
  
```

```

| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*
|
| NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
| Exe Time : 1 April 2019 17:23:05
|
|-----
  
```

P R E P R O C E S S O R D A T A

N O . O F C O M M A N D S 1 0 0

```

1 : UNIT m kN
2 : TITLE New Project
3 : DELTA 0.2
4 : option param itemax 40
5 : option control hinges 0 0.0001 0.001
6 : WALL LeftWall_32 0 -10 0 -1
7 : SOIL 0_L LeftWall_32 -10 0 2 0
8 : SOIL 0_R LeftWall_32 -10 0 1 180
9 : LDATA UG0 2 10 L_0 -0.44 LeftWall_32
10 : ATREST 0.5 0.5 1
11 : WEIGHT 18.5 8.5 10
12 : PERMEABILITY 0.0001
13 : RESISTANCE 0 35 0 0 0
14 : WINKLER 3143 9429.1
15 : ENDL
16 : LDATA UG2 4 11 L_0 -2.4 LeftWall_32
17 : ATREST 0.531 0.5 1
18 : WEIGHT 19.5 9.5 10
19 : PERMEABILITY 1E-07
20 : RESISTANCE 30 25 0 0 0
21 : WINKLER 3143 9429.1
22 : ENDL
23 : LDATA UG3 4271 12 L_0 -6.9 LeftWall_32
24 : ATREST 0.531 0.5 1
25 : WEIGHT 20 10 10
26 : PERMEABILITY 1E-07
27 : RESISTANCE 0 32 0 0 0
28 : WINKLER 3143 9429.1
29 : ENDL
30 : LDATA UG2 4 26346 L_0 -8.2 LeftWall_32
31 : ATREST 0.531 0.5 1
32 : WEIGHT 19.5 9.5 10
33 : PERMEABILITY 1E-07
34 : RESISTANCE 30 25 0 0 0
35 : WINKLER 3143 9429.1
  
```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```

36 : ENDL
37 : MATERIAL S275_115 2.1E+08
38 : BEAM WallElement_New_28707 LeftWall_32 -10 0 S275_115 0.19777 00 00 0
39 : STRIP LeftWall_32 1 2 1.45 16.55 0 20 45
40 : STEP Stage1_31
41 : CHANGE UG0_2_10_L_0 U-FRICT=35 LeftWall_32
42 : CHANGE UG0_2_10_L_0 D-FRICT=35 LeftWall_32
43 : CHANGE UG0_2_10_L_0 U-KA=0.357 LeftWall_32
44 : CHANGE UG0_2_10_L_0 U-KP=8.037 LeftWall_32
45 : CHANGE UG0_2_10_L_0 D-KA=0.235 LeftWall_32
46 : CHANGE UG0_2_10_L_0 D-KP=2.873 LeftWall_32
47 : CHANGE UG2_4_11_L_0 U-FRICT=25 LeftWall_32
48 : CHANGE UG2_4_11_L_0 D-FRICT=25 LeftWall_32
49 : CHANGE UG2_4_11_L_0 U-KA=0.478 LeftWall_32
50 : CHANGE UG2_4_11_L_0 U-KP=3.675 LeftWall_32
51 : CHANGE UG2_4_11_L_0 D-KA=0.352 LeftWall_32
52 : CHANGE UG2_4_11_L_0 D-KP=2.645 LeftWall_32
53 : CHANGE UG3_4271_12_L_0 U-FRICT=32 LeftWall_32
54 : CHANGE UG3_4271_12_L_0 D-FRICT=32 LeftWall_32
55 : CHANGE UG3_4271_12_L_0 U-KA=0.35 LeftWall_32
56 : CHANGE UG3_4271_12_L_0 U-KP=5.446 LeftWall_32
57 : CHANGE UG3_4271_12_L_0 D-KA=0.272 LeftWall_32
58 : CHANGE UG3_4271_12_L_0 D-KP=3.754 LeftWall_32
59 : CHANGE UG2_4_26346_L_0 U-FRICT=25 LeftWall_32
60 : CHANGE UG2_4_26346_L_0 D-FRICT=25 LeftWall_32
61 : CHANGE UG2_4_26346_L_0 U-KA=0.454 LeftWall_32
62 : CHANGE UG2_4_26346_L_0 U-KP=3.542 LeftWall_32
63 : CHANGE UG2_4_26346_L_0 D-KA=0.369 LeftWall_32
64 : CHANGE UG2_4_26346_L_0 D-KP=2.509 LeftWall_32
65 : CHANGE UG0_2_10_L_0 U-COHE=0 LeftWall_32
66 : CHANGE UG0_2_10_L_0 U-ADHES=0 LeftWall_32
67 : CHANGE UG0_2_10_L_0 D-COHE=0 LeftWall_32
68 : CHANGE UG0_2_10_L_0 D-ADHES=0 LeftWall_32
69 : CHANGE UG2_4_11_L_0 U-COHE=30 LeftWall_32
70 : CHANGE UG2_4_11_L_0 U-ADHES=0 LeftWall_32
71 : CHANGE UG2_4_11_L_0 D-COHE=30 LeftWall_32
72 : CHANGE UG2_4_11_L_0 D-ADHES=0 LeftWall_32
73 : CHANGE UG3_4271_12_L_0 U-COHE=0 LeftWall_32
74 : CHANGE UG3_4271_12_L_0 U-ADHES=0 LeftWall_32
75 : CHANGE UG3_4271_12_L_0 D-COHE=0 LeftWall_32
76 : CHANGE UG3_4271_12_L_0 D-ADHES=0 LeftWall_32
77 : CHANGE UG2_4_26346_L_0 U-COHE=30 LeftWall_32
78 : CHANGE UG2_4_26346_L_0 U-ADHES=0 LeftWall_32
79 : CHANGE UG2_4_26346_L_0 D-COHE=30 LeftWall_32
80 : CHANGE UG2_4_26346_L_0 D-ADHES=0 LeftWall_32
81 : SETWALL LeftWall_32
82 : GEOM -0.44 -0.44
83 : SURCHARGE 0 0 0 0
84 : WATER -1 0 -10 0 0
85 : ENDSTEP
86 : STEP Stage2_28513
87 : CHANGE UG0_2_10_L_0 D-KA=0.271 LeftWall_32
88 : CHANGE UG0_2_10_L_0 D-KP=5.879 LeftWall_32
89 : CHANGE UG2_4_11_L_0 D-KA=0.406 LeftWall_32
90 : CHANGE UG2_4_11_L_0 D-KP=3.222 LeftWall_32
91 : CHANGE UG3_4271_12_L_0 D-KA=0.307 LeftWall_32
92 : CHANGE UG3_4271_12_L_0 D-KP=4.845 LeftWall_32
93 : CHANGE UG2_4_26346_L_0 D-KA=0.406 LeftWall_32
94 : CHANGE UG2_4_26346_L_0 D-KP=3.222 LeftWall_32
95 : SETWALL LeftWall_32
96 : GEOM -0.44 -4.05
97 : SURCHARGE 0 0 0 0
98 : WATER -1 3.05 -10 0 0
99 : ADD WallElement_New_28707
100 : ENDSTEP

```

```

-----
PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*
-----
NewProject.BaseDesignSection_28.NTC2018SLEraraFrequenteQuasiPermanente_1116
Exe Time : 1 April 2019 17:23:05
-----

```

N O D A L P O I N T D A T A

NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE	Y-COORD	Z-COORD /	NODE			
1	0.0000	0.0000	/	2	0.0000	-0.20000	/	3	0.0000	-0.40000	/	4	0.0000	-0.60000	/
5	0.0000	-0.80000	/	6	0.0000	-1.00000	/	7	0.0000	-1.20000	/	8	0.0000	-1.40000	/
9	0.0000	-1.60000	/	10	0.0000	-1.80000	/	11	0.0000	-2.00000	/	12	0.0000	-2.20000	/
13	0.0000	-2.40000	/	14	0.0000	-2.60000	/	15	0.0000	-2.80000	/	16	0.0000	-3.00000	/
17	0.0000	-3.20000	/	18	0.0000	-3.40000	/	19	0.0000	-3.60000	/	20	0.0000	-3.80000	/
21	0.0000	-4.00000	/	22	0.0000	-4.20000	/	23	0.0000	-4.40000	/	24	0.0000	-4.60000	/
25	0.0000	-4.80000	/	26	0.0000	-5.00000	/	27	0.0000	-5.20000	/	28	0.0000	-5.40000	/
29	0.0000	-5.60000	/	30	0.0000	-5.80000	/	31	0.0000	-6.00000	/	32	0.0000	-6.20000	/
33	0.0000	-6.40000	/	34	0.0000	-6.60000	/	35	0.0000	-6.80000	/	36	0.0000	-7.00000	/
37	0.0000	-7.20000	/	38	0.0000	-7.40000	/	39	0.0000	-7.60000	/	40	0.0000	-7.80000	/

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

41 0.0000 -8.0000 / 42 0.0000 -8.2000 / 43 0.0000 -8.4000 / 44 0.0000 -8.6000 /
45 0.0000 -8.8000 / 46 0.0000 -9.0000 / 47 0.0000 -9.2000 / 48 0.0000 -9.4000 /
49 0.0000 -9.6000 / 50 0.0000 -9.8000 / 51 0.0000 -10.000 /

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                Exe Time : 1 April 2019  17:23:05
+-----+

```

ELEMENT GROUP NO. 1

```

0_L
_5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0

```

.....2D PLASTIC SOIL

element group behaviour throughout stage analysis

```

stage  status
-----
  1  active
  2  active

```

material set no. 1

```

prop( 1) angle 0.00000
prop( 2) layer as foreseen 1.00000

```

material set no. 2

```

prop( 1) angle 0.00000
prop( 2) layer as foreseen 2.00000

```

material set no. 3

```

prop( 1) angle 0.00000
prop( 2) layer as foreseen 3.00000

```

material set no. 4

```

prop( 1) angle 0.00000
prop( 2) layer as foreseen 4.00000

```

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	2.000
2	2	1	0.2000	0.000	0.000	0.000	2.000
3	3	1	0.2000	0.000	0.000	0.000	2.000
4	4	1	0.2000	0.000	0.000	0.000	2.000
5	5	1	0.2000	0.000	0.000	0.000	2.000
6	6	1	0.2000	0.000	0.000	0.000	2.000
7	7	1	0.2000	0.000	0.000	0.000	2.000
8	8	1	0.2000	0.000	0.000	0.000	2.000
9	9	1	0.2000	0.000	0.000	0.000	2.000
10	10	1	0.2000	0.000	0.000	0.000	2.000
11	11	1	0.2000	0.000	0.000	0.000	2.000
12	12	1	0.2000	0.000	0.000	0.000	2.000
13	13	2	0.2000	0.000	0.000	0.000	2.000
14	14	2	0.2000	0.000	0.000	0.000	2.000
15	15	2	0.2000	0.000	0.000	0.000	2.000
16	16	2	0.2000	0.000	0.000	0.000	2.000
17	17	2	0.2000	0.000	0.000	0.000	2.000
18	18	2	0.2000	0.000	0.000	0.000	2.000
19	19	2	0.2000	0.000	0.000	0.000	2.000
20	20	2	0.2000	0.000	0.000	0.000	2.000
21	21	2	0.2000	0.000	0.000	0.000	2.000
22	22	2	0.2000	0.000	0.000	0.000	2.000
23	23	2	0.2000	0.000	0.000	0.000	2.000
24	24	2	0.2000	0.000	0.000	0.000	2.000
25	25	2	0.2000	0.000	0.000	0.000	2.000
26	26	2	0.2000	0.000	0.000	0.000	2.000
27	27	2	0.2000	0.000	0.000	0.000	2.000
28	28	2	0.2000	0.000	0.000	0.000	2.000
29	29	2	0.2000	0.000	0.000	0.000	2.000
30	30	2	0.2000	0.000	0.000	0.000	2.000
31	31	2	0.2000	0.000	0.000	0.000	2.000
32	32	2	0.2000	0.000	0.000	0.000	2.000
33	33	2	0.2000	0.000	0.000	0.000	2.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

34	34	2	0.2000	0.000	0.000	0.000	2.000
35	35	2	0.2000	0.000	0.000	0.000	2.000
36	36	3	0.2000	0.000	0.000	0.000	2.000
37	37	3	0.2000	0.000	0.000	0.000	2.000
38	38	3	0.2000	0.000	0.000	0.000	2.000
39	39	3	0.2000	0.000	0.000	0.000	2.000
40	40	3	0.2000	0.000	0.000	0.000	2.000
41	41	3	0.2000	0.000	0.000	0.000	2.000
42	42	3	0.2000	0.000	0.000	0.000	2.000
43	43	4	0.2000	0.000	0.000	0.000	2.000
44	44	4	0.2000	0.000	0.000	0.000	2.000
45	45	4	0.2000	0.000	0.000	0.000	2.000
46	46	4	0.2000	0.000	0.000	0.000	2.000
47	47	4	0.2000	0.000	0.000	0.000	2.000
48	48	4	0.2000	0.000	0.000	0.000	2.000
49	49	4	0.2000	0.000	0.000	0.000	2.000
50	50	4	0.2000	0.000	0.000	0.000	2.000
51	51	4	0.1000	0.000	0.000	0.000	2.000

```

-----
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
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|
-----

```

ELEMENT GROUP NO. 2

```

0_R
_5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 4 : 0 0 0 0

```

.....2D PLASTIC SOIL

element group behaviour throughout stage analysis

stage status

```

-----
1 active
2 active

```

material set no. 1

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 1.00000

```

material set no. 2

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 2.00000

```

material set no. 3

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 3.00000

```

material set no. 4

```

prop( 1) angle      180.000
prop( 2) layer as foreseen 4.00000

```

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	1.000
2	2	1	0.2000	0.000	0.000	0.000	1.000
3	3	1	0.2000	0.000	0.000	0.000	1.000
4	4	1	0.2000	0.000	0.000	0.000	1.000
5	5	1	0.2000	0.000	0.000	0.000	1.000
6	6	1	0.2000	0.000	0.000	0.000	1.000
7	7	1	0.2000	0.000	0.000	0.000	1.000
8	8	1	0.2000	0.000	0.000	0.000	1.000
9	9	1	0.2000	0.000	0.000	0.000	1.000
10	10	1	0.2000	0.000	0.000	0.000	1.000
11	11	1	0.2000	0.000	0.000	0.000	1.000
12	12	1	0.2000	0.000	0.000	0.000	1.000
13	13	2	0.2000	0.000	0.000	0.000	1.000
14	14	2	0.2000	0.000	0.000	0.000	1.000
15	15	2	0.2000	0.000	0.000	0.000	1.000
16	16	2	0.2000	0.000	0.000	0.000	1.000
17	17	2	0.2000	0.000	0.000	0.000	1.000
18	18	2	0.2000	0.000	0.000	0.000	1.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

19	19	2	0.2000	0.000	0.000	0.000	1.000
20	20	2	0.2000	0.000	0.000	0.000	1.000
21	21	2	0.2000	0.000	0.000	0.000	1.000
22	22	2	0.2000	0.000	0.000	0.000	1.000
23	23	2	0.2000	0.000	0.000	0.000	1.000
24	24	2	0.2000	0.000	0.000	0.000	1.000
25	25	2	0.2000	0.000	0.000	0.000	1.000
26	26	2	0.2000	0.000	0.000	0.000	1.000
27	27	2	0.2000	0.000	0.000	0.000	1.000
28	28	2	0.2000	0.000	0.000	0.000	1.000
29	29	2	0.2000	0.000	0.000	0.000	1.000
30	30	2	0.2000	0.000	0.000	0.000	1.000
31	31	2	0.2000	0.000	0.000	0.000	1.000
32	32	2	0.2000	0.000	0.000	0.000	1.000
33	33	2	0.2000	0.000	0.000	0.000	1.000
34	34	2	0.2000	0.000	0.000	0.000	1.000
35	35	2	0.2000	0.000	0.000	0.000	1.000
36	36	3	0.2000	0.000	0.000	0.000	1.000
37	37	3	0.2000	0.000	0.000	0.000	1.000
38	38	3	0.2000	0.000	0.000	0.000	1.000
39	39	3	0.2000	0.000	0.000	0.000	1.000
40	40	3	0.2000	0.000	0.000	0.000	1.000
41	41	3	0.2000	0.000	0.000	0.000	1.000
42	42	3	0.2000	0.000	0.000	0.000	1.000
43	43	4	0.2000	0.000	0.000	0.000	1.000
44	44	4	0.2000	0.000	0.000	0.000	1.000
45	45	4	0.2000	0.000	0.000	0.000	1.000
46	46	4	0.2000	0.000	0.000	0.000	1.000
47	47	4	0.2000	0.000	0.000	0.000	1.000
48	48	4	0.2000	0.000	0.000	0.000	1.000
49	49	4	0.2000	0.000	0.000	0.000	1.000
50	50	4	0.2000	0.000	0.000	0.000	1.000
51	51	4	0.1000	0.000	0.000	0.000	1.000

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                Exe Time : 1 April 2019  17:23:05
+-----+

```

ELEMENT GROUP NO. 3

```

WallElement_New_28707
2 50 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0
.....
.....2D WALL ELEMENT.....
.....

```

element group behaviour throughout stage analysis

```

stage  status
-----
1  inactive
2  active

```

material set no. 1

```

prop( 1) young modulus      0.210000E+09
prop( 2) modification time  0.00000
prop( 3) new young modulus  0.00000
prop( 4) poisson ratio      0.00000
prop( 5) future .....      0.00000

```

```

no. of step variable items: 1
step inertia multiplier
-----
1  1.000
2  1.000

```

element data

el	na	nb	mat	erc1	erc2	thick	by-i	by-j
1	1	2	1	0.000	0.000	0.1978	0.000	0.000
2	2	3	1	0.000	0.000	0.1978	0.000	0.000
3	3	4	1	0.000	0.000	0.1978	0.000	0.000
4	4	5	1	0.000	0.000	0.1978	0.000	0.000
5	5	6	1	0.000	0.000	0.1978	0.000	0.000
6	6	7	1	0.000	0.000	0.1978	0.000	0.000
7	7	8	1	0.000	0.000	0.1978	0.000	0.000
8	8	9	1	0.000	0.000	0.1978	0.000	0.000
9	9	10	1	0.000	0.000	0.1978	0.000	0.000
10	10	11	1	0.000	0.000	0.1978	0.000	0.000
11	11	12	1	0.000	0.000	0.1978	0.000	0.000
12	12	13	1	0.000	0.000	0.1978	0.000	0.000
13	13	14	1	0.000	0.000	0.1978	0.000	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

14	14	15	1	0.000	0.000	0.1978	0.000	0.000
15	15	16	1	0.000	0.000	0.1978	0.000	0.000
16	16	17	1	0.000	0.000	0.1978	0.000	0.000
17	17	18	1	0.000	0.000	0.1978	0.000	0.000
18	18	19	1	0.000	0.000	0.1978	0.000	0.000
19	19	20	1	0.000	0.000	0.1978	0.000	0.000
20	20	21	1	0.000	0.000	0.1978	0.000	0.000
21	21	22	1	0.000	0.000	0.1978	0.000	0.000
22	22	23	1	0.000	0.000	0.1978	0.000	0.000
23	23	24	1	0.000	0.000	0.1978	0.000	0.000
24	24	25	1	0.000	0.000	0.1978	0.000	0.000
25	25	26	1	0.000	0.000	0.1978	0.000	0.000
26	26	27	1	0.000	0.000	0.1978	0.000	0.000
27	27	28	1	0.000	0.000	0.1978	0.000	0.000
28	28	29	1	0.000	0.000	0.1978	0.000	0.000
29	29	30	1	0.000	0.000	0.1978	0.000	0.000
30	30	31	1	0.000	0.000	0.1978	0.000	0.000
31	31	32	1	0.000	0.000	0.1978	0.000	0.000
32	32	33	1	0.000	0.000	0.1978	0.000	0.000
33	33	34	1	0.000	0.000	0.1978	0.000	0.000
34	34	35	1	0.000	0.000	0.1978	0.000	0.000
35	35	36	1	0.000	0.000	0.1978	0.000	0.000
36	36	37	1	0.000	0.000	0.1978	0.000	0.000
37	37	38	1	0.000	0.000	0.1978	0.000	0.000
38	38	39	1	0.000	0.000	0.1978	0.000	0.000
39	39	40	1	0.000	0.000	0.1978	0.000	0.000
40	40	41	1	0.000	0.000	0.1978	0.000	0.000
41	41	42	1	0.000	0.000	0.1978	0.000	0.000
42	42	43	1	0.000	0.000	0.1978	0.000	0.000
43	43	44	1	0.000	0.000	0.1978	0.000	0.000
44	44	45	1	0.000	0.000	0.1978	0.000	0.000
45	45	46	1	0.000	0.000	0.1978	0.000	0.000
46	46	47	1	0.000	0.000	0.1978	0.000	0.000
47	47	48	1	0.000	0.000	0.1978	0.000	0.000
48	48	49	1	0.000	0.000	0.1978	0.000	0.000
49	49	50	1	0.000	0.000	0.1978	0.000	0.000
50	50	51	1	0.000	0.000	0.1978	0.000	0.000

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+-----+
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
|
+-----+

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NO. OF NODAL LOADS (NLOAD) ..... 0
NO. OF LOAD CURVES (NLCUR) ..... 4
MAXIMUM POINTS/LCURVE (NPTM)..... 5

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+-----+
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
|
+-----+

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L O A D D A T A

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LOAD FUNCTION NUMBER = 1
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
1.20000	0.0000E+00
3.00000	0.0000E+00

```

LOAD FUNCTION NUMBER = 2
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
2.20000	0.0000E+00
3.00000	0.0000E+00

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

LOAD FUNCTION NUMBER = 3
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
3.00000	0.1000E+01

LOAD FUNCTION NUMBER = 4
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
3.00000	0.1000E+01

NO. OF DISTRIBUTED LOAD CARDS 0

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+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                Exe Time : 1 April 2019  17:23:05
+-----+

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L O A D B A L A N C E

STEP	1	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	1	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000

LOAD INPUT SECTION COMPLETED

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+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                Exe Time : 1 April 2019  17:23:05
+-----+

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NO. OF LAYERS 4
NO. OF DATA PER LAYER..... 100

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+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                Exe Time : 1 April 2019  17:23:05
+-----+

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LAYER DESCRIPTORS FOR STEP NO. 1

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)
ITEM NO.	5	GAMMAD	>= 18.500	(BOTH WALLS)
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)
ITEM NO.	9	U-FRICT	>= 35.000	(BOTH WALLS)
ITEM NO.	10	U-KA	>= 0.35700	WALL NO. 1
ITEM NO.	11	U-KP	>= 8.0370	WALL NO. 1
ITEM NO.	12	K0-NC	>= 0.50000	(BOTH WALLS)
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 35.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.23500	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.8730	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.47800	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.6750	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.35200	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.6450	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 20.000	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 10.000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.35000	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.4460	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.27200	WALL NO.	1
ITEM NO.	61	D-KP	>= 3.7540	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 11.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -8.2000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.45400	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.5420	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO. 59<math>\lt;math>D-FRICT <math>= 25.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.36900 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 2.5090 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

LAYER DESCRIPTORS FOR STEP NO. 2

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 8.0000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 18.500 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 8.5000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 35.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.35700 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 8.0370 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.50000 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-03 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 35.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.27100 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 5.8790 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-03 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 9.0000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= -2.4000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 19.500 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 9.5000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 8<math>\lt;math>U-COHE <math>= 30.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 25.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.47800 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 3.6750 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.53100 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-06 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 58<math>\lt;math>D-COHE <math>= 30.000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 25.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.40600 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 3.2220 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 2

ITEM NO. 1<math>\lt;math>NAME <math>= 10.000 (BOTH WALLS)
ITEM NO. 2<math>\lt;math>NATURE <math>= 1.0000 (BOTH WALLS)
ITEM NO. 3<math>\lt;math>LEVEL <math>= -6.9000 (BOTH WALLS)
ITEM NO. 4<math>\lt;math>WALL <math>= 1.0000 (BOTH WALLS)
ITEM NO. 5<math>\lt;math>GAMMAD <math>= 20.000 (BOTH WALLS)
ITEM NO. 6<math>\lt;math>GAMMAB <math>= 10.000 (BOTH WALLS)
ITEM NO. 7<math>\lt;math>GAMMAW <math>= 10.000 (BOTH WALLS)
ITEM NO. 9<math>\lt;math>U-FRICT <math>= 32.000 (BOTH WALLS)
ITEM NO. 10<math>\lt;math>U-KA <math>= 0.35000 WALL NO. 1
ITEM NO. 11<math>\lt;math>U-KP <math>= 5.4460 WALL NO. 1
ITEM NO. 12<math>\lt;math>KO-NC <math>= 0.53100 (BOTH WALLS)
ITEM NO. 13<math>\lt;math>NEXP <math>= 0.50000 (BOTH WALLS)
ITEM NO. 14<math>\lt;math>OCR <math>= 1.0000 (BOTH WALLS)
ITEM NO. 16<math>\lt;math>MODEL <math>= 3.0000 (BOTH WALLS)
ITEM NO. 25<math>\lt;math>WINKVC <math>= 3143.0 (BOTH WALLS)
ITEM NO. 26<math>\lt;math>WINKUR <math>= 9429.1 (BOTH WALLS)
ITEM NO. 27<math>\lt;math>U-PERM <math>= 0.10000E-06 (BOTH WALLS)
ITEM NO. 52<math>\lt;math>D-NATURE<math>= 1.0000 (BOTH WALLS)
ITEM NO. 53<math>\lt;math>D-LEVEL <math>= 0.0000 (BOTH WALLS)
ITEM NO. 59<math>\lt;math>D-FRICT <math>= 32.000 (BOTH WALLS)
ITEM NO. 60<math>\lt;math>D-KA <math>= 0.30700 WALL NO. 1
ITEM NO. 61<math>\lt;math>D-KP <math>= 4.8450 WALL NO. 1
ITEM NO. 77<math>\lt;math>D-PERM <math>= 0.10000E-06 (BOTH WALLS)

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	1	NAME	>= 11.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -8.2000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.45400	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.5420	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.40600	WALL NO.	1
ITEM NO.	61	D-KP	>= 3.2220	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

DEFAULT WATER UNIT WEIGHT = 10.000
AVERAGED ON 8 VALUES

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|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
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PHASE DESCRIPTORS

STEP NO.	1		LEFT WALL	RIGHT WALL
Y			0.000	-0.9990E+30
Z-PC			-0.4400	0.000
Z-EXCAVATION			-0.4400	0.000
Z-WATER TABLE			-1.000	-0.9990E+30
Q_AT_THE_FREE_FIELD_LEVEL			0.000	0.000
ZQ			0.000	0.000
DZW_OF_THE_WATER_TABLE			0.000	0.000
QS_ON_THE_EXCAVATION_SIDE			0.000	0.000
ZQS			0.000	-0.9990E+30
ZCUT			0.000	0.000
BALANCE LEVEL FOR PORE PRESSURES			-10.00	-10.00
WATER BEHAVIOUR FLAG (LINING OPT)			0.000	0.000
PORE_UPDATE_FLAG			0.000	0.000
PORE_TAB._FLAG (gt.0= use tabs)			0.000	0.000
lateral thrusts reduction elevatio			0.000	0.000
Downhill reduction factor for effe			0.000	0.000
Downhill reduction factor for pore			0.000	0.000
Uphill reduction factor for effect			0.000	0.000
Uphill reduction factor for pore p			0.000	0.000
SEISMIC HORIZONTAL ACCEL. Kh [g]			0.000	0.000
UPHILL VERTICAL ACCEL. Kv_uh [g]			0.000	0.000
DOWNHILL VERTICAL ACCEL.Kv_dh [g]			0.000	0.000
UPHILL BETA ANGLE (SLOPE) [deg]			0.000	0.000
UPHILL DELTA/PHI RATIO			0.000	0.000
DOWNHILL BETA ANGLE (SLOPE) [deg]			0.000	0.000
DOWNHILL DELTA/PHI RATIO			0.000	0.000
DYN.WATER BEHAVIOUR			0.000	0.000
Excess pore pressure RATIO Ru			0.000	0.000
SEISMIC PRESSURE LOWER VALUE			0.000	0.000
SEISMIC PRESSURE UPPER VALUE			0.000	0.000
SEISMIC PRESSURE LOWER LEVEL			0.000	0.000
SEISMIC PRESSURE UPPER LEVEL			0.000	0.000

=====end of step 1

STEP NO.	2		LEFT WALL	RIGHT WALL
Y			0.000	-0.9990E+30
Z-PC			-0.4400	0.000
Z-EXCAVATION			-4.050	0.000
Z-WATER TABLE			-1.000	-0.9990E+30
Q_AT_THE_FREE_FIELD_LEVEL			0.000	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```
ZQ 0.000 0.000
DZW_OF_THE_WATER_TABLE 3.050 0.000
QS_ON_THE_EXCAVATION_SIDE 0.000 0.000
ZQS 0.000 -0.9990E+30
ZCUT 0.000 0.000
BALANCE LEVEL FOR PORE PRESSURES -10.00 -10.00
WATER_BEHAVIOUR_FLAG (LINING OPT) 0.000 0.000
PORE_UPDATE_FLAG 0.000 0.000
PORE_TAB._FLAG (gt.0= use tabs) 0.000 0.000
lateral thrusts reduction elevatio 0.000 0.000
Downhill reduction factor for effe 0.000 0.000
Downhill reduction factor for pore 0.000 0.000
Uphill reduction factor for effect 0.000 0.000
Uphill reduction factor for pore p 0.000 0.000
SEISMIC HORIZONTAL ACCEL. Kh [g] 0.000 0.000
UPHILL VERTICAL ACCEL. Kv_uh [g] 0.000 0.000
DOWNHILL VERTICAL ACCEL.Kv_dh [g] 0.000 0.000
UPHILL BETA ANGLE (SLOPE) [deg] 0.000 0.000
UPHILL DELTA/PHI RATIO 0.000 0.000
DOWNHILL BETA ANGLE (SLOPE) [deg] 0.000 0.000
DOWNHILL DELTA/PHI RATIO 0.000 0.000
DYN.WATER BEHAVIOUR 0.000 0.000
Excess pore pressure RATIO Ru 0.000 0.000
SEISMIC PRESSURE LOWER VALUE 0.000 0.000
SEISMIC PRESSURE UPPER VALUE 0.000 0.000
SEISMIC PRESSURE LOWER LEVEL 0.000 0.000
SEISMIC PRESSURE UPPER LEVEL 0.000 0.000
```

=====end of step 2

LEFT-HAND WALL

```
LOWER LEVEL -10.00000
UPPER LEVEL 0.00000
```

RIGHT-HAND WALL

```
LOWER LEVEL -10.00000
UPPER LEVEL 0.00000
```

```
+-----+
| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
| NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116 |
| Exe Time : 1 April 2019 17:23:05 |
+-----+
```

INITIAL STRESS TABLES

SECTION

NUMBER OF DEFINED TABLES 1

INPUT DATA FOR INITIAL STRESS SET NO. 1
PERTAINING SOIL ELEMENTS AT Y-COORD 0.0000

ACTIVATION TIME 1.0000
END TIME (TIME BEYOND WHICH IT IS REMOVED) 2.0000

TYPE BOUSSINESQ

```
HORIZONTAL DISTANCE (DY) 1.450000000000000
FOUNDATION WIDTH (B) 16.550000000000000
ZETA-F..... 0.000000000000000E+000
Q-F ..... 20.000000000000000
BETA ..... 45.000000000000000
BEHAVIOUR (0=FREE, 1=REFLECTING) 0.000000000000000E+000
```

ELEMENT GROUPS BACKUP AREA CAN STAY IN CORE AT
POSITION 2718

NO. OF D.P.W FOR THIS AREA 6023
MAX NO. OF D.P.W. AVAILABLE 81920
** MAX NO OF ITERATIONS SET TO 40

```
ITER 0 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIOR= 0.000
```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 1 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 2 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

```

+-----+
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLELRaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
+-----+

```

New Project
SOLUTION REACHED USING 2 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 1 (AT TIME 1.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

Y-DISPL.F X-ROT. F
(02) (04) (

ALL NODAL POINTS HAVE ZERO DISPLACEMENT COMPONENTS

```

+-----+
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLELRaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
+-----+

```

New Project

STRESS RESULTS FOR GROUP NO. 1

0 L
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-1.0000	0.000	
4 D	1.161	0.000	2.960	5.803	2.960	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-0.8000	0.000	
5 D	1.733	0.000	6.660	8.667	6.660	8.667	V-C	3143.	-1.0000	0.000	
1.000	1.000	8.667	0.000	0.000	UGO_2_10_L_0		V-C	3143.	-1.0000	0.000	
6 D	2.259	0.000	10.36	11.29	10.36	11.29	V-C	3143.	-1.0000	0.000	
1.000	1.000	11.29	0.000	0.000	UGO_2_10_L_0						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

7 D	2.942	0.000	12.06	12.71	12.06	12.71	V-C	3143.	-1.200	2.000
1.000	1.000	14.71	0.000	0.000	UG0_2_10_L_0					
8 D	3.593	0.000	13.76	13.96	13.76	13.96	V-C	3143.	-1.400	4.000
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0					
9 D	4.217	0.000	15.46	15.08	15.46	15.08	V-C	3143.	-1.600	6.000
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0					
10 D	4.822	0.000	17.16	16.11	17.16	16.11	V-C	3143.	-1.800	8.000
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0					
11 D	5.412	0.000	18.86	17.06	18.86	17.06	V-C	3143.	-2.000	10.00
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0					
12 D	5.991	0.000	20.56	17.95	20.56	17.95	V-C	3143.	-2.200	12.00
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0					
13 D	6.700	0.000	22.26	19.50	22.26	19.50	V-C	3143.	-2.400	14.00
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0					
14 D	7.297	0.000	24.16	20.48	24.16	20.48	V-C	3143.	-2.600	16.00
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0					
15 D	7.889	0.000	26.06	21.45	26.06	21.45	V-C	3143.	-2.800	18.00
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0					
16 D	8.478	-2.8259E-18	27.96	22.39	27.96	22.39	V-C	3143.	-3.000	20.00
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0					
17 D	9.065	-2.8259E-18	29.86	23.32	29.86	23.32	V-C	3143.	-3.200	22.00
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0					
18 D	9.649	0.000	31.76	24.25	31.76	24.25	V-C	3143.	-3.400	24.00
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0					
19 D	10.23	-2.8259E-18	33.66	25.16	33.66	25.16	V-C	3143.	-3.600	26.00
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0					
20 D	10.81	0.000	35.56	26.07	35.56	26.07	V-C	3143.	-3.800	28.00
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0					
21 D	11.40	0.000	37.46	26.98	37.46	26.98	V-C	3143.	-4.000	30.00
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0					
22 D	11.98	0.000	39.36	27.88	39.36	27.88	V-C	3143.	-4.200	32.00
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0					
23 D	12.56	0.000	41.26	28.78	41.26	28.78	V-C	3143.	-4.400	34.00
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0					
24 D	13.14	0.000	43.16	29.68	43.16	29.68	V-C	3143.	-4.600	36.00
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0					
25 D	13.72	0.000	45.06	30.58	45.06	30.58	V-C	3143.	-4.800	38.00
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0					
26 D	14.30	0.000	46.96	31.48	46.96	31.48	V-C	3143.	-5.000	40.00
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0					
27 D	14.87	0.000	48.86	32.37	48.86	32.37	V-C	3143.	-5.200	42.00
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0					
28 D	15.45	-2.8259E-18	50.76	33.27	50.76	33.27	V-C	3143.	-5.400	44.00
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0					
29 D	16.03	0.000	52.66	34.17	52.66	34.17	V-C	3143.	-5.600	46.00
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0					
30 D	16.61	0.000	54.56	35.07	54.56	35.07	V-C	3143.	-5.800	48.00
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0					
31 D	17.19	0.000	56.46	35.97	56.46	35.97	V-C	3143.	-6.000	50.00
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0					
32 D	17.77	0.000	58.36	36.87	58.36	36.87	V-C	3143.	-6.200	52.00
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0					
33 D	18.35	0.000	60.26	37.77	60.26	37.77	V-C	3143.	-6.400	54.00
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0					
34 D	18.93	5.6518E-18	62.16	38.67	62.16	38.67	V-C	3143.	-6.600	56.00
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0					
35 D	19.51	0.000	64.06	39.57	64.06	39.57	V-C	3143.	-6.800	58.00
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0					
36 D	20.10	0.000	66.01	40.50	66.01	40.50	V-C	3143.	-7.000	60.00
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0					
37 D	20.69	0.000	68.01	41.46	68.01	41.46	V-C	3143.	-7.200	62.00
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0					
38 D	21.28	0.000	70.01	42.42	70.01	42.42	V-C	3143.	-7.400	64.00
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0					
39 D	21.88	0.000	72.01	43.38	72.01	43.38	V-C	3143.	-7.600	66.00
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0					
40 D	22.47	0.000	74.01	44.35	74.01	44.35	V-C	3143.	-7.800	68.00
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0					
41 D	23.06	0.000	76.01	45.31	76.01	45.31	V-C	3143.	-8.000	70.00
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0					
42 D	23.66	0.000	78.01	46.28	78.01	46.28	V-C	3143.	-8.200	72.00
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0					
43 D	24.24	0.000	79.91	47.19	79.91	47.19	V-C	3143.	-8.400	74.00
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0					
44 D	24.82	-5.6518E-18	81.81	48.11	81.81	48.11	V-C	3143.	-8.600	76.00
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0					
45 D	25.40	-5.6518E-18	83.71	49.02	83.71	49.02	V-C	3143.	-8.800	78.00
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0					
46 D	25.99	0.000	85.61	49.94	85.61	49.94	V-C	3143.	-9.000	80.00
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0					
47 D	26.57	0.000	87.51	50.86	87.51	50.86	V-C	3143.	-9.200	82.00
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0					
48 D	27.16	0.000	89.41	51.79	89.41	51.79	V-C	3143.	-9.400	84.00
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
49 D	27.74	0.000	91.31	52.71	91.31	52.71	V-C	3143.	-9.600	86.00
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0					
50 D	28.33	5.6518E-18	93.21	53.63	93.21	53.63	V-C	3143.	-9.800	88.00
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0					
51 D	14.46	0.000	95.11	54.56	95.11	54.56	V-C	3143.	-10.00	90.00

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000 1.000 144.6 0.000 0.000 UG2_4_26346_L_0

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|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLELRaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
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New Project

STRESS RESULTS FOR GROUP NO. 2

O_R
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-1.0000	0.000	
4 D	1.161	0.000	3.208	5.803	3.208	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-0.8000	0.000	
5 D	1.733	0.000	7.177	8.667	7.177	8.667	V-C	3143.	-1.0000	0.000	
1.000	1.000	8.667	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-1.2000	2.000	
6 D	2.259	0.000	11.23	11.29	11.23	11.29	V-C	3143.	-1.4000	4.000	
1.000	1.000	11.29	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-1.6000	6.000	
7 D	2.942	0.000	13.33	12.71	13.33	12.71	V-C	3143.	-1.8000	8.000	
1.000	1.000	14.71	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-2.0000	10.00	
8 D	3.593	0.000	15.47	13.96	15.47	13.96	V-C	3143.	-2.2000	12.00	
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-2.4000	14.00	
9 D	4.217	0.000	17.60	15.08	17.60	15.08	V-C	3143.	-2.6000	16.00	
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-2.8000	18.00	
10 D	4.822	0.000	19.94	16.11	19.94	16.11	V-C	3143.	-3.0000	20.00	
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-3.2000	22.00	
11 D	5.412	0.000	22.29	17.06	22.29	17.06	V-C	3143.	-3.4000	24.00	
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-3.6000	26.00	
12 D	5.991	0.000	24.56	17.95	24.56	17.95	V-C	3143.	-3.8000	28.00	
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0		V-C	3143.	-4.0000	30.00	
13 D	6.700	0.000	26.76	19.50	26.76	19.50	V-C	3143.	-4.2000	32.00	
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0		V-C	3143.	-4.4000	34.00	
14 D	7.297	0.000	29.10	20.48	29.10	20.48	V-C	3143.	-4.6000	36.00	
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0		V-C	3143.	-4.8000	38.00	
15 D	7.889	0.000	31.97	21.45	31.97	21.45	V-C	3143.	-5.0000	40.00	
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0		V-C	3143.	-5.2000	42.00	
16 D	8.478	2.8259E-18	34.18	22.39	34.18	22.39	V-C	3143.	-5.4000	44.00	
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0		V-C	3143.	-5.6000	46.00	
17 D	9.065	2.8259E-18	36.37	23.32	36.37	23.32	V-C	3143.	-5.8000	48.00	
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0		V-C	3143.	-6.0000	50.00	
18 D	9.649	0.000	38.53	24.25	38.53	24.25	V-C	3143.			
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
19 D	10.23	2.8259E-18	40.66	25.16	40.66	25.16	V-C	3143.			
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
20 D	10.81	0.000	43.20	26.07	43.20	26.07	V-C	3143.			
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
21 D	11.40	0.000	45.28	26.98	45.28	26.98	V-C	3143.			
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
22 D	11.98	0.000	47.35	27.88	47.35	27.88	V-C	3143.			
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
23 D	12.56	0.000	49.40	28.78	49.40	28.78	V-C	3143.			
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
24 D	13.14	0.000	51.79	29.68	51.79	29.68	V-C	3143.			
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
25 D	13.72	0.000	53.81	30.58	53.81	30.58	V-C	3143.			
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
26 D	14.30	0.000	55.82	31.48	55.82	31.48	V-C	3143.			
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
27 D	14.87	0.000	57.82	32.37	57.82	32.37	V-C	3143.			
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
28 D	15.45	2.8259E-18	59.82	33.27	59.82	33.27	V-C	3143.			
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
29 D	16.03	0.000	62.10	34.17	62.10	34.17	V-C	3143.			
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
30 D	16.61	0.000	64.08	35.07	64.08	35.07	V-C	3143.			
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0		V-C	3143.			
31 D	17.19	0.000	66.05	35.97	66.05	35.97	V-C	3143.			
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0		V-C	3143.			

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

32 D	17.77	0.000	68.02	36.87	68.02	36.87	V-C	3143.	-6.200	52.00
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0					
33 D	18.35	0.000	69.98	37.77	69.98	37.77	V-C	3143.	-6.400	54.00
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0					
34 D	18.93	-5.6518E-18	72.19	38.67	72.19	38.67	V-C	3143.	-6.600	56.00
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0					
35 D	19.51	0.000	74.14	39.57	74.14	39.57	V-C	3143.	-6.800	58.00
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0					
36 D	20.10	0.000	76.14	40.50	76.14	40.50	V-C	3143.	-7.000	60.00
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0					
37 D	20.69	0.000	78.19	41.46	78.19	41.46	V-C	3143.	-7.200	62.00
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0					
38 D	21.28	0.000	80.23	42.42	80.23	42.42	V-C	3143.	-7.400	64.00
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0					
39 D	21.88	0.000	82.49	43.38	82.49	43.38	V-C	3143.	-7.600	66.00
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0					
40 D	22.47	0.000	84.52	44.35	84.52	44.35	V-C	3143.	-7.800	68.00
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0					
41 D	23.06	0.000	86.56	45.31	86.56	45.31	V-C	3143.	-8.000	70.00
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0					
42 D	23.66	0.000	88.59	46.28	88.59	46.28	V-C	3143.	-8.200	72.00
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0					
43 D	24.24	0.000	90.52	47.19	90.52	47.19	V-C	3143.	-8.400	74.00
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0					
44 D	24.82	5.6518E-18	92.64	48.11	92.64	48.11	V-C	3143.	-8.600	76.00
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0					
45 D	25.40	5.6518E-18	94.57	49.02	94.57	49.02	V-C	3143.	-8.800	78.00
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0					
46 D	25.99	0.000	96.49	49.94	96.49	49.94	V-C	3143.	-9.000	80.00
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0					
47 D	26.57	0.000	98.41	50.86	98.41	50.86	V-C	3143.	-9.200	82.00
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0					
48 D	27.16	0.000	100.5	51.79	100.5	51.79	V-C	3143.	-9.400	84.00
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
49 D	27.74	0.000	102.4	52.71	102.4	52.71	V-C	3143.	-9.600	86.00
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0					
50 D	28.33	-5.6518E-18	104.3	53.63	104.3	53.63	V-C	3143.	-9.800	88.00
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0					
51 D	14.46	0.000	106.3	54.56	106.3	54.56	V-C	3143.	-10.00	90.00
1.000	1.000	144.6	0.000	0.000	UG2_4_26346_L_0					

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|                                     PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                                     NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|                                     Exe Time : 1 April 2019  17:23:05
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New Project

STRESS RESULTS FOR GROUP NO. 3

Wallelement New 28707

ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50

CURRENT TIME IS 1.0000

WALL2D ELEMENT

EL	TA	TB	MA	MB

***** NO ONE ELEMENT ACTIVE AT CURRENT STEP *****

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ITER      0  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05  RIMNOR= 0.000
            RENORM= 2289.      REMNOR= 0.000      RATIO =0.3596      TOLER =0.1000E-03  NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03  RMSMAL= 0.000
            RDT =0.1770E+05    RDR = 0.000
            RATIOI=0.3596     RATIOI= 0.000
            MAX UN= 0.000     IEQ= 102 NODE  51 DOF  2  X-ROT. F
            MIN UN=-11.06    IEQ= 41 NODE  21 DOF  1  Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS  0

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ITER      2  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05  RIMNOR= 0.000
            RENORM= 131.4      REMNOR=0.3689E-20  RATIO =0.8614E-01  TOLER =0.1000E-03  NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03  RMSMAL= 0.000
            RDT =0.1770E+05    RDR = 0.000
            RATIOI=0.8614E-01  RATIOI= 0.000
            MAX UN=0.1552E-09  IEQ= 39 NODE  20 DOF  1  Y-DISPL.F
            MIN UN=-3.792     IEQ= 7 NODE  4 DOF  1  Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS  0

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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ITER      3  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM= 237.7      REMNOR=0.7544E-19 RATIO =0.1159      TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.1159 RATIOI= 0.000
            MAX UN=0.1082E-08 IEQ= 15 NODE      8 DOF      1 Y-DISPL.F
            MIN UN=-8.762 IEQ= 39 NODE      20 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS      0

ITER      4  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM= 41.91      REMNOR=0.2877E-19 RATIO =0.4866E-01 TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.4866E-01 RATIOI= 0.000
            MAX UN=0.5233 IEQ= 99 NODE      50 DOF      1 Y-DISPL.F
            MIN UN=-4.376 IEQ= 57 NODE      29 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS      0

ITER      5  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM=0.8422      REMNOR=0.1568E-19 RATIO =0.6897E-02 TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.6897E-02 RATIOI= 0.000
            MAX UN=0.1028E-08 IEQ= 19 NODE      10 DOF      1 Y-DISPL.F
            MIN UN=-.7410 IEQ= 65 NODE      33 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS      0

ITER      6  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM=0.1591E-03 REMNOR=0.1499E-19 RATIO =0.9479E-04 TOLER =0.1000E-03 CONVERGED !
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.9479E-04 RATIOI= 0.000
            MAX UN=0.1051E-01 IEQ= 95 NODE      48 DOF      1 Y-DISPL.F
            MIN UN=-.5170E-09 IEQ= 53 NODE      27 DOF      1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS      0

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|          PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*          |
|                                                                                                     |
|          NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116          |
|          Exe Time : 1 April 2019  17:23:05          |
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New Project
SOLUTION REACHED USING 6 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 2 (AT TIME 2.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

	Y-DISPL.F (02)	X-ROT. F (04)
1	-3.2139233E-02	4.7857883E-03
2	-3.1182075E-02	4.7857883E-03
3	-3.0224917E-02	4.7857883E-03
4	-2.9267760E-02	4.7857883E-03
5	-2.8310604E-02	4.7857544E-03
6	-2.7353468E-02	4.7855772E-03
7	-2.6396396E-02	4.7850624E-03
8	-2.5439486E-02	4.7838919E-03
9	-2.4482915E-02	4.7815847E-03
10	-2.3526971E-02	4.7774964E-03
11	-2.2572089E-02	4.7708174E-03
12	-2.1618882E-02	4.7605704E-03
13	-2.0668175E-02	4.7456112E-03
14	-1.9721020E-02	4.7249125E-03
15	-1.8778651E-02	4.6976013E-03
16	-1.7842485E-02	4.6627131E-03
17	-1.6914137E-02	4.6191914E-03
18	-1.5995456E-02	4.5658889E-03
19	-1.5088516E-02	4.5015660E-03
20	-1.4195653E-02	4.4248919E-03
21	-1.3319482E-02	4.3344444E-03
22	-1.2462899E-02	4.2287086E-03
23	-1.1629000E-02	4.1079431E-03
24	-1.0820586E-02	3.9742092E-03

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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25 -1.0040046E-02 3.8295369E-03
26 -9.2893672E-03 3.6759231E-03
27 -8.5701450E-03 3.5153355E-03
28 -7.8835723E-03 3.3497125E-03
29 -7.2304677E-03 3.1809737E-03
30 -6.6112638E-03 3.0110211E-03
31 -6.0260141E-03 2.8417464E-03
32 -5.4743969E-03 2.6750368E-03
33 -4.9557054E-03 2.5127785E-03
34 -4.4688624E-03 2.3568669E-03
35 -4.0124114E-03 2.2091636E-03
36 -3.5845382E-03 2.0713415E-03
37 -3.1831613E-03 1.9442505E-03
38 -2.8061136E-03 1.8280558E-03
39 -2.4512024E-03 1.7229101E-03
40 -2.1162037E-03 1.6289525E-03
41 -1.7988669E-03 1.5463129E-03
42 -1.4969162E-03 1.4751087E-03
43 -1.2080621E-03 1.4153239E-03
44 -9.3004390E-04 1.3666800E-03
45 -6.6068586E-04 1.3286198E-03
46 -3.9794699E-04 1.3003148E-03
47 -1.3998231E-04 1.2806744E-03
48 1.1481059E-04 1.2683514E-03
49 3.6774088E-04 1.2617679E-03
50 6.1978185E-04 1.2591648E-03
51 8.7154962E-04 1.2586287E-03

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|                PARATIEPLUS (TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION *Build date:Jun 29, 2018* |
|                NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116 |
|                Exe Time : 1 April 2019  17:23:05 |
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New Project

STRESS RESULTS FOR GROUP NO. 1

0 L
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4	0.000	--	--	--	--	--	REMOVED	--	-0.6000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
5	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
6	0.000	--	--	--	--	--	REMOVED	--	-1.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
7	0.000	--	--	--	--	--	REMOVED	--	-1.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
8	0.000	--	--	--	--	--	REMOVED	--	-1.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
9	0.000	--	--	--	--	--	REMOVED	--	-1.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
10	0.000	--	--	--	--	--	REMOVED	--	-1.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
11	0.000	--	--	--	--	--	REMOVED	--	-2.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
12	0.000	--	--	--	--	--	REMOVED	--	-2.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
13	0.000	--	--	--	--	--	REMOVED	--	-2.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
14	0.000	--	--	--	--	--	REMOVED	--	-2.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
15	0.000	--	--	--	--	--	REMOVED	--	-2.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
16	0.000	--	--	--	--	--	REMOVED	--	-3.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
17	0.000	--	--	--	--	--	REMOVED	--	-3.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
18	0.000	--	--	--	--	--	REMOVED	--	-3.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

19	0.000	--	--	--	--	--	REMOVED	--	-3.600	0.000
1.000	1.000	0.000	0.000	0.000	not available					
20	0.000	--	--	--	--	--	REMOVED	--	-3.800	0.000
1.000	1.000	0.000	0.000	0.000	not available					
21	0.000	--	--	--	--	--	REMOVED	--	-4.000	0.000
1.000	1.000	0.000	0.000	0.000	not available					
22 D	12.62	1.2463E-02	1.087	61.24	39.36	61.24	V-C	3143.	-4.200	1.838
1.000	1.000	63.08	0.000	0.000	UG2_4_11_L_0					
23 D	12.83	1.1629E-02	2.537	59.84	41.26	59.84	V-C	3143.	-4.400	4.288
1.000	1.000	64.13	0.000	0.000	UG2_4_11_L_0					
24 D	13.02	1.0821E-02	3.987	58.37	43.16	58.37	V-C	3143.	-4.600	6.738
1.000	1.000	65.11	0.000	0.000	UG2_4_11_L_0					
25 D	13.22	1.0040E-02	5.437	56.93	45.06	56.93	V-C	3143.	-4.800	9.188
1.000	1.000	66.12	0.000	0.000	UG2_4_11_L_0					
26 D	13.44	9.2894E-03	6.887	55.54	46.96	55.54	V-C	3143.	-5.000	11.64
1.000	1.000	67.18	0.000	0.000	UG2_4_11_L_0					
27 D	13.66	8.5701E-03	8.337	54.23	48.86	54.23	V-C	3143.	-5.200	14.09
1.000	1.000	68.32	0.000	0.000	UG2_4_11_L_0					
28 D	13.91	7.8836E-03	9.787	53.01	50.76	53.01	V-C	3143.	-5.400	16.54
1.000	1.000	69.55	0.000	0.000	UG2_4_11_L_0					
29 D	14.17	7.2305E-03	11.24	51.88	52.66	51.88	V-C	3143.	-5.600	18.99
1.000	1.000	70.87	0.000	0.000	UG2_4_11_L_0					
30 D	14.46	6.6113E-03	12.69	50.85	54.56	50.85	V-C	3143.	-5.800	21.44
1.000	1.000	72.28	0.000	0.000	UG2_4_11_L_0					
31 D	14.76	6.0260E-03	14.14	49.91	56.46	49.91	V-C	3143.	-6.000	23.89
1.000	1.000	73.80	0.000	0.000	UG2_4_11_L_0					
32 D	15.08	5.4744E-03	15.59	49.08	58.36	49.08	V-C	3143.	-6.200	26.34
1.000	1.000	75.42	0.000	0.000	UG2_4_11_L_0					
33 D	15.43	4.9557E-03	17.04	48.35	60.26	48.35	V-C	3143.	-6.400	28.79
1.000	1.000	77.14	0.000	0.000	UG2_4_11_L_0					
34 D	15.79	4.4689E-03	18.49	47.71	62.16	47.71	V-C	3143.	-6.600	31.24
1.000	1.000	78.95	0.000	0.000	UG2_4_11_L_0					
35 D	16.17	4.0124E-03	19.94	47.17	64.06	47.17	V-C	3143.	-6.800	33.69
1.000	1.000	80.86	0.000	0.000	UG2_4_11_L_0					
36 D	16.58	3.5845E-03	21.44	46.74	66.01	46.74	V-C	3143.	-7.000	36.14
1.000	1.000	82.88	0.000	0.000	UG3_4271_12_L_0					
37 D	17.00	3.1832E-03	22.99	46.43	68.01	46.43	V-C	3143.	-7.200	38.59
1.000	1.000	85.02	0.000	0.000	UG3_4271_12_L_0					
38 D	17.45	2.8061E-03	24.54	46.19	70.01	46.19	V-C	3143.	-7.400	41.04
1.000	1.000	87.23	0.000	0.000	UG3_4271_12_L_0					
39 D	17.90	2.4512E-03	26.09	46.01	72.01	46.01	V-C	3143.	-7.600	43.49
1.000	1.000	89.50	0.000	0.000	UG3_4271_12_L_0					
40 D	18.37	2.1162E-03	27.63	45.90	74.01	45.90	V-C	3143.	-7.800	45.94
1.000	1.000	91.84	0.000	0.000	UG3_4271_12_L_0					
41 D	18.85	1.7989E-03	29.18	45.85	76.01	45.85	V-C	3143.	-8.000	48.39
1.000	1.000	94.24	0.000	0.000	UG3_4271_12_L_0					
42 D	19.14	1.4969E-03	30.73	44.86	78.01	46.33	UL-RL	9429.	-8.200	50.84
1.000	1.000	95.70	0.000	0.000	UG3_4271_12_L_0					
43 D	19.27	1.2081E-03	32.18	43.08	79.91	47.19	UL-RL	9429.	-8.400	53.29
1.000	1.000	96.37	0.000	0.000	UG2_4_26346_L_0					
44 D	19.41	9.3004E-04	33.63	41.29	81.81	48.11	UL-RL	9429.	-8.600	55.74
1.000	1.000	97.03	0.000	0.000	UG2_4_26346_L_0					
45 D	19.55	6.6069E-04	35.08	39.58	83.71	49.02	UL-RL	9429.	-8.800	58.19
1.000	1.000	97.77	0.000	0.000	UG2_4_26346_L_0					
46 D	19.71	3.9795E-04	36.53	37.93	85.61	49.94	UL-RL	9429.	-9.000	60.64
1.000	1.000	98.57	0.000	0.000	UG2_4_26346_L_0					
47 D	19.88	1.3998E-04	37.98	36.33	87.51	50.86	UL-RL	9429.	-9.200	63.09
1.000	1.000	99.42	0.000	0.000	UG2_4_26346_L_0					
48 D	20.06	-1.1481E-04	39.43	34.76	89.41	51.79	UL-RL	9429.	-9.400	65.54
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
49 D	20.24	-3.6774E-04	40.88	33.20	91.31	52.71	UL-RL	9429.	-9.600	67.99
1.000	1.000	101.2	0.000	0.000	UG2_4_26346_L_0					
50 D	20.42	-6.1978E-04	42.33	31.65	93.21	53.63	UL-RL	9429.	-9.800	70.44
1.000	1.000	102.1	0.000	0.000	UG2_4_26346_L_0					
51 D	10.30	-8.7155E-04	43.78	30.10	95.11	54.56	UL-RL	9429.	-10.00	72.89
1.000	1.000	103.0	0.000	0.000	UG2_4_26346_L_0					

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| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
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| NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116 |
| Exe Time : 1 April 2019 17:23:05 |
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New Project

STRESS RESULTS FOR GROUP NO. 2

OR
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FORCE DISPL-Y VERTICAL-P HORIZON.-P MAX-V-P MAX-H-P STATE STIFFNESS Z-LEVEL PORE E

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

FACTOR	UFACTOR	Peq	Su_a	Su_p	LAYER					
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000
1.000	1.000	0.000	0.000	0.000	not available					
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000
1.000	1.000	0.000	0.000	0.000	not available					
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000
1.000	1.000	0.000	0.000	0.000	not available					
4 D	0.2291	-2.9268E-02	3.208	1.145	3.208	5.803	ACTIVE	0.000	-0.6000	0.000
1.000	1.000	1.145	0.000	0.000	UG0_2_10_L_0					
5 D	0.5124	-2.8311E-02	7.177	2.562	7.177	8.667	ACTIVE	0.000	-0.8000	0.000
1.000	1.000	2.562	0.000	0.000	UG0_2_10_L_0					
6 D	0.8016	-2.7353E-02	11.23	4.008	11.23	11.29	ACTIVE	0.000	-1.000	0.000
1.000	1.000	4.008	0.000	0.000	UG0_2_10_L_0					
7 D	1.352	-2.6396E-02	13.33	4.760	13.33	12.71	ACTIVE	0.000	-1.200	2.000
1.000	1.000	6.760	0.000	0.000	UG0_2_10_L_0					
8 D	1.904	-2.5439E-02	15.47	5.521	15.47	13.96	ACTIVE	0.000	-1.400	3.999
1.000	1.000	9.520	0.000	0.000	UG0_2_10_L_0					
9 D	2.457	-2.4483E-02	17.60	6.284	17.60	15.09	ACTIVE	0.000	-1.600	5.999
1.000	1.000	12.28	0.000	0.000	UG0_2_10_L_0					
10 D	3.023	-2.3527E-02	19.94	7.118	19.94	16.11	ACTIVE	0.000	-1.800	7.998
1.000	1.000	15.12	0.000	0.000	UG0_2_10_L_0					
11 D	3.592	-2.2572E-02	22.30	7.960	22.30	17.06	ACTIVE	0.000	-2.000	9.998
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0					
12 D	4.154	-2.1619E-02	24.57	8.770	24.57	17.96	ACTIVE	0.000	-2.200	12.00
1.000	1.000	20.77	0.000	0.000	UG0_2_10_L_0					
13 D	2.799	-2.0668E-02	26.77	0.000	26.77	19.50	ACTIVE	0.000	-2.400	14.00
1.000	1.000	14.00	0.000	0.000	UG2_4_11_L_0					
14 D	3.109	-1.9721E-02	29.55	0.000	29.55	20.73	ACTIVE	0.000	-2.600	15.55
1.000	1.000	15.55	0.000	0.000	UG2_4_11_L_0					
15 D	3.419	-1.8779E-02	32.87	0.000	32.87	21.93	ACTIVE	0.000	-2.800	17.10
1.000	1.000	17.10	0.000	0.000	UG2_4_11_L_0					
16 D	3.729	-1.7842E-02	35.54	0.000	35.54	23.11	ACTIVE	0.000	-3.000	18.65
1.000	1.000	18.65	0.000	0.000	UG2_4_11_L_0					
17 D	4.039	-1.6914E-02	38.17	0.000	38.17	24.28	ACTIVE	0.000	-3.200	20.20
1.000	1.000	20.20	0.000	0.000	UG2_4_11_L_0					
18 D	4.349	-1.5995E-02	40.78	0.000	40.78	25.44	ACTIVE	0.000	-3.400	21.75
1.000	1.000	21.75	0.000	0.000	UG2_4_11_L_0					
19 D	4.659	-1.5089E-02	43.37	0.000	43.37	26.60	ACTIVE	0.000	-3.600	23.30
1.000	1.000	23.30	0.000	0.000	UG2_4_11_L_0					
20 D	4.969	-1.4196E-02	46.36	0.000	46.36	27.75	ACTIVE	0.000	-3.800	24.85
1.000	1.000	24.85	0.000	0.000	UG2_4_11_L_0					
21 D	5.279	-1.3319E-02	48.89	0.000	48.89	28.89	ACTIVE	0.000	-4.000	26.40
1.000	1.000	26.40	0.000	0.000	UG2_4_11_L_0					
22 D	5.589	-1.2463E-02	51.40	0.000	51.40	30.03	ACTIVE	0.000	-4.200	27.95
1.000	1.000	27.95	0.000	0.000	UG2_4_11_L_0					
23 D	5.899	-1.1629E-02	53.90	0.000	53.90	31.17	ACTIVE	0.000	-4.400	29.50
1.000	1.000	29.50	0.000	0.000	UG2_4_11_L_0					
24 D	6.209	-1.0821E-02	56.75	0.000	56.75	32.31	ACTIVE	0.000	-4.600	31.05
1.000	1.000	31.05	0.000	0.000	UG2_4_11_L_0					
25 D	6.519	-1.0040E-02	59.21	0.000	59.21	33.45	ACTIVE	0.000	-4.800	32.60
1.000	1.000	32.60	0.000	0.000	UG2_4_11_L_0					
26 D	6.829	-9.2894E-03	61.67	0.000	61.67	34.58	ACTIVE	0.000	-5.000	34.15
1.000	1.000	34.15	0.000	0.000	UG2_4_11_L_0					
27 D	7.139	-8.5701E-03	64.13	0.000	64.13	35.72	ACTIVE	0.000	-5.200	35.69
1.000	1.000	35.69	0.000	0.000	UG2_4_11_L_0					
28 D	7.449	-7.8836E-03	66.57	0.000	66.57	36.86	ACTIVE	0.000	-5.400	37.24
1.000	1.000	37.24	0.000	0.000	UG2_4_11_L_0					
29 D	7.759	-7.2305E-03	69.31	0.000	69.31	37.99	ACTIVE	0.000	-5.600	38.79
1.000	1.000	38.79	0.000	0.000	UG2_4_11_L_0					
30 D	8.069	-6.6113E-03	71.73	0.000	71.73	39.13	ACTIVE	0.000	-5.800	40.34
1.000	1.000	40.34	0.000	0.000	UG2_4_11_L_0					
31 D	8.379	-6.0260E-03	74.15	0.000	74.15	40.27	ACTIVE	0.000	-6.000	41.89
1.000	1.000	41.89	0.000	0.000	UG2_4_11_L_0					
32 D	8.689	-5.4744E-03	76.57	0.000	76.57	41.41	ACTIVE	0.000	-6.200	43.44
1.000	1.000	43.44	0.000	0.000	UG2_4_11_L_0					
33 D	8.999	-4.9557E-03	78.99	0.000	78.99	42.55	ACTIVE	0.000	-6.400	44.99
1.000	1.000	44.99	0.000	0.000	UG2_4_11_L_0					
34 D	9.619	-4.4689E-03	81.65	1.553	81.65	43.69	UL-RL	9429.	-6.600	46.54
1.000	1.000	48.10	0.000	0.000	UG2_4_11_L_0					
35 D	11.02	-4.0124E-03	84.05	6.999	84.05	44.83	UL-RL	9429.	-6.800	48.09
1.000	1.000	55.09	0.000	0.000	UG2_4_11_L_0					
36 D	15.98	-3.5845E-03	86.50	30.27	86.50	46.00	ACTIVE	0.000	-7.000	49.64
1.000	1.000	79.92	0.000	0.000	UG3_4271_12_L_0					
37 D	16.47	-3.1832E-03	88.99	31.15	88.99	47.20	ACTIVE	0.000	-7.200	51.19
1.000	1.000	82.34	0.000	0.000	UG3_4271_12_L_0					
38 D	16.95	-2.8061E-03	91.49	32.02	91.49	48.40	ACTIVE	0.000	-7.400	52.74
1.000	1.000	84.76	0.000	0.000	UG3_4271_12_L_0					
39 D	17.45	-2.4512E-03	94.19	32.97	94.19	49.60	ACTIVE	0.000	-7.600	54.29
1.000	1.000	87.26	0.000	0.000	UG3_4271_12_L_0					
40 D	17.94	-2.1162E-03	96.68	33.84	96.68	50.80	ACTIVE	0.000	-7.800	55.84
1.000	1.000	89.68	0.000	0.000	UG3_4271_12_L_0					
41 D	18.49	-1.7989E-03	99.16	35.04	99.16	52.01	UL-RL	9429.	-8.000	57.39
1.000	1.000	92.44	0.000	0.000	UG3_4271_12_L_0					
42 D	19.61	-1.4969E-03	101.6	39.10	101.6	53.21	UL-RL	9429.	-8.200	58.94
1.000	1.000	98.04	0.000	0.000	UG3_4271_12_L_0					
43 D	20.69	-1.2081E-03	104.0	42.97	104.0	54.36	UL-RL	9429.	-8.400	60.49
1.000	1.000	103.5	0.000	0.000	UG2_4_26346_L_0					

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

44 D	21.76	-9.3004E-04	106.6	46.75	106.6	55.52	UL-RL	9429.	-8.600	62.04
1.000	1.000	108.8	0.000	0.000	UG2_4_26346_L_0					
45 D	22.81	-6.6069E-04	109.0	50.45	109.0	56.68	UL-RL	9429.	-8.800	63.59
1.000	1.000	114.0	0.000	0.000	UG2_4_26346_L_0					
46 D	23.84	-3.9795E-04	111.3	54.08	111.3	57.83	UL-RL	9429.	-9.000	65.14
1.000	1.000	119.2	0.000	0.000	UG2_4_26346_L_0					
47 D	24.87	-1.3998E-04	113.7	57.67	113.7	58.99	UL-RL	9429.	-9.200	66.69
1.000	1.000	124.4	0.000	0.000	UG2_4_26346_L_0					
48 D	25.74	1.1481E-04	116.3	60.46	116.3	60.54	UL-RL	9429.	-9.400	68.24
1.000	1.000	128.7	0.000	0.000	UG2_4_26346_L_0					
49 D	26.45	3.6774E-04	118.6	62.44	118.6	62.49	UL-RL	9429.	-9.600	69.79
1.000	1.000	132.2	0.000	0.000	UG2_4_26346_L_0					
50 D	27.15	6.1978E-04	121.0	64.41	121.0	64.43	UL-RL	9429.	-9.800	71.34
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
51 D	13.93	8.7155E-04	123.4	66.38	123.4	66.38	V-C	3143.	-10.00	72.89
1.000	1.000	139.3	0.000	0.000	UG2_4_26346_L_0					

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|
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
|          Exe Time : 1 April 2019  17:23:05
|
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New Project

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STRESS RESULTS FOR GROUP NO. 3

Wallelement_New_28707 :
ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50
CURRENT TIME IS 2.0000

WALL2D ELEMENT

EL	TA	TB	MA	MB
1	4.95675E-10	-4.95675E-10	4.93756E-11	1.47409E-10
2	-1.46940E-10	1.46940E-10	-1.12731E-10	1.63574E-10
3	-1.60725E-10	1.60725E-10	-1.93610E-10	3.29688E-10
4	-0.22908	0.22908	-3.43714E-10	4.58157E-02
5	-0.74148	0.74148	4.58157E-02	-0.19411
6	-1.5431	1.5431	0.19411	-0.50274
7	-2.8950	2.8950	0.50274	-1.0817
8	-4.7991	4.7991	1.0817	-2.0416
9	-7.2558	7.2558	2.0416	-3.4927
10	-10.279	10.279	3.4927	-5.5485
11	-13.871	13.871	5.5485	-8.3227
12	-18.024	18.024	8.3227	-11.927
13	-20.823	20.823	11.927	-16.092
14	-23.933	23.933	16.092	-20.879
15	-27.352	27.352	20.879	-26.349
16	-31.081	31.081	26.349	-32.565
17	-35.121	35.121	32.565	-39.590
18	-39.470	39.470	39.590	-47.484
19	-44.129	44.129	47.484	-56.309
20	-49.098	49.098	56.309	-66.129
21	-54.377	54.377	66.129	-77.005
22	-47.351	47.351	77.005	-86.475
23	-40.425	40.425	86.475	-94.560
24	-33.612	33.612	94.560	-101.28
25	-26.908	26.908	101.28	-106.66
26	-20.300	20.300	106.66	-110.72
27	-13.775	13.775	110.72	-113.48
28	-7.3147	7.3147	113.48	-114.94
29	-0.90021	0.90021	114.94	-115.12
30	5.4878	-5.4878	115.12	-114.02
31	11.869	-11.869	114.02	-111.65
32	18.264	-18.264	111.65	-108.00
33	24.693	-24.693	108.00	-103.06
34	30.864	-30.864	103.06	-96.886
35	36.017	-36.017	96.886	-89.682
36	36.611	-36.611	89.682	-82.360
37	37.146	-37.146	82.360	-74.931
38	37.638	-37.638	74.931	-67.403
39	38.087	-38.087	67.403	-59.786
40	38.519	-38.519	59.786	-52.082
41	38.880	-38.880	52.082	-44.306
42	38.413	-38.413	44.306	-36.624
43	36.993	-36.993	36.624	-29.225
44	34.641	-34.641	29.225	-22.297
45	31.388	-31.388	22.297	-16.019
46	27.258	-27.258	16.019	-10.568
47	22.269	-22.269	10.568	-6.1138
48	16.578	-16.578	6.1138	-2.7982
49	10.363	-10.363	2.7982	-0.72560
50	3.6279	-3.6279	0.72560	1.16529E-12

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116
Exe Time : 1 April 2019      17:23:05
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F I N A L I N C R E M E N T A L A N A L Y S I S
S U M M A R Y

STEP		NO. OF ITERATIONS
1	CONVERGENCE :YES	2
2	CONVERGENCE :YES	6

END OF PROCESS FOR PROBLEM
New Project
NONLINEAR SOLUTION CPU TIME 0.04 [sec]
DATABASE CREATION CPU TIME..... 0.07 [sec]

7.3. Design Assumption : NTC2018: A1+M1+R1 (R3 per tiranti) - File di Paratie - File di output (.out)

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PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147
Exe Time : 1 April 2019      17:23:05
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*****
*
* PARATIE PLUS Non-Linear Spring Engine
*
* AN ELASTOPLASTIC FINITE ELEMENT PROGRAM
* FOR FLEXIBLE EARTH-RETAINING STRUCTURES
*
* Written by Ce.A.S. s.r.l. (ITALY)
* with the scientific supervision of
* Roberto Nova - full professor SOIL MECHANICS
* at Politecnico di Milano (ITALY)
*
*****
*
* RELEASE  2018.1  *Build date:Jun 29, 2018*
*
* Ce.A.S.  S.R.L  CENTRO DI ANALISI STRUTTURALE
* VIALE GIUSTINIANO 10
* 20129  M I L A N O (ITALIA)
* TEL.    +39 02 2020221
*
* email    bruno.becci@ceas.it
* Web Page www.ceas.it    www.paratieplus.com
*****

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JOB : NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147

```

STARTING
ACCEPTED <&lt;FILE,GENW >>
ACCEPTED <&lt;FILE,PLOTTER,BINARY >>
ACCEPTED <&lt;SOLVE TOTAL STRESS >>
ACCEPTED <&lt;PARAM ITEMAX 40 >>
ACCEPTED <&lt;CONTROL HINGES 0 0.0001 0.001 >>

```

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*****
*
* WARNING : PORE PRESSURES ARE AUTOMATICALLY COMPUTED
* BY THE PROGRAM.
*****

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PRELIMINARY OPERATIONS CPU TIME 0.01 [sec]

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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INPUT FILE HAS BEEN GENERATED BY WALGEN PROGRAM

New Project

NO. OF NODAL POINTS (NUMNP)	51
NO. OF COORDINATES (NCOORD).....	2
NO. OF NODE DOFS (NDOF).....	2
NO. OF EQUATIONS (NEQ).....	102
NO. OF CONSTRAINTS CARDS (NVINC).....	0
NO. OF ELEMENT GROUPS (NEG).....	3
NO. OF SOLUTION STEPS (NSTE).....	2
NO. OF ELEMENT SETS ATTACHED TO SLAVE NODES ..	0
NO. OF RECORD FROM WALGEN	100
NO. OF LONG NAMES (LASTNAME)	13
LENGTH UNIT CHOICE	3 (M)
FORCE UNIT CHOICE	3 (KN)
MAX PORE PRESSURE TABLE LENGTH.....	1
NO. OF ELEMENT GROUPS REQUIRING ADD. SLIP DOF .	0

IDOFA (01) = 2 Y-DISPL.F
IDOFA (02) = 4 X-ROT. F

RELEVANT ITEMS UNITS

STRESSES	kPa
Y-DISPLACEMENTS	m
ROTATIONS	RADIANS
BEAM AND SLAB MOMENTS	kN*m/m
BEAM SHEAR FORCES	kN/m
ANCHOR FORCES	kN/m
AXIAL FORCES IN TRUSSES	kN/m
AXIAL FORCES SPRINGS	kN/m
Y-REACTIONS	kN/m
X-MOMENT REACTIONS	kN*m/m
ETC.	

PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*

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P R E P R O C E S S O R D A T A

N O . O F C O M M A N D S 100

```

1 : UNIT m kN
2 : TITLE New Project
3 : DELTA 0.2
4 : option param itemax 40
5 : option control hinges 0 0.0001 0.001
6 : WALL LeftWall_32 0 -10 0 -1
7 : SOIL 0_L LeftWall_32 -10 0 2 0
8 : SOIL 0_R LeftWall_32 -10 0 1 180
9 : LDATA UG0_2_10_L_0 -0.44 LeftWall_32
10 : ATREST 0.5 0.5 1
11 : WEIGHT 18.5 8.5 10
12 : PERMEABILITY 0.0001
13 : RESISTANCE 0 35 0 0 0
14 : WINKLER 3143 9429.1
15 : ENDL
16 : LDATA UG2_4_11_L_0 -2.4 LeftWall_32
17 : ATREST 0.531 0.5 1
18 : WEIGHT 19.5 9.5 10
19 : PERMEABILITY 1E-07
20 : RESISTANCE 30 25 0 0 0
21 : WINKLER 3143 9429.1
22 : ENDL
23 : LDATA UG3 4271 12_L_0 -6.9 LeftWall_32
24 : ATREST 0.531 0.5 1
25 : WEIGHT 20 10 10
26 : PERMEABILITY 1E-07
27 : RESISTANCE 0 32 0 0 0
28 : WINKLER 3143 9429.1
29 : ENDL
30 : LDATA UG2_4_26346_L_0 -8.2 LeftWall_32
31 : ATREST 0.531 0.5 1
32 : WEIGHT 19.5 9.5 10
33 : PERMEABILITY 1E-07
34 : RESISTANCE 30 25 0 0 0

```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```

35 : WINKLER 3143 9429.1
36 : ENDL
37 : MATERIAL S275_115 2.1E+08
38 : BEAM WallElement_New 28707 LeftWall_32 -10 0 S275_115 0.19777 00 00 0
39 : STRIP LeftWall_32 1 2 1.45 16.55 0 20 45
40 : STEP Stage1_31
41 : CHANGE UG0_2_10_L_0 U-FRICT=35 LeftWall_32
42 : CHANGE UG0_2_10_L_0 D-FRICT=35 LeftWall_32
43 : CHANGE UG0_2_10_L_0 U-KA=0.357 LeftWall_32
44 : CHANGE UG0_2_10_L_0 U-KP=8.037 LeftWall_32
45 : CHANGE UG0_2_10_L_0 D-KA=0.235 LeftWall_32
46 : CHANGE UG0_2_10_L_0 D-KP=2.873 LeftWall_32
47 : CHANGE UG2_4_11_L_0 U-FRICT=25 LeftWall_32
48 : CHANGE UG2_4_11_L_0 D-FRICT=25 LeftWall_32
49 : CHANGE UG2_4_11_L_0 U-KA=0.478 LeftWall_32
50 : CHANGE UG2_4_11_L_0 U-KP=3.675 LeftWall_32
51 : CHANGE UG2_4_11_L_0 D-KA=0.352 LeftWall_32
52 : CHANGE UG2_4_11_L_0 D-KP=2.645 LeftWall_32
53 : CHANGE UG3_4271_12_L_0 U-FRICT=32 LeftWall_32
54 : CHANGE UG3_4271_12_L_0 D-FRICT=32 LeftWall_32
55 : CHANGE UG3_4271_12_L_0 U-KA=0.35 LeftWall_32
56 : CHANGE UG3_4271_12_L_0 U-KP=5.446 LeftWall_32
57 : CHANGE UG3_4271_12_L_0 D-KA=0.272 LeftWall_32
58 : CHANGE UG3_4271_12_L_0 D-KP=3.754 LeftWall_32
59 : CHANGE UG2_4_26346_L_0 U-FRICT=25 LeftWall_32
60 : CHANGE UG2_4_26346_L_0 D-FRICT=25 LeftWall_32
61 : CHANGE UG2_4_26346_L_0 U-KA=0.454 LeftWall_32
62 : CHANGE UG2_4_26346_L_0 U-KP=3.542 LeftWall_32
63 : CHANGE UG2_4_26346_L_0 D-KA=0.369 LeftWall_32
64 : CHANGE UG2_4_26346_L_0 D-KP=2.509 LeftWall_32
65 : CHANGE UG0_2_10_L_0 U-COHE=0 LeftWall_32
66 : CHANGE UG0_2_10_L_0 U-ADHES=0 LeftWall_32
67 : CHANGE UG0_2_10_L_0 D-COHE=0 LeftWall_32
68 : CHANGE UG0_2_10_L_0 D-ADHES=0 LeftWall_32
69 : CHANGE UG2_4_11_L_0 U-COHE=30 LeftWall_32
70 : CHANGE UG2_4_11_L_0 U-ADHES=0 LeftWall_32
71 : CHANGE UG2_4_11_L_0 D-COHE=30 LeftWall_32
72 : CHANGE UG2_4_11_L_0 D-ADHES=0 LeftWall_32
73 : CHANGE UG3_4271_12_L_0 U-COHE=0 LeftWall_32
74 : CHANGE UG3_4271_12_L_0 U-ADHES=0 LeftWall_32
75 : CHANGE UG3_4271_12_L_0 D-COHE=0 LeftWall_32
76 : CHANGE UG3_4271_12_L_0 D-ADHES=0 LeftWall_32
77 : CHANGE UG2_4_26346_L_0 U-COHE=30 LeftWall_32
78 : CHANGE UG2_4_26346_L_0 U-ADHES=0 LeftWall_32
79 : CHANGE UG2_4_26346_L_0 D-COHE=30 LeftWall_32
80 : CHANGE UG2_4_26346_L_0 D-ADHES=0 LeftWall_32
81 : SETWALL LeftWall_32
82 : GEOM -0.44 -0.44
83 : SURCHARGE 0 0 0 0
84 : WATER -1 0 -10 0 0
85 : ENDSTEP
86 : STEP Stage2_28513
87 : CHANGE UG0_2_10_L_0 D-KA=0.271 LeftWall_32
88 : CHANGE UG0_2_10_L_0 D-KP=5.879 LeftWall_32
89 : CHANGE UG2_4_11_L_0 D-KA=0.406 LeftWall_32
90 : CHANGE UG2_4_11_L_0 D-KP=3.222 LeftWall_32
91 : CHANGE UG3_4271_12_L_0 D-KA=0.307 LeftWall_32
92 : CHANGE UG3_4271_12_L_0 D-KP=4.845 LeftWall_32
93 : CHANGE UG2_4_26346_L_0 D-KA=0.406 LeftWall_32
94 : CHANGE UG2_4_26346_L_0 D-KP=3.222 LeftWall_32
95 : SETWALL LeftWall_32
96 : GEOM -0.44 -4.05
97 : SURCHARGE 0 0 0 0
98 : WATER -1 3.05 -10 0 0
99 : ADD WallElement_New 28707
100 : ENDSTEP

```

PARATIEPLUS (TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*

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N O D A L P O I N T D A T A

NODE	Y-COORD	Z-COORD	/	NODE	Y-COORD	Z-COORD	/	NODE	Y-COORD	Z-COORD	/	NODE	Y-COORD	Z-COORD	/
1	0.0000	0.0000	/	2	0.0000	-0.20000	/	3	0.0000	-0.40000	/	4	0.0000	-0.60000	/
5	0.0000	-0.80000	/	6	0.0000	-1.0000	/	7	0.0000	-1.2000	/	8	0.0000	-1.4000	/
9	0.0000	-1.6000	/	10	0.0000	-1.8000	/	11	0.0000	-2.0000	/	12	0.0000	-2.2000	/
13	0.0000	-2.4000	/	14	0.0000	-2.6000	/	15	0.0000	-2.8000	/	16	0.0000	-3.0000	/
17	0.0000	-3.2000	/	18	0.0000	-3.4000	/	19	0.0000	-3.6000	/	20	0.0000	-3.8000	/
21	0.0000	-4.0000	/	22	0.0000	-4.2000	/	23	0.0000	-4.4000	/	24	0.0000	-4.6000	/
25	0.0000	-4.8000	/	26	0.0000	-5.0000	/	27	0.0000	-5.2000	/	28	0.0000	-5.4000	/
29	0.0000	-5.6000	/	30	0.0000	-5.8000	/	31	0.0000	-6.0000	/	32	0.0000	-6.2000	/
33	0.0000	-6.4000	/	34	0.0000	-6.6000	/	35	0.0000	-6.8000	/	36	0.0000	-7.0000	/

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

33	33	2	0.2000	0.000	0.000	0.000	2.000
34	34	2	0.2000	0.000	0.000	0.000	2.000
35	35	2	0.2000	0.000	0.000	0.000	2.000
36	36	3	0.2000	0.000	0.000	0.000	2.000
37	37	3	0.2000	0.000	0.000	0.000	2.000
38	38	3	0.2000	0.000	0.000	0.000	2.000
39	39	3	0.2000	0.000	0.000	0.000	2.000
40	40	3	0.2000	0.000	0.000	0.000	2.000
41	41	3	0.2000	0.000	0.000	0.000	2.000
42	42	3	0.2000	0.000	0.000	0.000	2.000
43	43	4	0.2000	0.000	0.000	0.000	2.000
44	44	4	0.2000	0.000	0.000	0.000	2.000
45	45	4	0.2000	0.000	0.000	0.000	2.000
46	46	4	0.2000	0.000	0.000	0.000	2.000
47	47	4	0.2000	0.000	0.000	0.000	2.000
48	48	4	0.2000	0.000	0.000	0.000	2.000
49	49	4	0.2000	0.000	0.000	0.000	2.000
50	50	4	0.2000	0.000	0.000	0.000	2.000
51	51	4	0.1000	0.000	0.000	0.000	2.000

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147
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ELEMENT GROUP NO. 2

0_R : 5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0

.....2D PLASTIC SOIL

element group behaviour throughout stage analysis

```

stage  status
-----
1      active
2      active

```

material set no. 1

prop(1) angle 180.000
prop(2) layer as foreseen 1.00000

material set no. 2

prop(1) angle 180.000
prop(2) layer as foreseen 2.00000

material set no. 3

prop(1) angle 180.000
prop(2) layer as foreseen 3.00000

material set no. 4

prop(1) angle 180.000
prop(2) layer as foreseen 4.00000

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	1.000
2	2	1	0.2000	0.000	0.000	0.000	1.000
3	3	1	0.2000	0.000	0.000	0.000	1.000
4	4	1	0.2000	0.000	0.000	0.000	1.000
5	5	1	0.2000	0.000	0.000	0.000	1.000
6	6	1	0.2000	0.000	0.000	0.000	1.000
7	7	1	0.2000	0.000	0.000	0.000	1.000
8	8	1	0.2000	0.000	0.000	0.000	1.000
9	9	1	0.2000	0.000	0.000	0.000	1.000
10	10	1	0.2000	0.000	0.000	0.000	1.000
11	11	1	0.2000	0.000	0.000	0.000	1.000
12	12	1	0.2000	0.000	0.000	0.000	1.000
13	13	2	0.2000	0.000	0.000	0.000	1.000
14	14	2	0.2000	0.000	0.000	0.000	1.000
15	15	2	0.2000	0.000	0.000	0.000	1.000
16	16	2	0.2000	0.000	0.000	0.000	1.000
17	17	2	0.2000	0.000	0.000	0.000	1.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

LOAD FUNCTION NUMBER = 3
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
3.00000	0.1000E+01

LOAD FUNCTION NUMBER = 4
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
3.00000	0.1000E+01

NO. OF DISTRIBUTED LOAD CARDS 0

```

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L O A D B A L A N C E

STEP	1	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	1	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000

LOAD INPUT SECTION COMPLETED

```

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NO. OF LAYERS 4
NO. OF DATA PER LAYER..... 100

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LAYER DESCRIPTORS FOR STEP NO. 1

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)
ITEM NO.	5	GAMMAD	>= 18.500	(BOTH WALLS)
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)
ITEM NO.	9	U-FRICT	>= 35.000	(BOTH WALLS)
ITEM NO.	10	U-KA	>= 0.3570	WALL NO. 1
ITEM NO.	11	U-KP	>= 8.0370	WALL NO. 1
ITEM NO.	12	K0-NC	>= 0.50000	(BOTH WALLS)

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 35.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.23500	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.8730	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.47800	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.6750	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.35200	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.6450	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 20.000	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 10.000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.35000	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.4460	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.27200	WALL NO.	1
ITEM NO.	61	D-KP	>= 3.7540	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 11.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -8.2000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.45400	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.5420	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.36900	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.5090	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

LAYER DESCRIPTORS FOR STEP NO. 2

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 18.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 35.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.35700	WALL NO.	1
ITEM NO.	11	U-KP	>= 8.0370	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.50000	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 35.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.27100	WALL NO.	1
ITEM NO.	61	D-KP	>= 5.8790	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.47800	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.6750	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 30.000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 25.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.40600	WALL NO.	1
ITEM NO.	61	D-KP	>= 3.2220	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 20.000	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 10.000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	10	U-KA	>= 0.35000	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.4460	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 32.000	(BOTH WALLS)	
ITEM NO.	60	D-KA	>= 0.30700	WALL NO.	1
ITEM NO.	61	D-KP	>= 4.8450	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

NON ZERO LAYER DESCRIPTORS FOR LAYER NO.	4 FOR STEP NO.	2
ITEM NO. 1	NAME	= 11.000 (BOTH WALLS)
ITEM NO. 2	NATURE	= 1.0000 (BOTH WALLS)
ITEM NO. 3	LEVEL	= -8.2000 (BOTH WALLS)
ITEM NO. 4	WALL	= 1.0000 (BOTH WALLS)
ITEM NO. 5	GAMMAD	= 19.500 (BOTH WALLS)
ITEM NO. 6	GAMMAB	= 9.5000 (BOTH WALLS)
ITEM NO. 7	GAMMAW	= 10.000 (BOTH WALLS)
ITEM NO. 8	U-COHE	= 30.000 (BOTH WALLS)
ITEM NO. 9	U-FRICT	= 25.000 (BOTH WALLS)
ITEM NO. 10	U-KA	= 0.45400 WALL NO. 1
ITEM NO. 11	U-KP	= 3.5420 WALL NO. 1
ITEM NO. 12	KO-NC	= 0.53100 (BOTH WALLS)
ITEM NO. 13	NEXP	= 0.50000 (BOTH WALLS)
ITEM NO. 14	OCR	= 1.0000 (BOTH WALLS)
ITEM NO. 16	MODEL	= 3.0000 (BOTH WALLS)
ITEM NO. 25	WINKVC	= 3143.0 (BOTH WALLS)
ITEM NO. 26	WINKUR	= 9429.1 (BOTH WALLS)
ITEM NO. 27	U-PERM	= 0.10000E-06 (BOTH WALLS)
ITEM NO. 52	D-NATURE	= 1.0000 (BOTH WALLS)
ITEM NO. 53	D-LEVEL	= 0.0000 (BOTH WALLS)
ITEM NO. 58	D-COHE	= 30.000 (BOTH WALLS)
ITEM NO. 59	D-FRICT	= 25.000 (BOTH WALLS)
ITEM NO. 60	D-KA	= 0.40600 WALL NO. 1
ITEM NO. 61	D-KP	= 3.2220 WALL NO. 1
ITEM NO. 77	D-PERM	= 0.10000E-06 (BOTH WALLS)

DEFAULT WATER UNIT WEIGHT = 10.000
AVERAGED ON 8 VALUES

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| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
|                                                                              |
|          NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147    |
|          Exe Time : 1 April 2019 17:23:05                                  |
|                                                                              |
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PHASE DESCRIPTORS

STEP NO.	1	LEFT WALL	RIGHT WALL
Y		0.000	-0.9990E+30
Z-PC		-0.4400	0.000
Z-EXCAVATION		-0.4400	0.000
Z-WATER_TABLE		-1.000	-0.9990E+30
Q_AT_THE_FREE_FIELD_LEVEL		0.000	0.000
ZQ		0.000	0.000
DZW OF THE WATER TABLE		0.000	0.000
QS_ON_THE_EXCAVATION_SIDE		0.000	0.000
ZQS		0.000	-0.9990E+30
ZCUT		0.000	0.000
BALANCE LEVEL FOR PORE PRESSURES		-10.00	-10.00
WATER_BEHAVIOUR_FLAG (LINING OPT)		0.000	0.000
PORE_UPDATE_FLAG		0.000	0.000
PORE_TAB._FLAG (gt.0= use tabs)		0.000	0.000
lateral thrusts reduction elevatio		0.000	0.000
Downhill reduction factor for effe		0.000	0.000
Downhill reduction factor for pore		0.000	0.000
Uphill reduction factor for effect		0.000	0.000
Uphill reduction factor for pore p		0.000	0.000
SEISMIC HORIZONTAL ACCEL. Kh [g]		0.000	0.000
UPHILL VERTICAL ACCEL. Kv_uh [g]		0.000	0.000
DOWNHILL VERTICAL ACCEL.Kv_dh [g]		0.000	0.000
UPHILL BETA ANGLE (SLOPE) [deg]		0.000	0.000
UPHILL DELTA/PHI RATIO		0.000	0.000
DOWNHILL BETA ANGLE (SLOPE) [deg]		0.000	0.000
DOWNHILL DELTA/PHI RATIO		0.000	0.000
DYN.WATER BEHAVIOUR		0.000	0.000
Excess pore pressure RATIO Ru		0.000	0.000
SEISMIC PRESSURE LOWER VALUE		0.000	0.000
SEISMIC PRESSURE UPPER VALUE		0.000	0.000
SEISMIC PRESSURE LOWER LEVEL		0.000	0.000
SEISMIC PRESSURE UPPER LEVEL		0.000	0.000

=====end of step 1

STEP NO.	2	LEFT WALL	RIGHT WALL
Y		0.000	-0.9990E+30
Z-PC		-0.4400	0.000
Z-EXCAVATION		-4.050	0.000
Z-WATER_TABLE		-1.000	-0.9990E+30

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Q_AT_THE_FREE_FIELD_LEVEL	0.000	0.000
ZQ	0.000	0.000
DZW_OF_THE_WATER_TABLE	3.050	0.000
QS_ON_THE_EXCAVATION_SIDE	0.000	0.000
ZQS	0.000	-0.9990E+30
ZCUT	0.000	0.000
BALANCE LEVEL FOR PORE PRESSURES	-10.00	-10.00
WATER_BEHAVIOUR_FLAG (LINING OPT)	0.000	0.000
PORE_UPDATE_FLAG	0.000	0.000
PORE_TAB._FLAG (gt.0= use tabs)	0.000	0.000
lateRal thrusts reduction elevatio	0.000	0.000
Downhill reduction factor for effe	0.000	0.000
Downhill reduction factor for pore	0.000	0.000
Uphill reduction factor for effect	0.000	0.000
Uphill reduction factor for pore p	0.000	0.000
SEISMIC HORIZONTAL ACCEL. Kh [g]	0.000	0.000
UPHILL VERTICAL ACCEL. Kv_uh [g]	0.000	0.000
DOWNHILL VERTICAL ACCEL.Kv_dh [g]	0.000	0.000
UPHILL BETA ANGLE (SLOPE) [deg]	0.000	0.000
UPHILL DELTA/PHI RATIO	0.000	0.000
DOWNHILL BETA ANGLE (SLOPE) [deg]	0.000	0.000
DOWNHILL DELTA/PHI RATIO	0.000	0.000
DYN.WATER BEHAVIOUR	0.000	0.000
Excess pore pressure RATIO Ru	0.000	0.000
SEISMIC PRESSURE LOWER VALUE	0.000	0.000
SEISMIC PRESSURE UPPER VALUE	0.000	0.000
SEISMIC PRESSURE LOWER LEVEL	0.000	0.000
SEISMIC PRESSURE UPPER LEVEL	0.000	0.000

=====end of step 2

LEFT-HAND WALL

LOWER LEVEL -10.00000
UPPER LEVEL 0.00000

RIGHT-HAND WALL

LOWER LEVEL -10.00000
UPPER LEVEL 0.00000

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+-----+
|          PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|          NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147
|          Exe Time : 1 April 2019  17:23:05
+-----+

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INITIAL STRESS TABLES

SECTION

NUMBER OF DEFINED TABLES 1

INPUT DATA FOR INITIAL STRESS SET NO. 1
PERTAINING SOIL ELEMENTS AT Y-COORD 0.0000

ACTIVATION TIME 1.0000
END TIME (TIME BEYOND WHICH IT IS REMOVED) 2.0000

TYPE BOUSSINESQ

HORIZONTAL DISTANCE (DY)	1.4500000000000000
FOUNDATION WIDTH (B)	16.5500000000000000
ZETA-F.....	0.000000000000000E+000
Q-F	20.0000000000000000
BETA	45.0000000000000000
BEHAVIOUR (0=FREE, 1=REFLECTING)	0.000000000000000E+000

ELEMENT GROUPS BACKUP AREA CAN STAY IN CORE AT
POSITION 2718

NO. OF D.P.W FOR THIS AREA 6023
MAX NO. OF D.P.W. AVAILABLE 81920
** MAX NO OF ITERATIONS SET TO 40

ITER 0 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

RATIO=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 1 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIO=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 2 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIO=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147  |
|                Exe Time : 1 April 2019  17:23:05  |
+-----+

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New Project

SOLUTION REACHED USING 2 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 1 (AT TIME 1.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

Y-DISPL.F X-ROT. F
(02) (04) (

ALL NODAL POINTS HAVE ZERO DISPLACEMENT COMPONENTS

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147  |
|                Exe Time : 1 April 2019  17:23:05  |
+-----+

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New Project

STRESS RESULTS FOR GROUP NO. 1

0_L
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4 D	1.161	0.000	2.960	5.803	2.960	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UGO_2_10_L_0						
5 D	1.733	0.000	6.660	8.667	6.660	8.667	V-C	3143.	-0.8000	0.000	
1.000	1.000	8.667	0.000	0.000	UGO_2_10_L_0						
6 D	2.259	0.000	10.36	11.29	10.36	11.29	V-C	3143.	-1.000	0.000	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000	1.000	11.29	0.000	0.000	UG0_2_10_L_0					
7 D	2.942	0.000	12.06	12.71	12.06	12.71	V-C	3143.	-1.200	2.000
1.000	1.000	14.71	0.000	0.000	UG0_2_10_L_0					
8 D	3.593	0.000	13.76	13.96	13.76	13.96	V-C	3143.	-1.400	4.000
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0					
9 D	4.217	0.000	15.46	15.08	15.46	15.08	V-C	3143.	-1.600	6.000
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0					
10 D	4.822	0.000	17.16	16.11	17.16	16.11	V-C	3143.	-1.800	8.000
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0					
11 D	5.412	0.000	18.86	17.06	18.86	17.06	V-C	3143.	-2.000	10.00
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0					
12 D	5.991	0.000	20.56	17.95	20.56	17.95	V-C	3143.	-2.200	12.00
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0					
13 D	6.700	0.000	22.26	19.50	22.26	19.50	V-C	3143.	-2.400	14.00
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0					
14 D	7.297	0.000	24.16	20.48	24.16	20.48	V-C	3143.	-2.600	16.00
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0					
15 D	7.889	0.000	26.06	21.45	26.06	21.45	V-C	3143.	-2.800	18.00
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0					
16 D	8.478	-2.8259E-18	27.96	22.39	27.96	22.39	V-C	3143.	-3.000	20.00
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0					
17 D	9.065	-2.8259E-18	29.86	23.32	29.86	23.32	V-C	3143.	-3.200	22.00
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0					
18 D	9.649	0.000	31.76	24.25	31.76	24.25	V-C	3143.	-3.400	24.00
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0					
19 D	10.23	-2.8259E-18	33.66	25.16	33.66	25.16	V-C	3143.	-3.600	26.00
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0					
20 D	10.81	0.000	35.56	26.07	35.56	26.07	V-C	3143.	-3.800	28.00
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0					
21 D	11.40	0.000	37.46	26.98	37.46	26.98	V-C	3143.	-4.000	30.00
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0					
22 D	11.98	0.000	39.36	27.88	39.36	27.88	V-C	3143.	-4.200	32.00
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0					
23 D	12.56	0.000	41.26	28.78	41.26	28.78	V-C	3143.	-4.400	34.00
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0					
24 D	13.14	0.000	43.16	29.68	43.16	29.68	V-C	3143.	-4.600	36.00
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0					
25 D	13.72	0.000	45.06	30.58	45.06	30.58	V-C	3143.	-4.800	38.00
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0					
26 D	14.30	0.000	46.96	31.48	46.96	31.48	V-C	3143.	-5.000	40.00
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0					
27 D	14.87	0.000	48.86	32.37	48.86	32.37	V-C	3143.	-5.200	42.00
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0					
28 D	15.45	-2.8259E-18	50.76	33.27	50.76	33.27	V-C	3143.	-5.400	44.00
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0					
29 D	16.03	0.000	52.66	34.17	52.66	34.17	V-C	3143.	-5.600	46.00
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0					
30 D	16.61	0.000	54.56	35.07	54.56	35.07	V-C	3143.	-5.800	48.00
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0					
31 D	17.19	0.000	56.46	35.97	56.46	35.97	V-C	3143.	-6.000	50.00
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0					
32 D	17.77	0.000	58.36	36.87	58.36	36.87	V-C	3143.	-6.200	52.00
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0					
33 D	18.35	0.000	60.26	37.77	60.26	37.77	V-C	3143.	-6.400	54.00
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0					
34 D	18.93	5.6518E-18	62.16	38.67	62.16	38.67	V-C	3143.	-6.600	56.00
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0					
35 D	19.51	0.000	64.06	39.57	64.06	39.57	V-C	3143.	-6.800	58.00
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0					
36 D	20.10	0.000	66.01	40.50	66.01	40.50	V-C	3143.	-7.000	60.00
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0					
37 D	20.69	0.000	68.01	41.46	68.01	41.46	V-C	3143.	-7.200	62.00
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0					
38 D	21.28	0.000	70.01	42.42	70.01	42.42	V-C	3143.	-7.400	64.00
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0					
39 D	21.88	0.000	72.01	43.38	72.01	43.38	V-C	3143.	-7.600	66.00
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0					
40 D	22.47	0.000	74.01	44.35	74.01	44.35	V-C	3143.	-7.800	68.00
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0					
41 D	23.06	0.000	76.01	45.31	76.01	45.31	V-C	3143.	-8.000	70.00
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0					
42 D	23.66	0.000	78.01	46.28	78.01	46.28	V-C	3143.	-8.200	72.00
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0					
43 D	24.24	0.000	79.91	47.19	79.91	47.19	V-C	3143.	-8.400	74.00
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0					
44 D	24.82	-5.6518E-18	81.81	48.11	81.81	48.11	V-C	3143.	-8.600	76.00
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0					
45 D	25.40	-5.6518E-18	83.71	49.02	83.71	49.02	V-C	3143.	-8.800	78.00
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0					
46 D	25.99	0.000	85.61	49.94	85.61	49.94	V-C	3143.	-9.000	80.00
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0					
47 D	26.57	0.000	87.51	50.86	87.51	50.86	V-C	3143.	-9.200	82.00
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0					
48 D	27.16	0.000	89.41	51.79	89.41	51.79	V-C	3143.	-9.400	84.00
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
49 D	27.74	0.000	91.31	52.71	91.31	52.71	V-C	3143.	-9.600	86.00
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0					
50 D	28.33	5.6518E-18	93.21	53.63	93.21	53.63	V-C	3143.	-9.800	88.00
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0					

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

51 D 14.46 0.000 95.11 54.56 95.11 54.56 V-C 3143. -10.00 90.00
1.000 1.000 144.6 0.000 0.000 UG2_4_26346_L_0

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*                |
|                NewProject.BaseDesignSection 28.NTC2018A1M1R1R3pertiranti_1147                                |
|                Exe Time : 1 April 2019  17:23:05                                                    |
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New Project

S T R E S S R E S U L T S F O R G R O U P N O . 2

O_R :
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4 D	1.161	0.000	3.208	5.803	3.208	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UG0_2_10_L_0						
5 D	1.733	0.000	7.177	8.667	7.177	8.667	V-C	3143.	-0.8000	0.000	
1.000	1.000	8.667	0.000	0.000	UG0_2_10_L_0						
6 D	2.259	0.000	11.23	11.29	11.23	11.29	V-C	3143.	-1.000	0.000	
1.000	1.000	11.29	0.000	0.000	UG0_2_10_L_0						
7 D	2.942	0.000	13.33	12.71	13.33	12.71	V-C	3143.	-1.200	2.000	
1.000	1.000	14.71	0.000	0.000	UG0_2_10_L_0						
8 D	3.593	0.000	15.47	13.96	15.47	13.96	V-C	3143.	-1.400	4.000	
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0						
9 D	4.217	0.000	17.60	15.08	17.60	15.08	V-C	3143.	-1.600	6.000	
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0						
10 D	4.822	0.000	19.94	16.11	19.94	16.11	V-C	3143.	-1.800	8.000	
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0						
11 D	5.412	0.000	22.29	17.06	22.29	17.06	V-C	3143.	-2.000	10.00	
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0						
12 D	5.991	0.000	24.56	17.95	24.56	17.95	V-C	3143.	-2.200	12.00	
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0						
13 D	6.700	0.000	26.76	19.50	26.76	19.50	V-C	3143.	-2.400	14.00	
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0						
14 D	7.297	0.000	29.10	20.48	29.10	20.48	V-C	3143.	-2.600	16.00	
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0						
15 D	7.889	0.000	31.97	21.45	31.97	21.45	V-C	3143.	-2.800	18.00	
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0						
16 D	8.478	2.8259E-18	34.18	22.39	34.18	22.39	V-C	3143.	-3.000	20.00	
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0						
17 D	9.065	2.8259E-18	36.37	23.32	36.37	23.32	V-C	3143.	-3.200	22.00	
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0						
18 D	9.649	0.000	38.53	24.25	38.53	24.25	V-C	3143.	-3.400	24.00	
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0						
19 D	10.23	2.8259E-18	40.66	25.16	40.66	25.16	V-C	3143.	-3.600	26.00	
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0						
20 D	10.81	0.000	43.20	26.07	43.20	26.07	V-C	3143.	-3.800	28.00	
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0						
21 D	11.40	0.000	45.28	26.98	45.28	26.98	V-C	3143.	-4.000	30.00	
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0						
22 D	11.98	0.000	47.35	27.88	47.35	27.88	V-C	3143.	-4.200	32.00	
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0						
23 D	12.56	0.000	49.40	28.78	49.40	28.78	V-C	3143.	-4.400	34.00	
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0						
24 D	13.14	0.000	51.79	29.68	51.79	29.68	V-C	3143.	-4.600	36.00	
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0						
25 D	13.72	0.000	53.81	30.58	53.81	30.58	V-C	3143.	-4.800	38.00	
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0						
26 D	14.30	0.000	55.82	31.48	55.82	31.48	V-C	3143.	-5.000	40.00	
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0						
27 D	14.87	0.000	57.82	32.37	57.82	32.37	V-C	3143.	-5.200	42.00	
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0						
28 D	15.45	2.8259E-18	59.82	33.27	59.82	33.27	V-C	3143.	-5.400	44.00	
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0						
29 D	16.03	0.000	62.10	34.17	62.10	34.17	V-C	3143.	-5.600	46.00	
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0						
30 D	16.61	0.000	64.08	35.07	64.08	35.07	V-C	3143.	-5.800	48.00	
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0						
31 D	17.19	0.000	66.05	35.97	66.05	35.97	V-C	3143.	-6.000	50.00	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0						
32 D	17.77	0.000	68.02	36.87	68.02	36.87	V-C	3143.	-6.200	52.00	
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0						
33 D	18.35	0.000	69.98	37.77	69.98	37.77	V-C	3143.	-6.400	54.00	
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0						
34 D	18.93	-5.6518E-18	72.19	38.67	72.19	38.67	V-C	3143.	-6.600	56.00	
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0						
35 D	19.51	0.000	74.14	39.57	74.14	39.57	V-C	3143.	-6.800	58.00	
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0						
36 D	20.10	0.000	76.14	40.50	76.14	40.50	V-C	3143.	-7.000	60.00	
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0						
37 D	20.69	0.000	78.19	41.46	78.19	41.46	V-C	3143.	-7.200	62.00	
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0						
38 D	21.28	0.000	80.23	42.42	80.23	42.42	V-C	3143.	-7.400	64.00	
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0						
39 D	21.88	0.000	82.49	43.38	82.49	43.38	V-C	3143.	-7.600	66.00	
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0						
40 D	22.47	0.000	84.52	44.35	84.52	44.35	V-C	3143.	-7.800	68.00	
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0						
41 D	23.06	0.000	86.56	45.31	86.56	45.31	V-C	3143.	-8.000	70.00	
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0						
42 D	23.66	0.000	88.59	46.28	88.59	46.28	V-C	3143.	-8.200	72.00	
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0						
43 D	24.24	0.000	90.52	47.19	90.52	47.19	V-C	3143.	-8.400	74.00	
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0						
44 D	24.82	5.6518E-18	92.64	48.11	92.64	48.11	V-C	3143.	-8.600	76.00	
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0						
45 D	25.40	5.6518E-18	94.57	49.02	94.57	49.02	V-C	3143.	-8.800	78.00	
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0						
46 D	25.99	0.000	96.49	49.94	96.49	49.94	V-C	3143.	-9.000	80.00	
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0						
47 D	26.57	0.000	98.41	50.86	98.41	50.86	V-C	3143.	-9.200	82.00	
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0						
48 D	27.16	0.000	100.5	51.79	100.5	51.79	V-C	3143.	-9.400	84.00	
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0						
49 D	27.74	0.000	102.4	52.71	102.4	52.71	V-C	3143.	-9.600	86.00	
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0						
50 D	28.33	-5.6518E-18	104.3	53.63	104.3	53.63	V-C	3143.	-9.800	88.00	
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0						
51 D	14.46	0.000	106.3	54.56	106.3	54.56	V-C	3143.	-10.00	90.00	
1.000	1.000	144.6	0.000	0.000	UG2_4_26346_L_0						

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| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
|-----|
| NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147 |
| Exe Time : 1 April 2019 17:23:05 |
|-----|
New Project

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STRESS RESULTS FOR GROUP NO. 3

WallElement_New 28707 :
ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50
CURRENT TIME IS 1.0000

WALL2D ELEMENT

EL	TA	TB	MA	MB

***** NO ONE ELEMENT ACTIVE AT CURRENT STEP *****

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ITER 0 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 2289. REMNOR= 0.000 RATIO =0.3596 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.3596 RATIO= 0.000
MAX UN= 0.000 IEQ= 102 NODE 51 DOF 2 X-ROT. F
MIN UN=-11.06 IEQ= 41 NODE 21 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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ITER 2 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 131.4 REMNOR=0.3689E-20 RATIO =0.8614E-01 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.8614E-01 RATIO= 0.000
MAX UN=0.1552E-09 IEQ= 39 NODE 20 DOF 1 Y-DISPL. F
MIN UN=-3.792 IEQ= 7 NODE 4 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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ITER      3  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM= 237.7      REMNOR=-0.7544E-19 RATIO =0.1159      TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.1159      RATIOI= 0.000
            MAX UN=0.1082E-08 IEQ= 15 NODE      8 DOF 1 Y-DISPL.F
            MIN UN=-8.762      IEQ= 39 NODE      20 DOF 1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER      4  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM= 41.91      REMNOR=-0.2877E-19 RATIO =0.4866E-01 TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.4866E-01 RATIOI= 0.000
            MAX UN=0.5233      IEQ= 99 NODE      50 DOF 1 Y-DISPL.F
            MIN UN=-4.376      IEQ= 57 NODE      29 DOF 1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER      5  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM=0.8422      REMNOR=-0.1568E-19 RATIO =0.6897E-02 TOLER =0.1000E-03 NOT CONVERGED
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.6897E-02 RATIOI= 0.000
            MAX UN=0.1028E-08 IEQ= 19 NODE      10 DOF 1 Y-DISPL.F
            MIN UN=-.7410      IEQ= 65 NODE      33 DOF 1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER      6  RNORM = 0.000      RMNORM= 0.000
            RINORM=0.1770E+05 RIMNOR= 0.000
            RENORM=0.1591E-03 REMNOR=-0.1499E-19 RATIO =0.9479E-04 TOLER =0.1000E-03 CONVERGED !
            RFMAX = 26.76      RMMAX = 0.000
            RTSMAL=0.1000E-03 RMSMAL= 0.000
            RDT =0.1770E+05 RDR = 0.000
            RATIOI=0.9479E-04 RATIOI= 0.000
            MAX UN=0.1051E-01 IEQ= 95 NODE      48 DOF 1 Y-DISPL.F
            MIN UN=-.5170E-09 IEQ= 53 NODE      27 DOF 1 Y-DISPL.F
            NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*                |
|                                                                                                                                            |
|                NewProject.BaseDesignSection_28.NTC2018A1m1R1R3pertiranti_1147                    |
|                Exe Time : 1 April 2019  17:23:05                                                                                          |
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New Project

SOLUTION REACHED USING 6 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 2 (AT TIME 2.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

	Y-DISPL.F (02)	X-ROT. F (04)
1	-3.2139233E-02	4.7857883E-03
2	-3.1182075E-02	4.7857883E-03
3	-3.0224917E-02	4.7857883E-03
4	-2.9267760E-02	4.7857883E-03
5	-2.8310604E-02	4.7857544E-03
6	-2.7353468E-02	4.7855772E-03
7	-2.6396396E-02	4.7850624E-03
8	-2.5439486E-02	4.7838919E-03
9	-2.4482915E-02	4.7815847E-03
10	-2.3526971E-02	4.7774964E-03
11	-2.2572089E-02	4.7708174E-03
12	-2.1618882E-02	4.7605704E-03
13	-2.0668175E-02	4.7456112E-03
14	-1.9721020E-02	4.7249125E-03
15	-1.8778651E-02	4.6976013E-03
16	-1.7842485E-02	4.6627131E-03
17	-1.6914137E-02	4.6191914E-03
18	-1.5995456E-02	4.5658889E-03
19	-1.5088516E-02	4.5015660E-03
20	-1.4195653E-02	4.4248919E-03
21	-1.3319482E-02	4.3344444E-03
22	-1.2462899E-02	4.2287086E-03
23	-1.1629000E-02	4.1079431E-03

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000	1.000	0.000	0.000	0.000	not available					
19	0.000	--	--	--	--	--	REMOVED	--	-3.600	0.000
1.000	1.000	0.000	0.000	0.000	not available					
20	0.000	--	--	--	--	--	REMOVED	--	-3.800	0.000
1.000	1.000	0.000	0.000	0.000	not available					
21	0.000	--	--	--	--	--	REMOVED	--	-4.000	0.000
1.000	1.000	0.000	0.000	0.000	not available					
22 D	12.62	1.2463E-02	1.087	61.24	39.36	61.24	V-C	3143.	-4.200	1.838
1.000	1.000	63.08	0.000	0.000	UG2_4_11_L_0					
23 D	12.83	1.1629E-02	2.537	59.84	41.26	59.84	V-C	3143.	-4.400	4.288
1.000	1.000	64.13	0.000	0.000	UG2_4_11_L_0					
24 D	13.02	1.0821E-02	3.987	58.37	43.16	58.37	V-C	3143.	-4.600	6.738
1.000	1.000	65.11	0.000	0.000	UG2_4_11_L_0					
25 D	13.22	1.0040E-02	5.437	56.93	45.06	56.93	V-C	3143.	-4.800	9.188
1.000	1.000	66.12	0.000	0.000	UG2_4_11_L_0					
26 D	13.44	9.2894E-03	6.887	55.54	46.96	55.54	V-C	3143.	-5.000	11.64
1.000	1.000	67.18	0.000	0.000	UG2_4_11_L_0					
27 D	13.66	8.5701E-03	8.337	54.23	48.86	54.23	V-C	3143.	-5.200	14.09
1.000	1.000	68.32	0.000	0.000	UG2_4_11_L_0					
28 D	13.91	7.8836E-03	9.787	53.01	50.76	53.01	V-C	3143.	-5.400	16.54
1.000	1.000	69.55	0.000	0.000	UG2_4_11_L_0					
29 D	14.17	7.2305E-03	11.24	51.88	52.66	51.88	V-C	3143.	-5.600	18.99
1.000	1.000	70.87	0.000	0.000	UG2_4_11_L_0					
30 D	14.46	6.6113E-03	12.69	50.85	54.56	50.85	V-C	3143.	-5.800	21.44
1.000	1.000	72.28	0.000	0.000	UG2_4_11_L_0					
31 D	14.76	6.0260E-03	14.14	49.91	56.46	49.91	V-C	3143.	-6.000	23.89
1.000	1.000	73.80	0.000	0.000	UG2_4_11_L_0					
32 D	15.08	5.4744E-03	15.59	49.08	58.36	49.08	V-C	3143.	-6.200	26.34
1.000	1.000	75.42	0.000	0.000	UG2_4_11_L_0					
33 D	15.43	4.9557E-03	17.04	48.35	60.26	48.35	V-C	3143.	-6.400	28.79
1.000	1.000	77.14	0.000	0.000	UG2_4_11_L_0					
34 D	15.79	4.4689E-03	18.49	47.71	62.16	47.71	V-C	3143.	-6.600	31.24
1.000	1.000	78.95	0.000	0.000	UG2_4_11_L_0					
35 D	16.17	4.0124E-03	19.94	47.17	64.06	47.17	V-C	3143.	-6.800	33.69
1.000	1.000	80.86	0.000	0.000	UG2_4_11_L_0					
36 D	16.58	3.5845E-03	21.44	46.74	66.01	46.74	V-C	3143.	-7.000	36.14
1.000	1.000	82.88	0.000	0.000	UG3_4271_12_L_0					
37 D	17.00	3.1832E-03	22.99	46.33	68.01	46.43	V-C	3143.	-7.200	38.59
1.000	1.000	85.02	0.000	0.000	UG3_4271_12_L_0					
38 D	17.45	2.8061E-03	24.54	46.19	70.01	46.19	V-C	3143.	-7.400	41.04
1.000	1.000	87.23	0.000	0.000	UG3_4271_12_L_0					
39 D	17.90	2.4512E-03	26.09	46.01	72.01	46.01	V-C	3143.	-7.600	43.49
1.000	1.000	89.50	0.000	0.000	UG3_4271_12_L_0					
40 D	18.37	2.1162E-03	27.63	45.90	74.01	45.90	V-C	3143.	-7.800	45.94
1.000	1.000	91.84	0.000	0.000	UG3_4271_12_L_0					
41 D	18.85	1.7989E-03	29.18	45.85	76.01	45.85	V-C	3143.	-8.000	48.39
1.000	1.000	94.24	0.000	0.000	UG3_4271_12_L_0					
42 D	19.14	1.4969E-03	30.73	44.86	78.01	46.33	UL-RL	9429.	-8.200	50.84
1.000	1.000	95.70	0.000	0.000	UG3_4271_12_L_0					
43 D	19.27	1.2081E-03	32.18	43.08	79.91	47.19	UL-RL	9429.	-8.400	53.29
1.000	1.000	96.37	0.000	0.000	UG2_4_26346_L_0					
44 D	19.41	9.3004E-04	33.63	41.29	81.81	48.11	UL-RL	9429.	-8.600	55.74
1.000	1.000	97.03	0.000	0.000	UG2_4_26346_L_0					
45 D	19.55	6.6069E-04	35.08	39.58	83.71	49.02	UL-RL	9429.	-8.800	58.19
1.000	1.000	97.77	0.000	0.000	UG2_4_26346_L_0					
46 D	19.71	3.9795E-04	36.53	37.93	85.61	49.94	UL-RL	9429.	-9.000	60.64
1.000	1.000	98.57	0.000	0.000	UG2_4_26346_L_0					
47 D	19.88	1.3998E-04	37.98	36.33	87.51	50.86	UL-RL	9429.	-9.200	63.09
1.000	1.000	99.42	0.000	0.000	UG2_4_26346_L_0					
48 D	20.06	-1.1481E-04	39.43	34.76	89.41	51.79	UL-RL	9429.	-9.400	65.54
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
49 D	20.24	-3.6774E-04	40.88	33.20	91.31	52.71	UL-RL	9429.	-9.600	67.99
1.000	1.000	101.2	0.000	0.000	UG2_4_26346_L_0					
50 D	20.42	-6.1978E-04	42.33	31.65	93.21	53.63	UL-RL	9429.	-9.800	70.44
1.000	1.000	102.1	0.000	0.000	UG2_4_26346_L_0					
51 D	10.30	-8.7155E-04	43.78	30.10	95.11	54.56	UL-RL	9429.	-10.00	72.89
1.000	1.000	103.0	0.000	0.000	UG2_4_26346_L_0					

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PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*
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NewProject.BaseDesignSection_28.NTC2018AIM1R1R3pertiranti_1147
Exe Time : 1 April 2019 17:23:05
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New Project

STRESS RESULTS FOR GROUP NO. 2

O_R
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-1.0000	0.000	
4 D	0.2291	-2.9268E-02	3.208	1.145	3.208	5.803	ACTIVE	0.000	-0.6000	0.000	
1.000	1.000	1.145	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-1.0000	0.000	
5 D	0.5124	-2.8311E-02	7.177	2.562	7.177	8.667	ACTIVE	0.000	-0.8000	0.000	
1.000	1.000	2.562	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-1.0000	0.000	
6 D	0.8016	-2.7353E-02	11.23	4.008	11.23	11.29	ACTIVE	0.000	-1.2000	2.000	
1.000	1.000	4.008	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-1.4000	3.999	
7 D	1.352	-2.6396E-02	13.33	4.760	13.33	12.71	ACTIVE	0.000	-1.6000	5.999	
1.000	1.000	6.760	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-1.8000	7.998	
8 D	1.904	-2.5439E-02	15.47	5.521	15.47	13.96	ACTIVE	0.000	-2.0000	9.998	
1.000	1.000	9.520	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-2.2000	12.00	
9 D	2.457	-2.4483E-02	17.60	6.284	17.60	15.09	ACTIVE	0.000	-2.4000	14.00	
1.000	1.000	12.28	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-2.6000	15.55	
10 D	3.023	-2.3527E-02	19.94	7.118	19.94	16.11	ACTIVE	0.000	-2.8000	17.10	
1.000	1.000	15.12	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-3.0000	18.65	
11 D	3.592	-2.2572E-02	22.30	7.960	22.30	17.06	ACTIVE	0.000	-3.2000	20.20	
1.000	1.000	17.96	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-3.4000	21.75	
12 D	4.154	-2.1619E-02	24.57	8.770	24.57	17.96	ACTIVE	0.000	-3.6000	23.30	
1.000	1.000	20.77	0.000	0.000	UGO 2_10_L_0		ACTIVE	0.000	-3.8000	24.85	
13 D	2.799	-2.0668E-02	26.77	0.000	26.77	19.50	ACTIVE	0.000	-4.0000	26.40	
1.000	1.000	14.00	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-4.2000	27.95	
14 D	3.109	-1.9721E-02	29.55	0.000	29.55	20.73	ACTIVE	0.000	-4.4000	29.50	
1.000	1.000	15.55	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-4.6000	31.05	
15 D	3.419	-1.8779E-02	32.87	0.000	32.87	21.93	ACTIVE	0.000	-4.8000	32.60	
1.000	1.000	17.10	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-5.0000	34.15	
16 D	3.729	-1.7842E-02	35.54	0.000	35.54	23.11	ACTIVE	0.000	-5.2000	35.69	
1.000	1.000	18.65	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-5.4000	37.24	
17 D	4.039	-1.6914E-02	38.17	0.000	38.17	24.28	ACTIVE	0.000	-5.6000	38.79	
1.000	1.000	20.20	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-5.8000	40.34	
18 D	4.349	-1.5995E-02	40.78	0.000	40.78	25.44	ACTIVE	0.000	-6.0000	41.89	
1.000	1.000	21.75	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-6.2000	43.44	
19 D	4.659	-1.5089E-02	43.37	0.000	43.37	26.60	ACTIVE	0.000	-6.4000	44.99	
1.000	1.000	23.30	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-6.6000	46.54	
20 D	4.969	-1.4196E-02	46.36	0.000	46.36	27.75	ACTIVE	0.000	-6.8000	48.09	
1.000	1.000	24.85	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-7.0000	49.64	
21 D	5.279	-1.3319E-02	48.89	0.000	48.89	28.89	ACTIVE	0.000	-7.2000	51.19	
1.000	1.000	26.40	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-7.4000	52.74	
22 D	5.589	-1.2463E-02	51.40	0.000	51.40	30.03	ACTIVE	0.000	-7.6000	54.29	
1.000	1.000	27.95	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-7.8000	55.84	
23 D	5.899	-1.1629E-02	53.90	0.000	53.90	31.17	ACTIVE	0.000	-8.0000	57.39	
1.000	1.000	29.50	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000	-8.2000	58.94	
24 D	6.209	-1.0821E-02	56.75	0.000	56.75	32.31	ACTIVE	0.000	-8.4000	60.49	
1.000	1.000	31.05	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
25 D	6.519	-1.0040E-02	59.21	0.000	59.21	33.45	ACTIVE	0.000			
1.000	1.000	32.60	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
26 D	6.829	-9.2894E-03	61.67	0.000	61.67	34.58	ACTIVE	0.000			
1.000	1.000	34.15	0.000	0.000	UG2 4_11_L_0		UL-RL	9429.			
27 D	7.139	-8.5701E-03	64.13	0.000	64.13	35.72	ACTIVE	0.000			
1.000	1.000	35.69	0.000	0.000	UG2 4_11_L_0		UL-RL	9429.			
28 D	7.449	-7.8836E-03	66.57	0.000	66.57	36.86	ACTIVE	0.000			
1.000	1.000	37.24	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
29 D	7.759	-7.2305E-03	69.31	0.000	69.31	37.99	ACTIVE	0.000			
1.000	1.000	38.79	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
30 D	8.069	-6.6113E-03	71.73	0.000	71.73	39.13	ACTIVE	0.000			
1.000	1.000	40.34	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
31 D	8.379	-6.0260E-03	74.15	0.000	74.15	40.27	ACTIVE	0.000			
1.000	1.000	41.89	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
32 D	8.689	-5.4744E-03	76.57	0.000	76.57	41.41	ACTIVE	0.000			
1.000	1.000	43.44	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
33 D	8.999	-4.9557E-03	78.99	0.000	78.99	42.55	ACTIVE	0.000			
1.000	1.000	44.99	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
34 D	9.619	-4.4689E-03	81.65	1.553	81.65	43.69	ACTIVE	0.000			
1.000	1.000	48.10	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
35 D	11.02	-4.0124E-03	84.05	6.999	84.05	44.83	ACTIVE	0.000			
1.000	1.000	55.09	0.000	0.000	UG2 4_11_L_0		ACTIVE	0.000			
36 D	15.98	-3.5845E-03	86.50	30.27	86.50	46.00	ACTIVE	0.000			
1.000	1.000	79.92	0.000	0.000	UG3 4271_12_L_0		ACTIVE	0.000			
37 D	16.47	-3.1832E-03	88.99	31.15	88.99	47.20	ACTIVE	0.000			
1.000	1.000	82.34	0.000	0.000	UG3 4271_12_L_0		ACTIVE	0.000			
38 D	16.95	-2.8061E-03	91.49	32.02	91.49	48.40	ACTIVE	0.000			
1.000	1.000	84.76	0.000	0.000	UG3 4271_12_L_0		ACTIVE	0.000			
39 D	17.45	-2.4512E-03	94.19	32.97	94.19	49.60	ACTIVE	0.000			
1.000	1.000	87.26	0.000	0.000	UG3 4271_12_L_0		ACTIVE	0.000			
40 D	17.94	-2.1162E-03	96.68	33.84	96.68	50.80	ACTIVE	0.000			
1.000	1.000	89.68	0.000	0.000	UG3 4271_12_L_0		UL-RL	9429.			
41 D	18.49	-1.7989E-03	99.16	35.04	99.16	52.01	UL-RL	9429.			
1.000	1.000	92.44	0.000	0.000	UG3 4271_12_L_0		UL-RL	9429.			
42 D	19.61	-1.4969E-03	101.6	39.10	101.6	53.21	UL-RL	9429.			
1.000	1.000	98.04	0.000	0.000	UG3 4271_12_L_0		UL-RL	9429.			
43 D	20.69	-1.2081E-03	104.0	42.97	104.0	54.36	UL-RL	9429.			

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000	1.000	103.5	0.000	0.000	UG2_4_26346_L_0					
44 D	21.76	-9.3004E-04	106.6	46.75	106.6	55.52	UL-RL	9429.	-8.600	62.04
1.000	1.000	108.8	0.000	0.000	UG2_4_26346_L_0					
45 D	22.81	-6.6069E-04	109.0	50.45	109.0	56.68	UL-RL	9429.	-8.800	63.59
1.000	1.000	114.0	0.000	0.000	UG2_4_26346_L_0					
46 D	23.84	-3.9795E-04	111.3	54.08	111.3	57.83	UL-RL	9429.	-9.000	65.14
1.000	1.000	119.2	0.000	0.000	UG2_4_26346_L_0					
47 D	24.87	-1.3998E-04	113.7	57.67	113.7	58.99	UL-RL	9429.	-9.200	66.69
1.000	1.000	124.4	0.000	0.000	UG2_4_26346_L_0					
48 D	25.74	1.1481E-04	116.3	60.46	116.3	60.54	UL-RL	9429.	-9.400	68.24
1.000	1.000	128.7	0.000	0.000	UG2_4_26346_L_0					
49 D	26.45	3.6774E-04	118.6	62.44	118.6	62.49	UL-RL	9429.	-9.600	69.79
1.000	1.000	132.2	0.000	0.000	UG2_4_26346_L_0					
50 D	27.15	6.1978E-04	121.0	64.41	121.0	64.43	UL-RL	9429.	-9.800	71.34
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
51 D	13.93	8.7155E-04	123.4	66.38	123.4	66.38	V-C	3143.	-10.00	72.89
1.000	1.000	139.3	0.000	0.000	UG2_4_26346_L_0					

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|                                     PARATIEPLUS(TM)   NLS ENGINE RELEASE 2018.1   FULL VERSION *Build date:Jun 29, 2018*
|
|                                     NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147
|                                     Exe Time : 1 April 2019   17:23:05
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New Project

STRESS RESULTS FOR GROUP NO. 3

Wallelement New_28707
ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50
CURRENT TIME IS 2.0000

WALL2D ELEMENT

EL	TA	TB	MA	MB
1	4.95675E-10	-4.95675E-10	4.93756E-11	1.47409E-10
2	-1.46940E-10	1.46940E-10	-1.12731E-10	1.63574E-10
3	-1.60725E-10	1.60725E-10	-1.93610E-10	3.29688E-10
4	-0.22908	0.22908	-3.43714E-10	4.58157E-02
5	-0.74148	0.74148	4.58157E-02	-0.19411
6	-1.5431	1.5431	0.19411	-0.50274
7	-2.8950	2.8950	0.50274	-1.0817
8	-4.7991	4.7991	1.0817	-2.0416
9	-7.2558	7.2558	2.0416	-3.4927
10	-10.279	10.279	3.4927	-5.5485
11	-13.871	13.871	5.5485	-8.3227
12	-18.024	18.024	8.3227	-11.927
13	-20.823	20.823	11.927	-16.092
14	-23.933	23.933	16.092	-20.879
15	-27.352	27.352	20.879	-26.349
16	-31.081	31.081	26.349	-32.565
17	-35.121	35.121	32.565	-39.590
18	-39.470	39.470	39.590	-47.484
19	-44.129	44.129	47.484	-56.309
20	-49.098	49.098	56.309	-66.129
21	-54.377	54.377	66.129	-77.005
22	-47.351	47.351	77.005	-86.475
23	-40.425	40.425	86.475	-94.560
24	-33.612	33.612	94.560	-101.28
25	-26.908	26.908	101.28	-106.66
26	-20.300	20.300	106.66	-110.72
27	-13.775	13.775	110.72	-113.48
28	-7.3147	7.3147	113.48	-114.94
29	-0.90021	0.90021	114.94	-115.12
30	5.4878	-5.4878	115.12	-114.02
31	11.869	-11.869	114.02	-111.65
32	18.264	-18.264	111.65	-108.00
33	24.693	-24.693	108.00	-103.06
34	30.864	-30.864	103.06	-96.886
35	36.017	-36.017	96.886	-89.682
36	36.611	-36.611	89.682	-82.360
37	37.146	-37.146	82.360	-74.931
38	37.638	-37.638	74.931	-67.403
39	38.087	-38.087	67.403	-59.786
40	38.519	-38.519	59.786	-52.082
41	38.880	-38.880	52.082	-44.306
42	38.413	-38.413	44.306	-36.624
43	36.993	-36.993	36.624	-29.225
44	34.641	-34.641	29.225	-22.297
45	31.388	-31.388	22.297	-16.019
46	27.258	-27.258	16.019	-10.568
47	22.269	-22.269	10.568	-6.1138
48	16.578	-16.578	6.1138	-2.7982
49	10.363	-10.363	2.7982	-0.72560

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

50 3.6279 -3.6279 0.72560 1.16529E-12

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147
|                Exe Time : 1 April 2019      17:23:05
+-----+

```

F I N A L I N C R E M E N T A L A N A L Y S I S

S U M M A R Y

STEP		NO. OF ITERATIONS
1	CONVERGENCE :YES	2
2	CONVERGENCE :YES	6

END OF PROCESS FOR PROBLEM
New Project
NONLINEAR SOLUTION CPU TIME 0.03 [sec]
DATABASE CREATION CPU TIME..... 0.08 [sec]

7.4. Design Assumption : NTC2018: A2+M2+R1 - File di Paratie - File di output (.out)

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
|                Exe Time : 1 April 2019      17:23:05
+-----+

```

```

*****
*
* PARATIE PLUS Non-Linear Spring Engine
*
* AN ELASTOPLASTIC FINITE ELEMENT PROGRAM
* FOR FLEXIBLE EARTH-RETAINING STRUCTURES
*
* Written by Ce.A.S. s.r.l. (ITALY)
* with the scientific supervision of
* Roberto Nova - full professor SOIL MECHANICS
* at Politecnico di Milano (ITALY)
*
*****
*
* RELEASE  2018.1      *Build date:Jun 29, 2018*
*
* Ce.A.S.   S.R.L  CENTRO DI ANALISI STRUTTURALE
*          VIALE GIUSTINIANO 10
*          20129  M I L A N O  (ITALIA)
* TEL.     +39 02 2020221
*
* email    bruno.becci@ceas.it
* Web Page www.ceas.it      www.paratieplus.com
*****

```

JOB : NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
STARTING
ACCEPTED <FILE,GENW >
ACCEPTED <FILE,PLOTTER,BINARY >
ACCEPTED <SOLVE TOTAL STRESS >
ACCEPTED <PARAM ITEMAX 40 >
ACCEPTED <CONTROL HINGES 0 0.0001 0.001 >

```

*****
*
* WARNING : PORE PRESSURES ARE AUTOMATICALLY COMPUTED
* BY THE PROGRAM.
*****

```

PRELIMINARY OPERATIONS CPU TIME 0.00 [sec]

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
+-----+

```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```

|
|                                     NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
|                                     Exe Time : 1 April 2019      17:23:05
|-----|-----|

```

INPUT FILE HAS BEEN GENERATED BY WALGEN PROGRAM

New Project

```

NO. OF NODAL POINTS (NUMNP) ..... 51
NO. OF COORDINATES (NCOORD)..... 2
NO. OF NODE DOFS (NDOF)..... 2
NO. OF EQUATIONS (NEQ)..... 102
NO. OF CONSTRAINTS CARDS (NVINC)..... 0
NO. OF ELEMENT GROUPS (NEG)..... 3
NO. OF SOLUTION STEPS (NSTE)..... 2
NO. OF ELEMENT SETS ATTACHED TO SLAVE NODES ... 0
NO. OF RECORD FROM WALGEN ..... 100
NO. OF LONG NAMES (LASTNAME) ..... 13
LENGTH UNIT CHOICE ..... 3 (M )
FORCE UNIT CHOICE ..... 3 (KN )
MAX PORE PRESSURE TABLE LENGTH..... 1
NO. OF ELEMENT GROUPS REQUIRING ADD. SLIP DOF . 0

```

```

IDOFA (01) = 2 Y-DISPL.F
IDOFA (02) = 4 X-ROT.F

```

RELEVANT ITEMS UNITS

```

STRESSES                kPa
Y-DISPLACEMENTS        m
ROTATIONS                RADIANs
BEAM AND SLAB MOMENTS   kN*m/m
BEAM SHEAR FORCES       kN/m
ANCHOR FORCES           kN/m
AXIAL FORCES IN TRUSSES kN/m
AXIAL FORCES SPRINGS    kN/m
Y-REACTIONS             kN/m
X-MOMENT REACTIONS      kN*m/m
ETC.

```

```

|-----|-----|
|                                     PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*
|                                     NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
|                                     Exe Time : 1 April 2019      17:23:05
|-----|-----|

```

P R E P R O C E S S O R D A T A

N O . O F C O M M A N D S 100

```

1 : UNIT m kN
2 : TITLE New Project
3 : DELTA 0.2
4 : option param itemax 40
5 : option control hinges 0 0.0001 0.001
6 : WALL LeftWall_32 0 -10 0 -1
7 : SOIL 0_L LeftWall_32 -10 0 2 0
8 : SOIL 0_R LeftWall_32 -10 0 1 180
9 : LDATA UG0 2 10 L 0 -0.44 LeftWall_32
10 : ATREST 0.5 0.5 1
11 : WEIGHT 18.5 8.5 10
12 : PERMEABILITY 0.0001
13 : RESISTANCE 0 35 0 0 0
14 : WINKLER 3143 9429.1
15 : ENDL
16 : LDATA UG2 4 11 L 0 -2.4 LeftWall_32
17 : ATREST 0.531 0.5 1
18 : WEIGHT 19.5 9.5 10
19 : PERMEABILITY 1E-07
20 : RESISTANCE 30 25 0 0 0
21 : WINKLER 3143 9429.1
22 : ENDL
23 : LDATA UG3 4271 12 L 0 -6.9 LeftWall_32
24 : ATREST 0.531 0.5 1
25 : WEIGHT 20 10 10
26 : PERMEABILITY 1E-07
27 : RESISTANCE 0 32 0 0 0
28 : WINKLER 3143 9429.1
29 : ENDL
30 : LDATA UG2 4 26346 L 0 -8.2 LeftWall_32
31 : ATREST 0.531 0.5 1
32 : WEIGHT 19.5 9.5 10

```


VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

31	31	2	0.2000	0.000	0.000	0.000	2.000
32	32	2	0.2000	0.000	0.000	0.000	2.000
33	33	2	0.2000	0.000	0.000	0.000	2.000
34	34	2	0.2000	0.000	0.000	0.000	2.000
35	35	2	0.2000	0.000	0.000	0.000	2.000
36	36	3	0.2000	0.000	0.000	0.000	2.000
37	37	3	0.2000	0.000	0.000	0.000	2.000
38	38	3	0.2000	0.000	0.000	0.000	2.000
39	39	3	0.2000	0.000	0.000	0.000	2.000
40	40	3	0.2000	0.000	0.000	0.000	2.000
41	41	3	0.2000	0.000	0.000	0.000	2.000
42	42	3	0.2000	0.000	0.000	0.000	2.000
43	43	4	0.2000	0.000	0.000	0.000	2.000
44	44	4	0.2000	0.000	0.000	0.000	2.000
45	45	4	0.2000	0.000	0.000	0.000	2.000
46	46	4	0.2000	0.000	0.000	0.000	2.000
47	47	4	0.2000	0.000	0.000	0.000	2.000
48	48	4	0.2000	0.000	0.000	0.000	2.000
49	49	4	0.2000	0.000	0.000	0.000	2.000
50	50	4	0.2000	0.000	0.000	0.000	2.000
51	51	4	0.1000	0.000	0.000	0.000	2.000

```

-----+-----
                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018*
                |
                |                               NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
                |                               Exe Time : 1 April 2019      17:23:05
                |
-----+-----

```

ELEMENT GROUP NO. 2

```

0_R
_5 51 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 0 0 0 0

```

.....2D PLASTIC SOIL

element group behaviour throughout stage analysis

```

stage  status
-----
 1  active
 2  active

```

```

material set no.  1

prop( 1) angle           180.000
prop( 2) layer as foreseen 1.00000

```

```

material set no.  2

prop( 1) angle           180.000
prop( 2) layer as foreseen 2.00000

```

```

material set no.  3

prop( 1) angle           180.000
prop( 2) layer as foreseen 3.00000

```

```

material set no.  4

prop( 1) angle           180.000
prop( 2) layer as foreseen 4.00000

```

element data

el	n	mat	area	.....	.....	.....	flag
1	1	1	0.1000	0.000	0.000	0.000	1.000
2	2	1	0.2000	0.000	0.000	0.000	1.000
3	3	1	0.2000	0.000	0.000	0.000	1.000
4	4	1	0.2000	0.000	0.000	0.000	1.000
5	5	1	0.2000	0.000	0.000	0.000	1.000
6	6	1	0.2000	0.000	0.000	0.000	1.000
7	7	1	0.2000	0.000	0.000	0.000	1.000
8	8	1	0.2000	0.000	0.000	0.000	1.000
9	9	1	0.2000	0.000	0.000	0.000	1.000
10	10	1	0.2000	0.000	0.000	0.000	1.000
11	11	1	0.2000	0.000	0.000	0.000	1.000
12	12	1	0.2000	0.000	0.000	0.000	1.000
13	13	2	0.2000	0.000	0.000	0.000	1.000
14	14	2	0.2000	0.000	0.000	0.000	1.000
15	15	2	0.2000	0.000	0.000	0.000	1.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

11	11	12	1	0.000	0.000	0.1978	0.000	0.000
12	12	13	1	0.000	0.000	0.1978	0.000	0.000
13	13	14	1	0.000	0.000	0.1978	0.000	0.000
14	14	15	1	0.000	0.000	0.1978	0.000	0.000
15	15	16	1	0.000	0.000	0.1978	0.000	0.000
16	16	17	1	0.000	0.000	0.1978	0.000	0.000
17	17	18	1	0.000	0.000	0.1978	0.000	0.000
18	18	19	1	0.000	0.000	0.1978	0.000	0.000
19	19	20	1	0.000	0.000	0.1978	0.000	0.000
20	20	21	1	0.000	0.000	0.1978	0.000	0.000
21	21	22	1	0.000	0.000	0.1978	0.000	0.000
22	22	23	1	0.000	0.000	0.1978	0.000	0.000
23	23	24	1	0.000	0.000	0.1978	0.000	0.000
24	24	25	1	0.000	0.000	0.1978	0.000	0.000
25	25	26	1	0.000	0.000	0.1978	0.000	0.000
26	26	27	1	0.000	0.000	0.1978	0.000	0.000
27	27	28	1	0.000	0.000	0.1978	0.000	0.000
28	28	29	1	0.000	0.000	0.1978	0.000	0.000
29	29	30	1	0.000	0.000	0.1978	0.000	0.000
30	30	31	1	0.000	0.000	0.1978	0.000	0.000
31	31	32	1	0.000	0.000	0.1978	0.000	0.000
32	32	33	1	0.000	0.000	0.1978	0.000	0.000
33	33	34	1	0.000	0.000	0.1978	0.000	0.000
34	34	35	1	0.000	0.000	0.1978	0.000	0.000
35	35	36	1	0.000	0.000	0.1978	0.000	0.000
36	36	37	1	0.000	0.000	0.1978	0.000	0.000
37	37	38	1	0.000	0.000	0.1978	0.000	0.000
38	38	39	1	0.000	0.000	0.1978	0.000	0.000
39	39	40	1	0.000	0.000	0.1978	0.000	0.000
40	40	41	1	0.000	0.000	0.1978	0.000	0.000
41	41	42	1	0.000	0.000	0.1978	0.000	0.000
42	42	43	1	0.000	0.000	0.1978	0.000	0.000
43	43	44	1	0.000	0.000	0.1978	0.000	0.000
44	44	45	1	0.000	0.000	0.1978	0.000	0.000
45	45	46	1	0.000	0.000	0.1978	0.000	0.000
46	46	47	1	0.000	0.000	0.1978	0.000	0.000
47	47	48	1	0.000	0.000	0.1978	0.000	0.000
48	48	49	1	0.000	0.000	0.1978	0.000	0.000
49	49	50	1	0.000	0.000	0.1978	0.000	0.000
50	50	51	1	0.000	0.000	0.1978	0.000	0.000

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178  |
|                Exe Time : 1 April 2019  17:23:05  |
+-----+

```

```

NO. OF NODAL LOADS (NLOAD) ..... 0
NO. OF LOAD CURVES (NLCUR) ..... 4
MAXIMUM POINTS/LCURVE (NPMT)..... 5

```

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*  |
|                |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178  |
|                Exe Time : 1 April 2019  17:23:05  |
+-----+

```

L O A D D A T A

```

LOAD FUNCTION NUMBER = 1
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
1.20000	0.0000E+00
3.00000	0.0000E+00

```

LOAD FUNCTION NUMBER = 2
NUMBER OF TIME POINTS = 5

```

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
2.20000	0.0000E+00

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

3.00000 0.0000E+00

LOAD FUNCTION NUMBER = 3
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
0.80000	0.0000E+00
1.00000	0.1000E+01
3.00000	0.1000E+01

LOAD FUNCTION NUMBER = 4
NUMBER OF TIME POINTS = 4

TIME VALUE	FUNCTION
0.00000	0.0000E+00
1.80000	0.0000E+00
2.00000	0.1000E+01
3.00000	0.1000E+01

NO. OF DISTRIBUTED LOAD CARDS 0

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*                |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178                |
|                Exe Time : 1 April 2019 17:23:05                |
+-----+

```

L O A D B A L A N C E

STEP	1	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	1	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	2	Y-DISPL.F	0.0000000
STEP	2	TOTAL APPLIED LOAD IN DIR.	4	X-ROT. F	0.0000000

LOAD INPUT SECTION COMPLETED

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*                |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178                |
|                Exe Time : 1 April 2019 17:23:05                |
+-----+

```

NO. OF LAYERS 4
NO. OF DATA PER LAYER..... 100

```

+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION *Build date:Jun 29, 2018*                |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178                |
|                Exe Time : 1 April 2019 17:23:05                |
+-----+

```

LAYER DESCRIPTORS FOR STEP NO. 1

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)
ITEM NO.	5	GAMMAD	>= 18.5000	(BOTH WALLS)
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)
ITEM NO.	7	GAMMAW	>= 10.0000	(BOTH WALLS)
ITEM NO.	9	U-FRICT	>= 29.256	WALL NO. 1
ITEM NO.	9	U-FRICT	>= 35.0000	WALL NO. 2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	10	U-KA	>= 0.48300	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.3640	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.50000	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 29.256	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 35.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.29400	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.0850	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 24.000	WALL NO.	1
ITEM NO.	8	U-COHE	>= 30.000	WALL NO.	2
ITEM NO.	9	U-FRICT	>= 20.458	WALL NO.	1
ITEM NO.	9	U-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	10	U-KA	>= 0.58100	WALL NO.	1
ITEM NO.	11	U-KP	>= 2.8530	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 24.000	WALL NO.	1
ITEM NO.	58	D-COHE	>= 30.000	WALL NO.	2
ITEM NO.	59	D-FRICT	>= 20.458	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.41500	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.1040	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 20.000	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 10.000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 26.560	WALL NO.	1
ITEM NO.	9	U-FRICT	>= 32.000	WALL NO.	2
ITEM NO.	10	U-KA	>= 0.44500	WALL NO.	1
ITEM NO.	11	U-KP	>= 3.8950	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 26.560	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 32.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.33500	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.7770	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 4 FOR STEP NO. 1

ITEM NO.	1	NAME	>= 11.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -8.2000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 24.000	WALL NO.	1
ITEM NO.	8	U-COHE	>= 30.000	WALL NO.	2
ITEM NO.	9	U-FRICT	>= 20.458	WALL NO.	1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ITEM NO.	9	U-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	10	U-KA	>= 0.54700	WALL NO.	1
ITEM NO.	11	U-KP	>= 2.7620	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 24.000	WALL NO.	1
ITEM NO.	58	D-COHE	>= 30.000	WALL NO.	2
ITEM NO.	59	D-FRICT	>= 20.458	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.43500	WALL NO.	1
ITEM NO.	61	D-KP	>= 1.9970	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

LAYER DESCRIPTORS FOR STEP NO. 2

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 1 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 8.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 18.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 8.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	9	U-FRICT	>= 29.256	WALL NO.	1
ITEM NO.	9	U-FRICT	>= 35.000	WALL NO.	2
ITEM NO.	10	U-KA	>= 0.48300	WALL NO.	1
ITEM NO.	11	U-KP	>= 5.3640	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.50000	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-03	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	59	D-FRICT	>= 29.256	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 35.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.34300	WALL NO.	1
ITEM NO.	61	D-KP	>= 4.1020	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-03	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 2 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 9.0000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -2.4000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	
ITEM NO.	5	GAMMAD	>= 19.500	(BOTH WALLS)	
ITEM NO.	6	GAMMAB	>= 9.5000	(BOTH WALLS)	
ITEM NO.	7	GAMMAW	>= 10.000	(BOTH WALLS)	
ITEM NO.	8	U-COHE	>= 24.000	WALL NO.	1
ITEM NO.	8	U-COHE	>= 30.000	WALL NO.	2
ITEM NO.	9	U-FRICT	>= 20.458	WALL NO.	1
ITEM NO.	9	U-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	10	U-KA	>= 0.58100	WALL NO.	1
ITEM NO.	11	U-KP	>= 2.8530	WALL NO.	1
ITEM NO.	12	KO-NC	>= 0.53100	(BOTH WALLS)	
ITEM NO.	13	NEXP	>= 0.50000	(BOTH WALLS)	
ITEM NO.	14	OCR	>= 1.0000	(BOTH WALLS)	
ITEM NO.	16	MODEL	>= 3.0000	(BOTH WALLS)	
ITEM NO.	25	WINKVC	>= 3143.0	(BOTH WALLS)	
ITEM NO.	26	WINKUR	>= 9429.1	(BOTH WALLS)	
ITEM NO.	27	U-PERM	>= 0.10000E-06	(BOTH WALLS)	
ITEM NO.	52	D-NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	53	D-LEVEL	>= 0.0000	(BOTH WALLS)	
ITEM NO.	58	D-COHE	>= 24.000	WALL NO.	1
ITEM NO.	58	D-COHE	>= 30.000	WALL NO.	2
ITEM NO.	59	D-FRICT	>= 20.458	WALL NO.	1
ITEM NO.	59	D-FRICT	>= 25.000	WALL NO.	2
ITEM NO.	60	D-KA	>= 0.48200	WALL NO.	1
ITEM NO.	61	D-KP	>= 2.5350	WALL NO.	1
ITEM NO.	77	D-PERM	>= 0.10000E-06	(BOTH WALLS)	

NON ZERO LAYER DESCRIPTORS FOR LAYER NO. 3 FOR STEP NO. 2

ITEM NO.	1	NAME	>= 10.000	(BOTH WALLS)	
ITEM NO.	2	NATURE	>= 1.0000	(BOTH WALLS)	
ITEM NO.	3	LEVEL	>= -6.9000	(BOTH WALLS)	
ITEM NO.	4	WALL	>= 1.0000	(BOTH WALLS)	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

ACTIVATION TIME 1.0000
END TIME (TIME BEYOND WHICH IT IS REMOVED) 2.0000

TYPE BOUSSINESQ

HORIZONTAL DISTANCE (DY) 1.4500000000000000
FOUNDATION WIDTH (B) 16.5500000000000000
ZETA-F..... 0.0000000000000000E+000
Q-F 20.0000000000000000
BETA 45.0000000000000000
BEHAVIOUR (0=FREE, 1=REFLECTING) 0.0000000000000000E+000

ELEMENT GROUPS BACKUP AREA CAN STAY IN CORE AT
POSITION 2718

NO. OF D.P.W FOR THIS AREA 6023
MAX NO. OF D.P.W. AVAILABLE 81920
** MAX NO OF ITERATIONS SET TO 40

ITER 0 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 1 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 2 RNORM = 0.000 RMNORM= 0.000
RINORM=0.2710E+05 RIMNOR= 0.000
RENORM=0.6311E-28 REMNOR= 0.000 RATIO =0.4825E-16 TOLER =0.1000E-03 CONVERGED !
RFMAX = 28.33 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.2710E+05 RDR = 0.000
RATIOT=0.4825E-16 RATIO= 0.000
MAX UN=0.3553E-14 IEQ= 89 NODE 45 DOF 1 Y-DISPL.F
MIN UN=-.3553E-14 IEQ= 67 NODE 34 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018* |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178 |
|                Exe Time : 1 April 2019 17:23:05 |
+-----+

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New Project

SOLUTION REACHED USING 2 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 1 (AT TIME 1.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

Y-DISPL.F X-ROT. F
(02) (04) (

ALL NODAL POINTS HAVE ZERO DISPLACEMENT COMPONENTS

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+-----+
|                PARATIEPLUS(TM)  NLS ENGINE RELEASE 2018.1  FULL VERSION  *Build date:Jun 29, 2018* |
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178 |
|                Exe Time : 1 April 2019 17:23:05 |
+-----+

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New Project

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

STRESS RESULTS FOR GROUP NO. 1

0 L :

ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 1.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4 D	1.161	0.000	2.960	5.803	2.960	5.803	V-C	3143.	-0.6000	0.000	
1.000	1.000	5.803	0.000	0.000	UG0_2_10_L_0						
5 D	1.733	0.000	6.660	8.667	6.660	8.667	V-C	3143.	-0.8000	0.000	
1.000	1.000	8.667	0.000	0.000	UG0_2_10_L_0						
6 D	2.259	0.000	10.36	11.29	10.36	11.29	V-C	3143.	-1.0000	0.000	
1.000	1.000	11.29	0.000	0.000	UG0_2_10_L_0						
7 D	2.942	0.000	12.06	12.71	12.06	12.71	V-C	3143.	-1.2000	2.000	
1.000	1.000	14.71	0.000	0.000	UG0_2_10_L_0						
8 D	3.593	0.000	13.76	13.96	13.76	13.96	V-C	3143.	-1.4000	4.000	
1.000	1.000	17.96	0.000	0.000	UG0_2_10_L_0						
9 D	4.217	0.000	15.46	15.08	15.46	15.08	V-C	3143.	-1.6000	6.000	
1.000	1.000	21.08	0.000	0.000	UG0_2_10_L_0						
10 D	4.822	0.000	17.16	16.11	17.16	16.11	V-C	3143.	-1.8000	8.000	
1.000	1.000	24.11	0.000	0.000	UG0_2_10_L_0						
11 D	5.412	0.000	18.86	17.06	18.86	17.06	V-C	3143.	-2.0000	10.000	
1.000	1.000	27.06	0.000	0.000	UG0_2_10_L_0						
12 D	5.991	0.000	20.56	17.95	20.56	17.95	V-C	3143.	-2.2000	12.000	
1.000	1.000	29.95	0.000	0.000	UG0_2_10_L_0						
13 D	6.700	0.000	22.26	19.50	22.26	19.50	V-C	3143.	-2.4000	14.000	
1.000	1.000	33.50	0.000	0.000	UG2_4_11_L_0						
14 D	7.297	0.000	24.16	20.48	24.16	20.48	V-C	3143.	-2.6000	16.000	
1.000	1.000	36.48	0.000	0.000	UG2_4_11_L_0						
15 D	7.889	0.000	26.06	21.45	26.06	21.45	V-C	3143.	-2.8000	18.000	
1.000	1.000	39.45	0.000	0.000	UG2_4_11_L_0						
16 D	8.478	-2.8259E-18	27.96	22.39	27.96	22.39	V-C	3143.	-3.0000	20.000	
1.000	1.000	42.39	0.000	0.000	UG2_4_11_L_0						
17 D	9.065	-2.8259E-18	29.86	23.32	29.86	23.32	V-C	3143.	-3.2000	22.000	
1.000	1.000	45.32	0.000	0.000	UG2_4_11_L_0						
18 D	9.649	0.000	31.76	24.25	31.76	24.25	V-C	3143.	-3.4000	24.000	
1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0						
19 D	10.23	-2.8259E-18	33.66	25.16	33.66	25.16	V-C	3143.	-3.6000	26.000	
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0						
20 D	10.81	0.000	35.56	26.07	35.56	26.07	V-C	3143.	-3.8000	28.000	
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0						
21 D	11.40	0.000	37.46	26.98	37.46	26.98	V-C	3143.	-4.0000	30.000	
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0						
22 D	11.98	0.000	39.36	27.88	39.36	27.88	V-C	3143.	-4.2000	32.000	
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0						
23 D	12.56	0.000	41.26	28.78	41.26	28.78	V-C	3143.	-4.4000	34.000	
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0						
24 D	13.14	0.000	43.16	29.68	43.16	29.68	V-C	3143.	-4.6000	36.000	
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0						
25 D	13.72	0.000	45.06	30.58	45.06	30.58	V-C	3143.	-4.8000	38.000	
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0						
26 D	14.30	0.000	46.96	31.48	46.96	31.48	V-C	3143.	-5.0000	40.000	
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0						
27 D	14.87	0.000	48.86	32.37	48.86	32.37	V-C	3143.	-5.2000	42.000	
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0						
28 D	15.45	-2.8259E-18	50.76	33.27	50.76	33.27	V-C	3143.	-5.4000	44.000	
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0						
29 D	16.03	0.000	52.66	34.17	52.66	34.17	V-C	3143.	-5.6000	46.000	
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0						
30 D	16.61	0.000	54.56	35.07	54.56	35.07	V-C	3143.	-5.8000	48.000	
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0						
31 D	17.19	0.000	56.46	35.97	56.46	35.97	V-C	3143.	-6.0000	50.000	
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0						
32 D	17.77	0.000	58.36	36.87	58.36	36.87	V-C	3143.	-6.2000	52.000	
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0						
33 D	18.35	0.000	60.26	37.77	60.26	37.77	V-C	3143.	-6.4000	54.000	
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0						
34 D	18.93	5.6518E-18	62.16	38.67	62.16	38.67	V-C	3143.	-6.6000	56.000	
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0						
35 D	19.51	0.000	64.06	39.57	64.06	39.57	V-C	3143.	-6.8000	58.000	
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0						
36 D	20.10	0.000	66.01	40.50	66.01	40.50	V-C	3143.	-7.0000	60.000	
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0						
37 D	20.69	0.000	68.01	41.46	68.01	41.46	V-C	3143.	-7.2000	62.000	
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1.000	1.000	48.25	0.000	0.000	UG2_4_11_L_0					
19 D	10.23	2.8259E-18	40.66	25.16	40.66	25.16	V-C	3143.	-3.600	26.00
1.000	1.000	51.16	0.000	0.000	UG2_4_11_L_0					
20 D	10.81	0.000	43.20	26.07	43.20	26.07	V-C	3143.	-3.800	28.00
1.000	1.000	54.07	0.000	0.000	UG2_4_11_L_0					
21 D	11.40	0.000	45.28	26.98	45.28	26.98	V-C	3143.	-4.000	30.00
1.000	1.000	56.98	0.000	0.000	UG2_4_11_L_0					
22 D	11.98	0.000	47.35	27.88	47.35	27.88	V-C	3143.	-4.200	32.00
1.000	1.000	59.88	0.000	0.000	UG2_4_11_L_0					
23 D	12.56	0.000	49.40	28.78	49.40	28.78	V-C	3143.	-4.400	34.00
1.000	1.000	62.78	0.000	0.000	UG2_4_11_L_0					
24 D	13.14	0.000	51.79	29.68	51.79	29.68	V-C	3143.	-4.600	36.00
1.000	1.000	65.68	0.000	0.000	UG2_4_11_L_0					
25 D	13.72	0.000	53.81	30.58	53.81	30.58	V-C	3143.	-4.800	38.00
1.000	1.000	68.58	0.000	0.000	UG2_4_11_L_0					
26 D	14.30	0.000	55.82	31.48	55.82	31.48	V-C	3143.	-5.000	40.00
1.000	1.000	71.48	0.000	0.000	UG2_4_11_L_0					
27 D	14.87	0.000	57.82	32.37	57.82	32.37	V-C	3143.	-5.200	42.00
1.000	1.000	74.37	0.000	0.000	UG2_4_11_L_0					
28 D	15.45	2.8259E-18	59.82	33.27	59.82	33.27	V-C	3143.	-5.400	44.00
1.000	1.000	77.27	0.000	0.000	UG2_4_11_L_0					
29 D	16.03	0.000	62.10	34.17	62.10	34.17	V-C	3143.	-5.600	46.00
1.000	1.000	80.17	0.000	0.000	UG2_4_11_L_0					
30 D	16.61	0.000	64.08	35.07	64.08	35.07	V-C	3143.	-5.800	48.00
1.000	1.000	83.07	0.000	0.000	UG2_4_11_L_0					
31 D	17.19	0.000	66.05	35.97	66.05	35.97	V-C	3143.	-6.000	50.00
1.000	1.000	85.97	0.000	0.000	UG2_4_11_L_0					
32 D	17.77	0.000	68.02	36.87	68.02	36.87	V-C	3143.	-6.200	52.00
1.000	1.000	88.87	0.000	0.000	UG2_4_11_L_0					
33 D	18.35	0.000	69.98	37.77	69.98	37.77	V-C	3143.	-6.400	54.00
1.000	1.000	91.77	0.000	0.000	UG2_4_11_L_0					
34 D	18.93	-5.6518E-18	72.19	38.67	72.19	38.67	V-C	3143.	-6.600	56.00
1.000	1.000	94.67	0.000	0.000	UG2_4_11_L_0					
35 D	19.51	0.000	74.14	39.57	74.14	39.57	V-C	3143.	-6.800	58.00
1.000	1.000	97.57	0.000	0.000	UG2_4_11_L_0					
36 D	20.10	0.000	76.14	40.50	76.14	40.50	V-C	3143.	-7.000	60.00
1.000	1.000	100.5	0.000	0.000	UG3_4271_12_L_0					
37 D	20.69	0.000	78.19	41.46	78.19	41.46	V-C	3143.	-7.200	62.00
1.000	1.000	103.5	0.000	0.000	UG3_4271_12_L_0					
38 D	21.28	0.000	80.23	42.42	80.23	42.42	V-C	3143.	-7.400	64.00
1.000	1.000	106.4	0.000	0.000	UG3_4271_12_L_0					
39 D	21.88	0.000	82.49	43.38	82.49	43.38	V-C	3143.	-7.600	66.00
1.000	1.000	109.4	0.000	0.000	UG3_4271_12_L_0					
40 D	22.47	0.000	84.52	44.35	84.52	44.35	V-C	3143.	-7.800	68.00
1.000	1.000	112.3	0.000	0.000	UG3_4271_12_L_0					
41 D	23.06	0.000	86.56	45.31	86.56	45.31	V-C	3143.	-8.000	70.00
1.000	1.000	115.3	0.000	0.000	UG3_4271_12_L_0					
42 D	23.66	0.000	88.59	46.28	88.59	46.28	V-C	3143.	-8.200	72.00
1.000	1.000	118.3	0.000	0.000	UG3_4271_12_L_0					
43 D	24.24	0.000	90.52	47.19	90.52	47.19	V-C	3143.	-8.400	74.00
1.000	1.000	121.2	0.000	0.000	UG2_4_26346_L_0					
44 D	24.82	5.6518E-18	92.64	48.11	92.64	48.11	V-C	3143.	-8.600	76.00
1.000	1.000	124.1	0.000	0.000	UG2_4_26346_L_0					
45 D	25.40	5.6518E-18	94.57	49.02	94.57	49.02	V-C	3143.	-8.800	78.00
1.000	1.000	127.0	0.000	0.000	UG2_4_26346_L_0					
46 D	25.99	0.000	96.49	49.94	96.49	49.94	V-C	3143.	-9.000	80.00
1.000	1.000	129.9	0.000	0.000	UG2_4_26346_L_0					
47 D	26.57	0.000	98.41	50.86	98.41	50.86	V-C	3143.	-9.200	82.00
1.000	1.000	132.9	0.000	0.000	UG2_4_26346_L_0					
48 D	27.16	0.000	100.5	51.79	100.5	51.79	V-C	3143.	-9.400	84.00
1.000	1.000	135.8	0.000	0.000	UG2_4_26346_L_0					
49 D	27.74	0.000	102.4	52.71	102.4	52.71	V-C	3143.	-9.600	86.00
1.000	1.000	138.7	0.000	0.000	UG2_4_26346_L_0					
50 D	28.33	-5.6518E-18	104.3	53.63	104.3	53.63	V-C	3143.	-9.800	88.00
1.000	1.000	141.6	0.000	0.000	UG2_4_26346_L_0					
51 D	14.46	0.000	106.3	54.56	106.3	54.56	V-C	3143.	-10.00	90.00
1.000	1.000	144.6	0.000	0.000	UG2_4_26346_L_0					

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PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018*
NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
Exe Time : 1 April 2019 17:23:05
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New Project

STRESS RESULTS FOR GROUP NO. 3

WallElement_New_28707

ELEMENT TYPE 2 NO.OF ELEMENTS. IN THIS GROUP 50
CURRENT TIME IS 1.0000

WALL2D ELEMENT

EL TA TB MA MB

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

***** NO ONE ELEMENT ACTIVE AT CURRENT STEP *****

ITER 0 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 2289. REMNOR= 0.000 RATIO =0.3596 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.3596 RATIO= 0.000
MAX UN= 0.000 IEQ= 102 NODE 51 DOF 2 X-ROT. F
MIN UN=-11.06 IEQ= 41 NODE 21 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 2 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 186.5 REMNOR=0.3689E-20 RATIO =0.1026 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.1026 RATIO= 0.000
MAX UN=0.1552E-09 IEQ= 39 NODE 20 DOF 1 Y-DISPL. F
MIN UN=-4.112 IEQ= 23 NODE 12 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 3 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 294.5 REMNOR=0.3503E-19 RATIO =0.1290 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.1290 RATIO= 0.000
MAX UN=0.1014E-08 IEQ= 21 NODE 11 DOF 1 Y-DISPL. F
MIN UN=-9.548 IEQ= 39 NODE 20 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 4 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 73.33 REMNOR=0.4875E-19 RATIO =0.6436E-01 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.6436E-01 RATIO= 0.000
MAX UN=0.7849 IEQ= 99 NODE 50 DOF 1 Y-DISPL. F
MIN UN=-5.261 IEQ= 61 NODE 31 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 5 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM= 1.554 REMNOR=0.5861E-19 RATIO =0.9369E-02 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.9369E-02 RATIO= 0.000
MAX UN=0.1560E-08 IEQ= 5 NODE 3 DOF 1 Y-DISPL. F
MIN UN=-1.246 IEQ= 83 NODE 42 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 6 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM=0.4671E-02 REMNOR=0.2747E-19 RATIO =0.5137E-03 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.5137E-03 RATIO= 0.000
MAX UN=0.3934E-01 IEQ= 95 NODE 48 DOF 1 Y-DISPL. F
MIN UN=-.1514E-08 IEQ= 3 NODE 2 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 7 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000
RENORM=0.2061E-03 REMNOR=0.2314E-19 RATIO =0.1079E-03 TOLER =0.1000E-03 NOT CONVERGED
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.1079E-03 RATIO= 0.000
MAX UN=0.6868E-09 IEQ= 15 NODE 8 DOF 1 Y-DISPL. F
MIN UN=-.8006E-02 IEQ= 83 NODE 42 DOF 1 Y-DISPL. F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

ITER 8 RNORM = 0.000 RMNORM= 0.000
RINORM=0.1770E+05 RIMNOR= 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

RENORM=0.1526E-05 REMNOR=0.2938E-19 RATIO =0.9285E-05 TOLER =0.1000E-03 CONVERGED !
RFMAX = 26.76 RMMAX = 0.000
RTSMAL=0.1000E-03 RMSMAL= 0.000
RDT =0.1770E+05 RDR = 0.000
RATIOT=0.9285E-05 RATOR= 0.000
MAX UN=0.1531E-08 IEQ= 9 NODE 5 DOF 1 Y-DISPL.F
MIN UN=-.1206E-02 IEQ= 69 NODE 35 DOF 1 Y-DISPL.F
NO. OF CONTACT CONSTRAINT VIOLATIONS 0

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|                PARATIEPLUS (TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
|                Exe Time : 1 April 2019  17:23:05
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New Project
SOLUTION REACHED USING 8 ITERATIONS ON 40

PRINT OUT FOR TIME STEP 2 (AT TIME 2.000)

PRINT OUT OF ACTIVE COMPONENTS (FIXED NODES ARE NOT PRINTED OUT)

	Y-DISPL.F (02)	X-ROT. F (04)
1	-3.7365606E-02	5.4403386E-03
2	-3.6277538E-02	5.4403386E-03
3	-3.5189470E-02	5.4403386E-03
4	-3.4101403E-02	5.4403386E-03
5	-3.3013338E-02	5.4402928E-03
6	-3.1925299E-02	5.4400530E-03
7	-3.0837347E-02	5.4393566E-03
8	-2.9749614E-02	5.4377938E-03
9	-2.8662327E-02	5.4347765E-03
10	-2.7575851E-02	5.4295372E-03
11	-2.6490723E-02	5.4211265E-03
12	-2.5407688E-02	5.4084099E-03
13	-2.4327734E-02	5.3900687E-03
14	-2.3252110E-02	5.3649840E-03
15	-2.2182248E-02	5.3322829E-03
16	-2.1119769E-02	5.2910009E-03
17	-2.0066485E-02	5.2400815E-03
18	-1.9024450E-02	5.1783775E-03
19	-1.7995936E-02	5.1046492E-03
20	-1.6983480E-02	5.0175657E-03
21	-1.5989900E-02	4.9157051E-03
22	-1.5018289E-02	4.7975522E-03
23	-1.4071932E-02	4.6636029E-03
24	-1.3153733E-02	4.5163830E-03
25	-1.2266099E-02	4.3583658E-03
26	-1.1410945E-02	4.1919718E-03
27	-1.0589714E-02	4.0195723E-03
28	-9.8033672E-03	3.8434707E-03
29	-9.0524260E-03	3.6658705E-03
30	-8.3369803E-03	3.4888510E-03
31	-7.6567161E-03	3.3143740E-03
32	-7.0109406E-03	3.1442963E-03
33	-6.3985905E-03	2.9803727E-03
34	-5.8182704E-03	2.8242668E-03
35	-5.2682579E-03	2.6775500E-03
36	-4.7465254E-03	2.5417078E-03
37	-4.2508071E-03	2.4174169E-03
38	-3.7787990E-03	2.3045571E-03
39	-3.3282332E-03	2.2029635E-03
40	-2.8968766E-03	2.1124249E-03
41	-2.4825431E-03	2.0326887E-03
42	-2.0831002E-03	1.9634669E-03
43	-1.6964767E-03	1.9044392E-03
44	-1.3206526E-03	1.8554900E-03
45	-9.5361580E-04	1.8165419E-03
46	-5.9340082E-04	1.7871473E-03
47	-2.3817455E-04	1.7664877E-03
48	1.1369771E-04	1.7533797E-03
49	4.6357956E-04	1.7463052E-03
50	8.1250132E-04	1.7434798E-03
51	1.1611276E-03	1.7428920E-03

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|                PARATIEPLUS (TM)  NLS ENGINE RELEASE  2018.1  FULL VERSION  *Build date:Jun 29, 2018*
|
|                NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178
|                Exe Time : 1 April 2019  17:23:05
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New Project

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

STRESS RESULTS FOR GROUP NO. 1

0 L :

ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
2	0.000	--	--	--	--	--	REMOVED	--	-0.2000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
3	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
4	0.000	--	--	--	--	--	REMOVED	--	-0.6000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
5	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
6	0.000	--	--	--	--	--	REMOVED	--	-1.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
7	0.000	--	--	--	--	--	REMOVED	--	-1.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
8	0.000	--	--	--	--	--	REMOVED	--	-1.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
9	0.000	--	--	--	--	--	REMOVED	--	-1.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
10	0.000	--	--	--	--	--	REMOVED	--	-1.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
11	0.000	--	--	--	--	--	REMOVED	--	-2.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
12	0.000	--	--	--	--	--	REMOVED	--	-2.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
13	0.000	--	--	--	--	--	REMOVED	--	-2.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
14	0.000	--	--	--	--	--	REMOVED	--	-2.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
15	0.000	--	--	--	--	--	REMOVED	--	-2.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
16	0.000	--	--	--	--	--	REMOVED	--	-3.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
17	0.000	--	--	--	--	--	REMOVED	--	-3.200	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
18	0.000	--	--	--	--	--	REMOVED	--	-3.400	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
19	0.000	--	--	--	--	--	REMOVED	--	-3.600	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
20	0.000	--	--	--	--	--	REMOVED	--	-3.800	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
21	0.000	--	--	--	--	--	REMOVED	--	-4.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available						
22 D	14.22	1.5018E-02	1.087	69.27	39.36	69.27	V-C	3143.	-4.200	1.838	
1.000	1.000	71.11	0.000	0.000	UG2_4_11_L_0						
23 D	14.36	1.4072E-02	2.537	67.52	41.26	67.52	V-C	3143.	-4.400	4.288	
1.000	1.000	71.80	0.000	0.000	UG2_4_11_L_0						
24 D	14.49	1.3154E-02	3.987	65.70	43.16	65.70	V-C	3143.	-4.600	6.738	
1.000	1.000	72.44	0.000	0.000	UG2_4_11_L_0						
25 D	14.62	1.2266E-02	5.437	63.92	45.06	63.92	V-C	3143.	-4.800	9.188	
1.000	1.000	73.11	0.000	0.000	UG2_4_11_L_0						
26 D	14.77	1.1411E-02	6.887	62.21	46.96	62.21	V-C	3143.	-5.000	11.64	
1.000	1.000	73.85	0.000	0.000	UG2_4_11_L_0						
27 D	14.93	1.0590E-02	8.337	60.58	48.86	60.58	V-C	3143.	-5.200	14.09	
1.000	1.000	74.67	0.000	0.000	UG2_4_11_L_0						
28 D	15.12	9.8034E-03	9.787	59.04	50.76	59.04	V-C	3143.	-5.400	16.54	
1.000	1.000	75.58	0.000	0.000	UG2_4_11_L_0						
29 D	15.32	9.0524E-03	11.24	57.60	52.66	57.60	V-C	3143.	-5.600	18.99	
1.000	1.000	76.59	0.000	0.000	UG2_4_11_L_0						
30 D	15.54	8.3370E-03	12.69	56.27	54.56	56.27	V-C	3143.	-5.800	21.44	
1.000	1.000	77.71	0.000	0.000	UG2_4_11_L_0						
31 D	15.79	7.6567E-03	14.14	55.04	56.46	55.04	V-C	3143.	-6.000	23.89	
1.000	1.000	78.93	0.000	0.000	UG2_4_11_L_0						
32 D	16.05	7.0109E-03	15.59	53.91	58.36	53.91	V-C	3143.	-6.200	26.34	
1.000	1.000	80.25	0.000	0.000	UG2_4_11_L_0						
33 D	16.33	6.3986E-03	17.04	52.88	60.26	52.88	V-C	3143.	-6.400	28.79	
1.000	1.000	81.67	0.000	0.000	UG2_4_11_L_0						
34 D	16.64	5.8183E-03	18.49	51.95	62.16	51.95	V-C	3143.	-6.600	31.24	
1.000	1.000	83.19	0.000	0.000	UG2_4_11_L_0						
35 D	16.96	5.2683E-03	19.94	51.12	64.06	51.12	V-C	3143.	-6.800	33.69	
1.000	1.000	84.81	0.000	0.000	UG2_4_11_L_0						
36 D	17.31	4.7465E-03	21.44	50.40	66.01	50.40	V-C	3143.	-7.000	36.14	
1.000	1.000	86.54	0.000	0.000	UG3_4271_12_L_0						
37 D	17.67	4.2508E-03	22.99	49.78	68.01	49.78	UL-RL	9429.	-7.200	38.59	
1.000	1.000	88.37	0.000	0.000	UG3_4271_12_L_0						

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

38 D	18.06	3.7788E-03	24.54	49.24	70.01	49.25	UL-RL	9429.	-7.400	41.04
1.000	1.000	90.28	0.000	0.000	UG3_4271_12_L_0					
39 D	18.45	3.3282E-03	26.09	48.77	72.01	48.77	UL-RL	9429.	-7.600	43.49
1.000	1.000	92.25	0.000	0.000	UG3_4271_12_L_0					
40 D	18.86	2.8969E-03	27.63	48.35	74.01	48.36	UL-RL	9429.	-7.800	45.94
1.000	1.000	94.29	0.000	0.000	UG3_4271_12_L_0					
41 D	19.28	2.4825E-03	29.18	47.99	76.01	48.00	UL-RL	9429.	-8.000	48.39
1.000	1.000	96.38	0.000	0.000	UG3_4271_12_L_0					
42 D	19.70	2.0831E-03	30.73	47.67	78.01	47.69	UL-RL	9429.	-8.200	50.84
1.000	1.000	98.51	0.000	0.000	UG3_4271_12_L_0					
43 D	20.13	1.6965E-03	32.18	47.34	79.91	47.36	UL-RL	9429.	-8.400	53.29
1.000	1.000	100.6	0.000	0.000	UG2_4_26346_L_0					
44 D	20.14	1.3207E-03	33.63	44.97	81.81	48.11	UL-RL	9429.	-8.600	55.74
1.000	1.000	100.7	0.000	0.000	UG2_4_26346_L_0					
45 D	20.11	9.5362E-04	35.08	42.34	83.71	49.02	UL-RL	9429.	-8.800	58.19
1.000	1.000	100.5	0.000	0.000	UG2_4_26346_L_0					
46 D	20.08	5.9340E-04	36.53	39.78	85.61	49.94	UL-RL	9429.	-9.000	60.64
1.000	1.000	100.4	0.000	0.000	UG2_4_26346_L_0					
47 D	20.07	2.3817E-04	37.98	37.26	87.51	50.86	UL-RL	9429.	-9.200	63.09
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
48 D	20.06	-1.1370E-04	39.43	34.77	89.41	51.79	UL-RL	9429.	-9.400	65.54
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
49 D	20.06	-4.6358E-04	40.88	32.30	91.31	52.71	UL-RL	9429.	-9.600	67.99
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
50 D	20.05	-8.1250E-04	42.33	29.83	93.21	53.63	UL-RL	9429.	-9.800	70.44
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					
51 D	10.03	-1.1611E-03	43.78	27.37	95.11	54.56	UL-RL	9429.	-10.000	72.89
1.000	1.000	100.3	0.000	0.000	UG2_4_26346_L_0					

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+-----+
| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
|-----+
|                                     NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178 |
|                                     Exe Time : 1 April 2019 17:23:05 |
+-----+

```

New Project

STRESS RESULTS FOR GROUP NO. 2

0_R
ELEMENT TYPE 5 NO.OF ELEMENTS. IN THIS GROUP 51
CURRENT TIME IS 2.0000

HARDENING 2D SOIL ELEMENT

***** TOTAL STRESS FORMULATION *****

EL * FACTOR	FORCE UFACTOR	DISPL-Y Peq	VERTICAL-P Su_a	HORIZON.-P Su_p	MAX-V-P LAYER	MAX-H-P	STATE	STIFFNESS	Z-LEVEL	PORE	E
1	0.000	--	--	--	--	--	REMOVED	--	0.000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.2000	0.000	
2	0.000	--	--	--	--	--	REMOVED	--	-0.4000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-0.6000	0.000	
3	0.000	--	--	--	--	--	REMOVED	--	-0.8000	0.000	
1.000	1.000	0.000	0.000	0.000	not available		REMOVED	--	-1.0000	0.000	
4 D	0.3099	-3.4101E-02	3.208	1.550	3.208	5.803	ACTIVE	0.000	-0.6000	0.000	
1.000	1.000	1.550	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-0.8000	0.000	
5 D	0.6933	-3.3013E-02	7.177	3.466	7.177	8.667	ACTIVE	0.000	-1.0000	0.000	
1.000	1.000	3.466	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-1.2000	0.000	
6 D	1.085	-3.1925E-02	11.23	5.423	11.23	11.29	ACTIVE	0.000	-1.4000	0.000	
1.000	1.000	5.423	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-1.6000	0.000	
7 D	1.688	-3.0837E-02	13.33	6.440	13.33	12.71	ACTIVE	0.000	-1.8000	0.000	
1.000	1.000	8.440	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-2.0000	0.000	
8 D	2.294	-2.9750E-02	15.47	7.470	15.47	13.96	ACTIVE	0.000	-2.2000	0.000	
1.000	1.000	11.47	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-2.4000	0.000	
9 D	2.900	-2.8662E-02	17.60	8.502	17.60	15.09	ACTIVE	0.000	-2.6000	0.000	
1.000	1.000	14.50	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-2.8000	0.000	
10 D	3.526	-2.7576E-02	19.94	9.630	19.94	16.11	ACTIVE	0.000	-3.0000	0.000	
1.000	1.000	17.63	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-3.2000	0.000	
11 D	4.153	-2.6491E-02	22.30	10.77	22.30	17.06	ACTIVE	0.000	-3.4000	0.000	
1.000	1.000	20.77	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-3.6000	0.000	
12 D	4.773	-2.5408E-02	24.57	11.87	24.57	17.96	ACTIVE	0.000	-3.8000	0.000	
1.000	1.000	23.86	0.000	0.000	UG0_2_10_L_0		ACTIVE	0.000	-4.0000	0.000	
13 D	2.799	-2.4328E-02	26.77	0.000	26.77	19.50	ACTIVE	0.000	-4.2000	0.000	
1.000	1.000	14.00	0.000	0.000	UG2_4_11_L_0		ACTIVE	0.000	-4.4000	0.000	
14 D	3.109	-2.3252E-02	29.55	0.000	29.55	20.73	ACTIVE	0.000	-4.6000	0.000	
1.000	1.000	15.55	0.000	0.000	UG2_4_11_L_0		ACTIVE	0.000	-4.8000	0.000	
15 D	3.419	-2.2182E-02	32.87	0.000	32.87	21.93	ACTIVE	0.000	-5.0000	0.000	
1.000	1.000	17.10	0.000	0.000	UG2_4_11_L_0		ACTIVE	0.000	-5.2000	0.000	
16 D	3.729	-2.1120E-02	35.54	0.000	35.54	23.11	ACTIVE	0.000	-5.4000	0.000	
1.000	1.000	18.65	0.000	0.000	UG2_4_11_L_0		ACTIVE	0.000	-5.6000	0.000	
17 D	4.039	-2.0066E-02	38.17	0.000	38.17	24.28	ACTIVE	0.000	-5.8000	0.000	
1.000	1.000	20.20	0.000	0.000	UG2_4_11_L_0		ACTIVE	0.000	-6.0000	0.000	
18 D	4.349	-1.9024E-02	40.78	0.000	40.78	25.44	ACTIVE	0.000	-6.2000	0.000	

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1	1.59477E-10	-1.59477E-10	1.58816E-11	6.56099E-11
2	2.64680E-10	-2.64680E-10	-2.31210E-11	1.05423E-10
3	-1.85089E-10	1.85089E-10	-9.69335E-11	9.90400E-11
4	-0.30993	0.30993	-6.87127E-11	-6.19860E-02
5	-1.0032	1.0032	6.19860E-02	-0.26262
6	-2.0878	2.0878	0.26262	-0.68017
7	-3.7757	3.7757	0.68017	-1.4353
8	-6.0695	6.0695	1.4353	-2.6492
9	-8.9698	8.9698	2.6492	-4.4432
10	-12.495	12.495	4.4432	-6.9423
11	-16.649	16.649	6.9423	-10.272
12	-21.422	21.422	10.272	-14.556
13	-24.221	24.221	14.556	-19.401
14	-27.330	27.330	19.401	-24.867
15	-30.750	30.750	24.867	-31.016
16	-34.479	34.479	31.016	-37.912
17	-38.518	38.518	37.912	-45.616
18	-42.867	42.867	45.616	-54.189
19	-47.527	47.527	54.189	-63.695
20	-52.496	52.496	63.695	-74.194
21	-57.775	57.775	74.194	-85.749
22	-49.142	49.142	85.749	-95.577
23	-40.680	40.680	95.577	-103.71
24	-32.401	32.401	103.71	-110.19
25	-24.297	24.297	110.19	-115.05
26	-16.356	16.356	115.05	-118.32
27	-8.6958	8.6958	118.32	-120.06
28	-1.4469	1.4469	120.06	-120.35
29	5.3769	-5.3769	120.35	-119.28
30	11.832	-11.832	119.28	-116.91
31	17.939	-17.939	116.91	-113.32
32	23.720	-23.720	113.32	-108.58
33	29.195	-29.195	108.58	-102.74
34	34.355	-34.355	102.74	-95.869
35	39.250	-39.250	95.869	-88.019
36	38.930	-38.930	88.019	-80.233
37	38.445	-38.445	80.233	-72.544
38	37.809	-37.809	72.544	-64.982
39	37.016	-37.016	64.982	-57.579
40	36.099	-36.099	57.579	-50.359
41	35.067	-35.067	50.359	-43.346
42	33.931	-33.931	43.346	-36.560
43	34.285	-34.285	36.560	-29.703
44	33.406	-33.406	29.703	-23.021
45	31.258	-31.258	23.021	-16.770
46	27.865	-27.865	16.770	-11.197
47	23.247	-23.247	11.197	-6.5475
48	17.591	-17.591	6.5475	-3.0292
49	11.168	-11.168	3.0292	-0.79560
50	3.9779	-3.9779	0.79560	1.92385E-12

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| PARATIEPLUS(TM) NLS ENGINE RELEASE 2018.1 FULL VERSION *Build date:Jun 29, 2018* |
| NewProject.BaseDesignSection_28.NTC2018A2M2R1_1178 |
| Exe Time : 1 April 2019 17:23:05 |
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F I N A L I N C R E M E N T A L A N A L Y S I S
S U M M A R Y

STEP		NO. OF ITERATIONS
1	CONVERGENCE :YES	2
2	CONVERGENCE :YES	8

END OF PROCESS FOR PROBLEM

New Project
NONLINEAR SOLUTION CPU TIME 0.04 [sec]
DATABASE CREATION CPU TIME..... 0.07 [sec]

7.5. Design Assumption : Nominal - File di SteelWorld - Report esteso (.ext)

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STEEL-WORLD 4.4 Ce.A.S. s.r.l. 1 April 2019 PAG. 1
17:23:07
DEFAULT TITLE FOR STEEL-WORLD
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* * *

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

37	7.200	0.000	0.000	0.000	0.000	0.000	0.000
38	7.400	0.000	0.000	0.000	0.000	0.000	0.000
39	7.600	0.000	0.000	0.000	0.000	0.000	0.000

STEEL-WORLD 4.4 Ce.A.S. s.r.l. 1 April 2019 PAG. 3
17:23:07

DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

40	7.800	0.000	0.000	0.000	0.000	0.000	0.000
41	8.000	0.000	0.000	0.000	0.000	0.000	0.000
42	8.200	0.000	0.000	0.000	0.000	0.000	0.000
43	8.400	0.000	0.000	0.000	0.000	0.000	0.000
44	8.600	0.000	0.000	0.000	0.000	0.000	0.000
45	8.800	0.000	0.000	0.000	0.000	0.000	0.000
46	9.000	0.000	0.000	0.000	0.000	0.000	0.000
47	9.200	0.000	0.000	0.000	0.000	0.000	0.000
48	9.400	0.000	0.000	0.000	0.000	0.000	0.000
49	9.600	0.000	0.000	0.000	0.000	0.000	0.000
50	9.800	0.000	0.000	0.000	0.000	0.000	0.000
51	10.000	0.000	0.000	0.000	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

STEEL-WORLD 4.4 Ce.A.S. s.r.l. 1 April 2019 PAG. 4
17:23:07

DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 5
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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

STEEL-WORLD 4.4 Ce.A.S. s.r.l. 1 April 2019 PAG. 6
17:23:07
DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]

STEEL-WORLD 4.4 Ce.A.S. s.r.l. 1 April 2019 PAG. 7
17:23:07
DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 8
1 April 2019 17:23:07

DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 9

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

1 April 2019 17:23:07

DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 10

1 April 2019 17:23:07

DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 29 at x= 5599.999 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 30 at x= 5799.999 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0

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 CHECK OF DIRECTLY INPUT MEMBER LW0_S0

gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 31 at x= 5999.999 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 32 at x= 6199.998 [mm]
 selected class for current cross section = 2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

betab 1.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 41 at x= 7999.997 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 42 at x= 8199.997 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

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 CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 43 at x= 8399.997 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 43 at x= 8399.997 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 44 at x= 8599.996 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

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max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

VASCHE DI PRIMA PIOGGIA
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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.000
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 440.0000 [mm]
buckl. length about x-x = 440.0000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 0.0000 XMAX = 440.00

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

BXMIN= 0.0000 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000
" " MQ/Mmax<1/50 -<gt; LINEAR

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

VASCHE DI PRIMA PIOGGIA
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***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 440.0000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 9560.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 440.00 XMAX = 10000.
BXMIN= 0.0000 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000

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" " MQ/Mmax<1/50 -> LINEAR
Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 1 SUBCASE 1
FOUND AT ACTION FILE LINE N. 69
EC3_EN_1993-5:20 RESISTANCE RATIO 0.000
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

PRESCRIBED ACTIONS FOR CASE 2 SUBCASE 1

PT	X m	N kN	T2 kN	T3 kN	MT kN*m	M2 kN*m	M3 kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.000	0.000	0.000	0.000
5	0.800	0.000	0.000	0.000	0.000	0.000	0.000
6	1.000	0.000	0.000	0.000	0.000	0.000	0.000
7	1.200	0.000	0.000	0.000	0.000	0.000	0.000
8	1.400	0.000	0.000	0.000	0.000	0.000	0.000
9	1.600	0.000	0.000	0.000	0.000	0.000	0.000
10	1.800	0.000	0.000	0.000	0.000	0.000	0.000
11	2.000	0.000	0.000	0.000	0.000	0.000	0.000
12	2.200	0.000	0.000	0.000	0.000	0.000	0.000
13	2.400	0.000	0.000	0.000	0.000	0.000	0.000
14	2.600	0.000	0.000	0.000	0.000	0.000	0.000
15	2.800	0.000	0.000	0.000	0.000	0.000	0.000
16	3.000	0.000	0.000	0.000	0.000	0.000	0.000
17	3.200	0.000	0.000	0.000	0.000	0.000	0.000
18	3.400	0.000	0.000	0.000	0.000	0.000	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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19	3.600	0.000	0.000	0.000	0.000	0.000	0.000
20	3.800	0.000	0.000	0.000	0.000	0.000	0.000
21	4.000	0.000	0.000	0.000	0.000	0.000	0.000
22	4.200	0.000	0.000	0.000	0.000	0.000	0.000
23	4.400	0.000	0.000	0.000	0.000	0.000	0.000
24	4.600	0.000	0.000	0.000	0.000	0.000	0.000
25	4.800	0.000	0.000	0.000	0.000	0.000	0.000
26	5.000	0.000	0.000	0.000	0.000	0.000	0.000
27	5.200	0.000	0.000	0.000	0.000	0.000	0.000
28	5.400	0.000	0.000	0.000	0.000	0.000	0.000
29	5.600	0.000	0.000	0.000	0.000	0.000	0.000
30	5.800	0.000	0.000	0.000	0.000	0.000	0.000
31	6.000	0.000	0.000	0.000	0.000	0.000	0.000
32	6.200	0.000	0.000	0.000	0.000	0.000	0.000
33	6.400	0.000	0.000	0.000	0.000	0.000	0.000
34	6.600	0.000	0.000	0.000	0.000	0.000	0.000
35	6.800	0.000	0.000	0.000	0.000	0.000	0.000
36	7.000	0.000	0.000	0.000	0.000	0.000	0.000
37	7.200	0.000	0.000	0.000	0.000	0.000	0.000
38	7.400	0.000	0.000	0.000	0.000	0.000	0.000
39	7.600	0.000	0.000	0.000	0.000	0.000	0.000
40	7.800	0.000	0.000	0.000	0.000	0.000	0.000
41	8.000	0.000	0.000	0.000	0.000	0.000	0.000
42	8.200	0.000	0.000	0.000	0.000	0.000	0.000
43	8.400	0.000	0.000	0.000	0.000	0.000	0.000
44	8.600	0.000	0.000	0.000	0.000	0.000	0.000
45	8.800	0.000	0.000	0.000	0.000	0.000	0.000
46	9.000	0.000	0.000	0.000	0.000	0.000	0.000
47	9.200	0.000	0.000	0.000	0.000	0.000	0.000
48	9.400	0.000	0.000	0.000	0.000	0.000	0.000
49	9.600	0.000	0.000	0.000	0.000	0.000	0.000
50	9.800	0.000	0.000	0.000	0.000	0.000	0.000
51	10.000	0.000	0.000	0.000	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0
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web buckling ratio (5.7)          =    0.000

Section no.      5 at x= 800.0000 [mm]
selected class for current cross section = 2

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

5.2.2 (2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000          M(V,Rd)= 0.8562E+09

Section no.      5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      =    0.000
resist. ratio according to 5.4      =    0.000
max. resist. ratio (max. among above)=    0.000
web buckling ratio (5.7)          =    0.000

Section no.      6 at x= 1000.000 [mm]
selected class for current cross section = 2

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

5.2.2 (2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000          M(V,Rd)= 0.8562E+09

Section no.      6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      =    0.000
resist. ratio according to 5.4      =    0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0
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max. resist. ratio (max. among above)=    0.000
web buckling ratio (5.7)          =    0.000

Section no.      7 at x= 1200.000 [mm]
selected class for current cross section = 2

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

5.2.2 (2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000          M(V,Rd)= 0.8562E+09

Section no.      7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      =    0.000
resist. ratio according to 5.4      =    0.000
max. resist. ratio (max. among above)=    0.000
web buckling ratio (5.7)          =    0.000

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

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RELAZIONE GEOTECNICA E DI CALCOLO

resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

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resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]

VASCHE DI PRIMA PIOGGIA
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selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

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resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

VASCHE DI PRIMA PIOGGIA
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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

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max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

VASCHE DI PRIMA PIOGGIA
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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

betab 1.000

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Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

betab 1.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

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-----
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-----
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-----

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

    betab 1.000
    Wply 0.3269E+07
    fy 275.0
    gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

    betab 1.000
    Wply 0.3269E+07
    fy 275.0
    gammaM0 1.050

5.2.2 (2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2 (5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

```

```

-----
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-----
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-----
CHECK OF DIRECTLY INPUT MEMBER LW0_S0
-----

web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.000
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 440.0000 [mm]
buckl. length about x-x = 440.0000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 0.0000 XMAX = 440.00
            BXMIN= 0.0000 BXMAX= 0.0000
            X(1) = 0.0000 X(N) = 10000.
            M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000

```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000
" " MQ/Mmax$\leq 1/50$ -\leq LINEAR
Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****
***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 440.0000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 9560.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 440.00 XMAX = 10000.
BXMIN= 0.0000 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000
" " MQ/Mmax$\leq 1/50$ -\leq LINEAR
Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****
***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 2 SUBCASE 1
FOUND AT ACTION FILE LINE N. 195
EC3_EN_1993-5:20 RESISTANCE RATIO 0.000
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

PRESCRIBED ACTIONS FOR CASE		3		SUBCASE		1	
PT	X	N	T2	T3	MT	M2	M3
	m	kN	kN	kN	kN*m	kN*m	kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.000	0.000	0.000	0.000
5	0.800	0.000	0.000	0.000	0.000	0.000	0.000
6	1.000	0.000	0.000	0.000	0.000	0.000	0.000
7	1.200	0.000	0.000	0.000	0.000	0.000	0.000
8	1.400	0.000	0.000	0.000	0.000	0.000	0.000
9	1.600	0.000	0.000	0.000	0.000	0.000	0.000
10	1.800	0.000	0.000	0.000	0.000	0.000	0.000
11	2.000	0.000	0.000	0.000	0.000	0.000	0.000
12	2.200	0.000	0.000	0.000	0.000	0.000	0.000
13	2.400	0.000	0.000	0.000	0.000	0.000	0.000
14	2.600	0.000	0.000	0.000	0.000	0.000	0.000
15	2.800	0.000	0.000	0.000	0.000	0.000	0.000
16	3.000	0.000	0.000	0.000	0.000	0.000	0.000
17	3.200	0.000	0.000	0.000	0.000	0.000	0.000
18	3.400	0.000	0.000	0.000	0.000	0.000	0.000
19	3.600	0.000	0.000	0.000	0.000	0.000	0.000
20	3.800	0.000	0.000	0.000	0.000	0.000	0.000
21	4.000	0.000	0.000	0.000	0.000	0.000	0.000
22	4.200	0.000	0.000	0.000	0.000	0.000	0.000
23	4.400	0.000	0.000	0.000	0.000	0.000	0.000
24	4.600	0.000	0.000	0.000	0.000	0.000	0.000
25	4.800	0.000	0.000	0.000	0.000	0.000	0.000
26	5.000	0.000	0.000	0.000	0.000	0.000	0.000
27	5.200	0.000	0.000	0.000	0.000	0.000	0.000
28	5.400	0.000	0.000	0.000	0.000	0.000	0.000
29	5.600	0.000	0.000	0.000	0.000	0.000	0.000
30	5.800	0.000	0.000	0.000	0.000	0.000	0.000
31	6.000	0.000	0.000	0.000	0.000	0.000	0.000
32	6.200	0.000	0.000	0.000	0.000	0.000	0.000
33	6.400	0.000	0.000	0.000	0.000	0.000	0.000
34	6.600	0.000	0.000	0.000	0.000	0.000	0.000
35	6.800	0.000	0.000	0.000	0.000	0.000	0.000
36	7.000	0.000	0.000	0.000	0.000	0.000	0.000
37	7.200	0.000	0.000	0.000	0.000	0.000	0.000
38	7.400	0.000	0.000	0.000	0.000	0.000	0.000
39	7.600	0.000	0.000	0.000	0.000	0.000	0.000
40	7.800	0.000	0.000	0.000	0.000	0.000	0.000
41	8.000	0.000	0.000	0.000	0.000	0.000	0.000
42	8.200	0.000	0.000	0.000	0.000	0.000	0.000
43	8.400	0.000	0.000	0.000	0.000	0.000	0.000
44	8.600	0.000	0.000	0.000	0.000	0.000	0.000
45	8.800	0.000	0.000	0.000	0.000	0.000	0.000
46	9.000	0.000	0.000	0.000	0.000	0.000	0.000

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47	9.200	0.000	0.000	0.000	0.000	0.000	0.000
48	9.400	0.000	0.000	0.000	0.000	0.000	0.000
49	9.600	0.000	0.000	0.000	0.000	0.000	0.000
50	9.800	0.000	0.000	0.000	0.000	0.000	0.000
51	10.000	0.000	0.000	0.000	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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RELAZIONE GEOTECNICA E DI CALCOLO

gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000

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Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

```
-----
betab      1.000
Wply      0.3269E+07
fy        275.0
gammaM0   1.050
5.2.2(2):  McRd= 0.8562E+09
```

Moment resistance: no need to consider shear reduction

```
5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.   4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.000
resist. ratio according to 5.4      = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7)           = 0.000
```

```
Section no.   5 at x= 800.0000 [mm]
selected class for current cross section = 2
```

```
betab      1.000
Wply      0.3269E+07
fy        275.0
gammaM0   1.050
```

```
5.2.2(2):  McRd= 0.8562E+09
```

Moment resistance: no need to consider shear reduction

```
5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.   5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.000
resist. ratio according to 5.4      = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7)           = 0.000
```

```
Section no.   6 at x= 1000.0000 [mm]
selected class for current cross section = 2
```

```
-----
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-----
CHECK OF DIRECTLY INPUT MEMBER LW0_S0
-----
```

```
betab      1.000
Wply      0.3269E+07
fy        275.0
gammaM0   1.050
5.2.2(2):  McRd= 0.8562E+09
```

Moment resistance: no need to consider shear reduction

```
5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.   6 at x= 1000.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.000
resist. ratio according to 5.4      = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7)           = 0.000
```

```
Section no.   7 at x= 1200.0000 [mm]
selected class for current cross section = 2
```

```
betab      1.000
Wply      0.3269E+07
fy        275.0
gammaM0   1.050
```

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

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RELAZIONE GEOTECNICA E DI CALCOLO

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

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resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

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resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

betab 1.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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RELAZIONE GEOTECNICA E DI CALCOLO

fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000
Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000
Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000
Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

betab 1.000

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RELAZIONE GEOTECNICA E DI CALCOLO

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.000
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

zstart = 0.000000 [mm] zend= 440.0000 [mm]
buckl. length about x-x = 440.0000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 0.0000 XMAX = 440.00
BXMIN= 0.0000 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

" " Mmax 0.0000
" " MQ/Mmax<1/50 -> LINEAR
Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 440.0000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 9560.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 440.00 XMAX = 10000.
BXMIN= 0.0000 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000
" " MQ/Mmax<1/50 -> LINEAR

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

End calculation - Moment:Y Bracing:Z

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 3 SUBCASE 1
FOUND AT ACTION FILE LINE N. 321
EC3_EN_1993-5:20 RESISTANCE RATIO 0.000
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

PRESCRIBED ACTIONS FOR CASE 4 SUBCASE 1

PT	X m	N kN	T2 kN	T3 kN	MT kN*m	M2 kN*m	M3 kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.000	0.000	0.000	0.000
5	0.800	0.000	0.000	0.000	0.000	0.000	0.000
6	1.000	0.000	0.000	0.000	0.000	0.000	0.000
7	1.200	0.000	0.000	0.000	0.000	0.000	0.000
8	1.400	0.000	0.000	0.000	0.000	0.000	0.000
9	1.600	0.000	0.000	0.000	0.000	0.000	0.000
10	1.800	0.000	0.000	0.000	0.000	0.000	0.000
11	2.000	0.000	0.000	0.000	0.000	0.000	0.000
12	2.200	0.000	0.000	0.000	0.000	0.000	0.000
13	2.400	0.000	0.000	0.000	0.000	0.000	0.000
14	2.600	0.000	0.000	0.000	0.000	0.000	0.000
15	2.800	0.000	0.000	0.000	0.000	0.000	0.000
16	3.000	0.000	0.000	0.000	0.000	0.000	0.000
17	3.200	0.000	0.000	0.000	0.000	0.000	0.000
18	3.400	0.000	0.000	0.000	0.000	0.000	0.000
19	3.600	0.000	0.000	0.000	0.000	0.000	0.000
20	3.800	0.000	0.000	0.000	0.000	0.000	0.000
21	4.000	0.000	0.000	0.000	0.000	0.000	0.000
22	4.200	0.000	0.000	0.000	0.000	0.000	0.000
23	4.400	0.000	0.000	0.000	0.000	0.000	0.000
24	4.600	0.000	0.000	0.000	0.000	0.000	0.000
25	4.800	0.000	0.000	0.000	0.000	0.000	0.000

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26	5.000	0.000	0.000	0.000	0.000	0.000	0.000
27	5.200	0.000	0.000	0.000	0.000	0.000	0.000
28	5.400	0.000	0.000	0.000	0.000	0.000	0.000
29	5.600	0.000	0.000	0.000	0.000	0.000	0.000
30	5.800	0.000	0.000	0.000	0.000	0.000	0.000
31	6.000	0.000	0.000	0.000	0.000	0.000	0.000
32	6.200	0.000	0.000	0.000	0.000	0.000	0.000
33	6.400	0.000	0.000	0.000	0.000	0.000	0.000
34	6.600	0.000	0.000	0.000	0.000	0.000	0.000
35	6.800	0.000	0.000	0.000	0.000	0.000	0.000
36	7.000	0.000	0.000	0.000	0.000	0.000	0.000
37	7.200	0.000	0.000	0.000	0.000	0.000	0.000
38	7.400	0.000	0.000	0.000	0.000	0.000	0.000
39	7.600	0.000	0.000	0.000	0.000	0.000	0.000
40	7.800	0.000	0.000	0.000	0.000	0.000	0.000
41	8.000	0.000	0.000	0.000	0.000	0.000	0.000
42	8.200	0.000	0.000	0.000	0.000	0.000	0.000
43	8.400	0.000	0.000	0.000	0.000	0.000	0.000
44	8.600	0.000	0.000	0.000	0.000	0.000	0.000
45	8.800	0.000	0.000	0.000	0.000	0.000	0.000
46	9.000	0.000	0.000	0.000	0.000	0.000	0.000
47	9.200	0.000	0.000	0.000	0.000	0.000	0.000
48	9.400	0.000	0.000	0.000	0.000	0.000	0.000
49	9.600	0.000	0.000	0.000	0.000	0.000	0.000
50	9.800	0.000	0.000	0.000	0.000	0.000	0.000
51	10.000	0.000	0.000	0.000	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

betab 1.000

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 21 at x= 4000.000 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 22 at x= 4200.000 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000

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resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 23 at x= 4400.000 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 24 at x= 4600.000 [mm]

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selected class for current cross section = 2

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resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): $\rho = 0.000$ $M(V,Rd) = 0.8562E+09$

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): $McRd = 0.8562E+09$

Moment resistance: no need to consider shear reduction

5.2.2(5.9): $\rho = 0.000$ $M(V,Rd) = 0.8562E+09$

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Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): $McRd = 0.8562E+09$

Moment resistance: no need to consider shear reduction

5.2.2(5.9): $\rho = 0.000$ $M(V,Rd) = 0.8562E+09$

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above) = 0.000
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): $McRd = 0.8562E+09$

Moment resistance: no need to consider shear reduction

5.2.2(5.9): $\rho = 0.000$ $M(V,Rd) = 0.8562E+09$

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Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 33 at x= 6399.998 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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 CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 34 at x= 6599.998 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 35 at x= 6799.998 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.000
 max. resist. ratio (max. among above)= 0.000
 web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
 selected class for current cross section = 2
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

5.2.2(2): McRd= 0.8562E+09

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RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.000
maximum web buckling ratio = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S0

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 440.0000 [mm]
buckl. length about x-x = 440.0000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3	:	XMIN =	0.0000	XMAX =	440.00
		BXMIN=	0.0000	BXMAX=	0.0000
		X(1) =	0.0000	X(N) =	10000.
		M(1) =	0.0000	M(N) =	0.0000

Table B.3	:	PSI	0.0000
" "	"	Cm	0.0000
" "	"	MQ	0.0000
" "	"	Mmax	0.0000
" "	"	MQ/Mmax	<1/50 -> LINEAR

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 440.0000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 9560.000 [mm]

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CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3	:	XMIN =	440.00	XMAX =	10000.
		BXMIN=	0.0000	BXMAX=	0.0000

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X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : PSI 0.0000
" " Cm 0.0000
" " MQ 0.0000
" " Mmax 0.0000
" " MQ/Mmax<1/50 -> LINEAR

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.0000
Max. bending moment (abs value) [kNm]= 0.0000

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 4 SUBCASE 1
FOUND AT ACTION FILE LINE N. 447
EC3_EN_1993-5:20 RESISTANCE RATIO 0.000
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

MEMBER LW0_S0
MAX RESISTANCE RATIO 0.000 FOR LCASE 4
MAX AXIAL BUCKLING RATIO 0.000 FOR LCASE 4
MAX LATERAL BUCKLING RATIO 0.000 FOR LCASE 4
MAX LOCAL BUCKLING RATIO 0.000 FOR LCASE 4

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

ELEMENT LW0_S1 SHAPE SEC_0 TYPE U
MATERIAL MAT_0 SHAPE NATURE =ROLLED

PRESCRIBED ACTIONS FOR CASE 1 SUBCASE 1

PT	X	N	T2	T3	MT	M2	M3
	m	kN	kN	kN	kN*m	kN*m	kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.2291	0.000	0.000	0.000
5	0.800	0.000	0.000	0.7415	0.000	0.4582E-01	0.000
6	1.000	0.000	0.000	1.543	0.000	0.1941	0.000
7	1.200	0.000	0.000	2.895	0.000	0.5027	0.000
8	1.400	0.000	0.000	4.799	0.000	1.082	0.000
9	1.600	0.000	0.000	7.256	0.000	2.042	0.000
10	1.800	0.000	0.000	10.28	0.000	3.493	0.000
11	2.000	0.000	0.000	13.87	0.000	5.549	0.000
12	2.200	0.000	0.000	18.02	0.000	8.323	0.000
13	2.400	0.000	0.000	20.82	0.000	11.93	0.000
14	2.600	0.000	0.000	23.93	0.000	16.09	0.000
15	2.800	0.000	0.000	27.35	0.000	20.88	0.000
16	3.000	0.000	0.000	31.08	0.000	26.35	0.000
17	3.200	0.000	0.000	35.12	0.000	32.57	0.000
18	3.400	0.000	0.000	39.47	0.000	39.59	0.000
19	3.600	0.000	0.000	44.13	0.000	47.48	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

20	3.800	0.000	0.000	49.10	0.000	56.31	0.000
21	4.000	0.000	0.000	54.38	0.000	66.13	0.000
22	4.200	0.000	0.000	47.35	0.000	77.00	0.000
23	4.400	0.000	0.000	40.42	0.000	86.47	0.000
24	4.600	0.000	0.000	33.61	0.000	94.56	0.000
25	4.800	0.000	0.000	26.91	0.000	101.3	0.000
26	5.000	0.000	0.000	20.30	0.000	106.7	0.000
27	5.200	0.000	0.000	13.78	0.000	110.7	0.000
28	5.400	0.000	0.000	7.315	0.000	113.5	0.000
29	5.600	0.000	0.000	0.9002	0.000	114.9	0.000
30	5.800	0.000	0.000	-5.488	0.000	115.1	0.000
31	6.000	0.000	0.000	-11.87	0.000	114.0	0.000
32	6.200	0.000	0.000	-18.26	0.000	111.7	0.000
33	6.400	0.000	0.000	-24.69	0.000	108.0	0.000
34	6.600	0.000	0.000	-30.86	0.000	103.1	0.000
35	6.800	0.000	0.000	-36.02	0.000	96.89	0.000
36	7.000	0.000	0.000	-36.61	0.000	89.68	0.000
37	7.200	0.000	0.000	-37.15	0.000	82.36	0.000
38	7.400	0.000	0.000	-37.64	0.000	74.93	0.000
39	7.600	0.000	0.000	-38.09	0.000	67.40	0.000

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40	7.800	0.000	0.000	-38.52	0.000	59.79	0.000
41	8.000	0.000	0.000	-38.88	0.000	52.08	0.000
42	8.200	0.000	0.000	-38.41	0.000	44.31	0.000
43	8.400	0.000	0.000	-36.99	0.000	36.62	0.000
44	8.600	0.000	0.000	-34.64	0.000	29.23	0.000
45	8.800	0.000	0.000	-31.39	0.000	22.30	0.000
46	9.000	0.000	0.000	-27.26	0.000	16.02	0.000
47	9.200	0.000	0.000	-22.27	0.000	10.57	0.000
48	9.400	0.000	0.000	-16.58	0.000	6.114	0.000
49	9.600	0.000	0.000	-10.36	0.000	2.798	0.000
50	9.800	0.000	0.000	-3.628	0.000	0.7256	0.000
51	10.000	0.000	0.000	-3.628	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000

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RELAZIONE GEOTECNICA E DI CALCOLO

max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

z direction : Shear Area Av = 7386. mm2
Vsd = 0.2291 kN , VplRd = 1117. kN, ratio = 0.2051E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 0.7415 kN , VplRd = 1117. kN, ratio = 0.6639E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 1.543 kN , VplRd = 1117. kN, ratio = 0.1382E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 2.895 kN , VplRd = 1117. kN, ratio = 0.2592E-02

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

betab 1.000
Wply 0.3269E+07
fy 275.0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 4.799 kN , VplRd = 1117. kN, ratio = 0.4297E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.004

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

max. resist. ratio (max. among above)= 0.004
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 7.256 kN , VplRd = 1117. kN, ratio = 0.6496E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.002
resist. ratio according to 5.4 = 0.006
max. resist. ratio (max. among above)= 0.006
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Z direction : Shear Area Av = 7386. mm2
Vsd = 10.28 kN , VplRd = 1117. kN, ratio = 0.9203E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.004
resist. ratio according to 5.4 = 0.009
max. resist. ratio (max. among above)= 0.009
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 13.87 kN , VplRd = 1117. kN, ratio = 0.1242E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.006
resist. ratio according to 5.4 = 0.012
max. resist. ratio (max. among above)= 0.012
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 18.02 kN , VplRd = 1117. kN, ratio = 0.1614E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.010
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.016
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 20.82 kN , VplRd = 1117. kN, ratio = 0.1864E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.014
resist. ratio according to 5.4 = 0.019
max. resist. ratio (max. among above)= 0.019

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 23.93 kN , VplRd = 1117. kN, ratio = 0.2143E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.019
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.021
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 27.35 kN , VplRd = 1117. kN, ratio = 0.2449E-01

betab 1.000
Wply 0.3269E+07

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.024
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.024
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 31.08 kN , VplRd = 1117. kN, ratio = 0.2783E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.031
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.031
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 35.12 kN , VplRd = 1117. kN, ratio = 0.3144E-01

betab 1.000

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Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.038
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.038
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 39.47 kN , VplRd = 1117. kN, ratio = 0.3534E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.046
resist. ratio according to 5.4 = 0.035
max. resist. ratio (max. among above)= 0.046
web buckling ratio (5.7) = 0.000

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Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 44.13 kN , VplRd = 1117. kN, ratio = 0.3951E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.055
resist. ratio according to 5.4 = 0.040
max. resist. ratio (max. among above)= 0.055
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 49.10 kN , VplRd = 1117. kN, ratio = 0.4396E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.066
resist. ratio according to 5.4 = 0.044
max. resist. ratio (max. among above)= 0.066
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 54.38 kN , VplRd = 1117. kN, ratio = 0.4869E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.077
resist. ratio according to 5.4 = 0.049
max. resist. ratio (max. among above)= 0.077
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 47.35 kN , VplRd = 1117. kN, ratio = 0.4239E-01

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.090
resist. ratio according to 5.4 = 0.042

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max. resist. ratio (max. among above)= 0.090
web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 40.42 kN , VplRd = 1117. kN, ratio = 0.3619E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.101
resist. ratio according to 5.4 = 0.036
max. resist. ratio (max. among above)= 0.101
web buckling ratio (5.7) = 0.000

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Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 33.61 kN , VplRd = 1117. kN, ratio = 0.3009E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.110
resist. ratio according to 5.4 = 0.030
max. resist. ratio (max. among above)= 0.110
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 26.91 kN , VplRd = 1117. kN, ratio = 0.2409E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.118
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.118
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 20.30 kN , VplRd = 1117. kN, ratio = 0.1818E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.125
resist. ratio according to 5.4 = 0.018
max. resist. ratio (max. among above)= 0.125
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 13.78 kN , VplRd = 1117. kN, ratio = 0.1233E-01

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.129
resist. ratio according to 5.4 = 0.012
max. resist. ratio (max. among above)= 0.129
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 7.315 kN , VplRd = 1117. kN, ratio = 0.6549E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.133
resist. ratio according to 5.4 = 0.007
max. resist. ratio (max. among above)= 0.133
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 0.9002 kN , VplRd = 1117. kN, ratio = 0.8060E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.134
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.134
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -5.488 kN , VplRd = 1117. kN, ratio = 0.4913E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.134
resist. ratio according to 5.4 = 0.005
max. resist. ratio (max. among above)= 0.134
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -11.87 kN , VplRd = 1117. kN, ratio = 0.1063E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.133
resist. ratio according to 5.4 = 0.011
max. resist. ratio (max. among above)= 0.133
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -18.26 kN , VplRd = 1117. kN, ratio = 0.1635E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.130
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.130
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2

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Vsd = -24.69 kN , VplRd = 1117. kN, ratio = 0.2211E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.126
resist. ratio according to 5.4 = 0.022
max. resist. ratio (max. among above)= 0.126
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -30.86 kN , VplRd = 1117. kN, ratio = 0.2763E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.120
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.120
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -36.02 kN , VplRd = 1117. kN, ratio = 0.3225E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no.    35 at x= 6799.998      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.113
resist. ratio according to 5.4      = 0.032
max. resist. ratio (max. among above)= 0.113
web buckling ratio (5.7)           = 0.000

Section no.    36 at x= 6999.998      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -36.61      kN , VplRd = 1117.      kN, ratio = 0.3278E-01

        betab      1.000
        Wply      0.3269E+07
        fy        275.0
        gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.    36 at x= 6999.998      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.105
resist. ratio according to 5.4      = 0.033
max. resist. ratio (max. among above)= 0.105
web buckling ratio (5.7)           = 0.000

Section no.    37 at x= 7199.997      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -37.15      kN , VplRd = 1117.      kN, ratio = 0.3326E-01

        betab      1.000
        Wply      0.3269E+07
        fy        275.0
        gammaM0    1.050

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5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.    37 at x= 7199.997      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.096
resist. ratio according to 5.4      = 0.033
max. resist. ratio (max. among above)= 0.096
web buckling ratio (5.7)           = 0.000

Section no.    38 at x= 7399.997      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -37.64      kN , VplRd = 1117.      kN, ratio = 0.3370E-01

        betab      1.000
        Wply      0.3269E+07
        fy        275.0

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gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.088
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.088
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.09 kN , VplRd = 1117. kN, ratio = 0.3410E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.079
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.079
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.52 kN , VplRd = 1117. kN, ratio = 0.3449E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]

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selected class for current cross section = 2
resist. ratio according to 5.1 = 0.070
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above) = 0.070
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.88 kN , VplRd = 1117. kN, ratio = 0.3481E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.061
resist. ratio according to 5.4 = 0.035
max. resist. ratio (max. among above) = 0.061
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.41 kN , VplRd = 1117. kN, ratio = 0.3439E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.052
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above) = 0.052
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -36.99 kN , VplRd = 1117. kN, ratio = 0.3312E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.043
resist. ratio according to 5.4 = 0.033
max. resist. ratio (max. among above)= 0.043
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Z direction : Shear Area Av = 7386. mm2
Vsd = -34.64 kN , VplRd = 1117. kN, ratio = 0.3102E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.034
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.034
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -31.39 kN , VplRd = 1117. kN, ratio = 0.2810E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.1 = 0.026
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.028

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web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -27.26 kN , VplRd = 1117. kN, ratio = 0.2440E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.019
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.024
web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -22.27 kN , VplRd = 1117. kN, ratio = 0.1994E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.012
resist. ratio according to 5.4 = 0.020
max. resist. ratio (max. among above)= 0.020
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -16.58 kN , VplRd = 1117. kN, ratio = 0.1484E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.007
resist. ratio according to 5.4 = 0.015
max. resist. ratio (max. among above)= 0.015
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Vsd = -10.36 kN , VplRd = 1117. kN, ratio = 0.9278E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.003
resist. ratio according to 5.4 = 0.009
max. resist. ratio (max. among above)= 0.009
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -3.628 kN , VplRd = 1117. kN, ratio = 0.3248E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = -3.628 kN , VplRd = 1117. kN, ratio = 0.3248E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.134
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 4050.000 [mm]
buckl. length about x-x = 4050.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 0.0000 XMAX = 4050.0
BXMIN= 0.0000 BXMAX= 0.68848E+08
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.11600E+17
" " : ERR Q M - PARABOLA CENTR. 0.12509E+17

Table B.3 : PSI 0.0000
" " ALPHA 0.85628E-01
" " Cm unif. 0.40000
" " Cm conc. 0.40000
" " Cm avrg. 0.40000
" " Cm . 0.40000

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.40000
Max. bending moment (abs value) [kNm]= 68.848

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 4050.000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 5950.000 [mm]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 4050.0 XMAX = 10000.
BXMIN= 0.68848E+08 BXMAX= 0.0000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.14649E+17
" " : ERR Q M - PARABOLA CENTR. 0.29267E+17
Table B.3 : PSI 0.0000
" " ALPHA 0.77560
" " Cm unif. 0.98878
" " Cm conc. 0.97756
" " Cm avrg. 0.98130
" " Cm . 0.97756

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.97756
Max. bending moment (abs value) [kNm]= 115.12

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 1 SUBCASE 1
FOUND AT ACTION FILE LINE N. 132
EC3_EN_1993-5:20 RESISTANCE RATIO 0.134
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

PRESCRIBED ACTIONS FOR CASE 2 SUBCASE 1

PT	X	N	T2	T3	MT	M2	M3
	m	kN	kN	kN	kN*m	kN*m	kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.2291	0.000	0.000	0.000
5	0.800	0.000	0.000	0.7415	0.000	0.4582E-01	0.000
6	1.000	0.000	0.000	1.543	0.000	0.1941	0.000
7	1.200	0.000	0.000	2.895	0.000	0.5027	0.000
8	1.400	0.000	0.000	4.799	0.000	1.082	0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

9	1.600	0.000	0.000	7.256	0.000	2.042	0.000
10	1.800	0.000	0.000	10.28	0.000	3.493	0.000
11	2.000	0.000	0.000	13.87	0.000	5.549	0.000
12	2.200	0.000	0.000	18.02	0.000	8.323	0.000
13	2.400	0.000	0.000	20.82	0.000	11.93	0.000
14	2.600	0.000	0.000	23.93	0.000	16.09	0.000
15	2.800	0.000	0.000	27.35	0.000	20.88	0.000
16	3.000	0.000	0.000	31.08	0.000	26.35	0.000

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17	3.200	0.000	0.000	35.12	0.000	32.57	0.000
18	3.400	0.000	0.000	39.47	0.000	39.59	0.000
19	3.600	0.000	0.000	44.13	0.000	47.48	0.000
20	3.800	0.000	0.000	49.10	0.000	56.31	0.000
21	4.000	0.000	0.000	54.38	0.000	66.13	0.000
22	4.200	0.000	0.000	47.35	0.000	77.00	0.000
23	4.400	0.000	0.000	40.42	0.000	86.47	0.000
24	4.600	0.000	0.000	33.61	0.000	94.56	0.000
25	4.800	0.000	0.000	26.91	0.000	101.3	0.000
26	5.000	0.000	0.000	20.30	0.000	106.7	0.000
27	5.200	0.000	0.000	13.78	0.000	110.7	0.000
28	5.400	0.000	0.000	7.315	0.000	113.5	0.000
29	5.600	0.000	0.000	0.9002	0.000	114.9	0.000
30	5.800	0.000	0.000	-5.488	0.000	115.1	0.000
31	6.000	0.000	0.000	-11.87	0.000	114.0	0.000
32	6.200	0.000	0.000	-18.26	0.000	111.7	0.000
33	6.400	0.000	0.000	-24.69	0.000	108.0	0.000
34	6.600	0.000	0.000	-30.86	0.000	103.1	0.000
35	6.800	0.000	0.000	-36.02	0.000	96.89	0.000
36	7.000	0.000	0.000	-36.61	0.000	89.68	0.000
37	7.200	0.000	0.000	-37.15	0.000	82.36	0.000
38	7.400	0.000	0.000	-37.64	0.000	74.93	0.000
39	7.600	0.000	0.000	-38.09	0.000	67.40	0.000
40	7.800	0.000	0.000	-38.52	0.000	59.79	0.000
41	8.000	0.000	0.000	-38.88	0.000	52.08	0.000
42	8.200	0.000	0.000	-38.41	0.000	44.31	0.000
43	8.400	0.000	0.000	-36.99	0.000	36.62	0.000
44	8.600	0.000	0.000	-34.64	0.000	29.23	0.000
45	8.800	0.000	0.000	-31.39	0.000	22.30	0.000
46	9.000	0.000	0.000	-27.26	0.000	16.02	0.000
47	9.200	0.000	0.000	-22.27	0.000	10.57	0.000
48	9.400	0.000	0.000	-16.58	0.000	6.114	0.000
49	9.600	0.000	0.000	-10.36	0.000	2.798	0.000
50	9.800	0.000	0.000	-3.628	0.000	0.7256	0.000
51	10.000	0.000	0.000	-3.628	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 0.2291 kN , VplRd = 1117. kN, ratio = 0.2051E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000

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resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 0.7415 kN , VplRd = 1117. kN, ratio = 0.6639E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 1.543 kN , VplRd = 1117. kN, ratio = 0.1382E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 2.895 kN , VplRd = 1117. kN, ratio = 0.2592E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 7 at x= 1200.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 4.799 kN , VplRd = 1117. kN, ratio = 0.4297E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.004
max. resist. ratio (max. among above)= 0.004
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 7.256 kN , VplRd = 1117. kN, ratio = 0.6496E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.002
resist. ratio according to 5.4 = 0.006
max. resist. ratio (max. among above)= 0.006
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 10.28 kN , VplRd = 1117. kN, ratio = 0.9203E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.004
resist. ratio according to 5.4 = 0.009
max. resist. ratio (max. among above)= 0.009
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

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Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 13.87 kN , VplRd = 1117. kN, ratio = 0.1242E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.006
resist. ratio according to 5.4 = 0.012
max. resist. ratio (max. among above)= 0.012
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = 18.02 kN , VplRd = 1117. kN, ratio = 0.1614E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]

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selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.1 = 0.010
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.016
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 20.82 kN , VplRd = 1117. kN, ratio = 0.1864E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.014
resist. ratio according to 5.4 = 0.019
max. resist. ratio (max. among above)= 0.019
web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 23.93 kN , VplRd = 1117. kN, ratio = 0.2143E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.019
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.021
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

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Vsd = 27.35 kN , VplRd = 1117. kN, ratio = 0.2449E-01
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050
 5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 15 at x= 2800.000 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.024
 resist. ratio according to 5.4 = 0.024
 max. resist. ratio (max. among above)= 0.024
 web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
 selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
 Z direction : Shear Area Av = 7386. mm2

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 CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Vsd = 31.08 kN , VplRd = 1117. kN, ratio = 0.2783E-01
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050
 5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 16 at x= 3000.000 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.031
 resist. ratio according to 5.4 = 0.028
 max. resist. ratio (max. among above)= 0.031
 web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
 selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
 Z direction : Shear Area Av = 7386. mm2
 Vsd = 35.12 kN , VplRd = 1117. kN, ratio = 0.3144E-01

betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050
 5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
 Section no. 17 at x= 3200.001 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.038

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resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above) = 0.038
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 39.47 kN , VplRd = 1117. kN, ratio = 0.3534E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.046
resist. ratio according to 5.4 = 0.035
max. resist. ratio (max. among above) = 0.046
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 44.13 kN , VplRd = 1117. kN, ratio = 0.3951E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.055
resist. ratio according to 5.4 = 0.040
max. resist. ratio (max. among above) = 0.055
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 49.10 kN , VplRd = 1117. kN, ratio = 0.4396E-01

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.066
resist. ratio according to 5.4 = 0.044
max. resist. ratio (max. among above)= 0.066
web buckling ratio (5.7) = 0.000
Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 54.38 kN , VplRd = 1117. kN, ratio = 0.4869E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.077
resist. ratio according to 5.4 = 0.049
max. resist. ratio (max. among above)= 0.077
web buckling ratio (5.7) = 0.000
Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 47.35 kN , VplRd = 1117. kN, ratio = 0.4239E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.090
resist. ratio according to 5.4 = 0.042

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max. resist. ratio (max. among above)= 0.090
web buckling ratio (5.7)                = 0.000

Section no.    23 at x= 4400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.    mm2
Vsd = 40.42    kN , VplRd = 1117.    kN, ratio = 0.3619E-01

    betab      1.000
    Wply       0.3269E+07
    fy         275.0
    gammaM0    1.050

5.2.2(2):    McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000    M(V,Rd)= 0.8562E+09

Section no.    23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1    = 0.101
resist. ratio according to 5.4    = 0.036
max. resist. ratio (max. among above)= 0.101
web buckling ratio (5.7)        = 0.000

Section no.    24 at x= 4600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.    mm2
Vsd = 33.61    kN , VplRd = 1117.    kN, ratio = 0.3009E-01

    betab      1.000
    Wply       0.3269E+07
    fy         275.0
    gammaM0    1.050

5.2.2(2):    McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000    M(V,Rd)= 0.8562E+09

Section no.    24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1    = 0.110
resist. ratio according to 5.4    = 0.030
max. resist. ratio (max. among above)= 0.110
web buckling ratio (5.7)        = 0.000

Section no.    25 at x= 4800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.    mm2
Vsd = 26.91    kN , VplRd = 1117.    kN, ratio = 0.2409E-01

    betab      1.000
    Wply       0.3269E+07
    fy         275.0
    gammaM0    1.050

5.2.2(2):    McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.118
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.118
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 20.30 kN , VplRd = 1117. kN, ratio = 0.1818E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.125
resist. ratio according to 5.4 = 0.018
max. resist. ratio (max. among above)= 0.125
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 13.78 kN , VplRd = 1117. kN, ratio = 0.1233E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.129
resist. ratio according to 5.4 = 0.012
max. resist. ratio (max. among above)= 0.129

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web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 7.315 kN , VplRd = 1117. kN, ratio = 0.6549E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.133
resist. ratio according to 5.4 = 0.007
max. resist. ratio (max. among above)= 0.133
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 0.9002 kN , VplRd = 1117. kN, ratio = 0.8060E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.134
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.134
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -5.488 kN , VplRd = 1117. kN, ratio = 0.4913E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.134
resist. ratio according to 5.4 = 0.005
max. resist. ratio (max. among above)= 0.134
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -11.87 kN , VplRd = 1117. kN, ratio = 0.1063E-01

betab 1.000

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Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.133
resist. ratio according to 5.4 = 0.011
max. resist. ratio (max. among above)= 0.133
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -18.26 kN , VplRd = 1117. kN, ratio = 0.1635E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.130
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.130
web buckling ratio (5.7) = 0.000

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Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -24.69 kN , VplRd = 1117. kN, ratio = 0.2211E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.126
resist. ratio according to 5.4 = 0.022
max. resist. ratio (max. among above)= 0.126
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -30.86 kN , VplRd = 1117. kN, ratio = 0.2763E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.120
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.120
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -36.02 kN , VplRd = 1117. kN, ratio = 0.3225E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.113

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resist. ratio according to 5.4 = 0.032
max. resist. ratio (max. among above)= 0.113
web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -36.61 kN , VplRd = 1117. kN, ratio = 0.3278E-01

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.105
resist. ratio according to 5.4 = 0.033
max. resist. ratio (max. among above)= 0.105
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -37.15 kN , VplRd = 1117. kN, ratio = 0.3326E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.096
resist. ratio according to 5.4 = 0.033
max. resist. ratio (max. among above)= 0.096
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -37.64 kN , VplRd = 1117. kN, ratio = 0.3370E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.088
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.088
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.09 kN , VplRd = 1117. kN, ratio = 0.3410E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.079
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.079
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -38.52 kN , VplRd = 1117. kN, ratio = 0.3449E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.070
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.070
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = -38.88 kN , VplRd = 1117. kN, ratio = 0.3481E-01

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.061
resist. ratio according to 5.4 = 0.035
max. resist. ratio (max. among above)= 0.061
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = -38.41 kN , VplRd = 1117. kN, ratio = 0.3439E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.052
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.052
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386.$ mm²
Vsd = -36.99 kN , VplRd = 1117. kN, ratio = 0.3312E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.043
resist. ratio according to 5.4 = 0.033
max. resist. ratio (max. among above)= 0.043
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -34.64 kN , VplRd = 1117. kN, ratio = 0.3102E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.034
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.034
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -31.39 kN , VplRd = 1117. kN, ratio = 0.2810E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.026
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.028
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -27.26 kN , VplRd = 1117. kN, ratio = 0.2440E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.019
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.024
web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -22.27 kN , VplRd = 1117. kN, ratio = 0.1994E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.012
resist. ratio according to 5.4 = 0.020
max. resist. ratio (max. among above)= 0.020
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -16.58 kN , VplRd = 1117. kN, ratio = 0.1484E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.007
resist. ratio according to 5.4 = 0.015
max. resist. ratio (max. among above)= 0.015
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -10.36 kN , VplRd = 1117. kN, ratio = 0.9278E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.003
resist. ratio according to 5.4 = 0.009
max. resist. ratio (max. among above)= 0.009
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -3.628 kN , VplRd = 1117. kN, ratio = 0.3248E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -3.628 kN , VplRd = 1117. kN, ratio = 0.3248E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.134
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 4050.000 [mm]
buckl. length about x-x = 4050.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 0.0000 XMAX = 4050.0
BXMIN= 0.0000 BXMAX= 0.68848E+08
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.11600E+17
" " : ERR Q M - PARABOLA CENTR. 0.12509E+17

Table B.3 : PSI 0.0000
" " ALPHA 0.85628E-01
" " Cm unif. 0.40000
" " Cm conc. 0.40000
" " Cm avrg. 0.40000
" " Cm . 0.40000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.40000
Max. bending moment (abs value) [kNm]= 68.848

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

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CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 4050.000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 5950.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 4050.0 XMAX = 10000.
BXMIN= 0.68848E+08 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.14649E+17
" " : ERR Q M - PARABOLA CENTR. 0.29267E+17
Table B.3 : PSI 0.0000
" " ALPHA 0.77560
" " Cm unif. 0.98878
" " Cm conc. 0.97756
" " Cm avrg. 0.98130
" " Cm . 0.97756

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.97756

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Max. bending moment (abs value) [kNm]= 115.12

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 2 SUBCASE 1
FOUND AT ACTION FILE LINE N. 258
EC3_EN_1993-5:20 RESISTANCE RATIO 0.134
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

PRESCRIBED ACTIONS FOR CASE 3 SUBCASE 1

PT	X	N	T2	T3	MT	M2	M3
	m	kN	kN	kN	kN*m	kN*m	kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.2978	0.000	0.000	0.000
5	0.800	0.000	0.000	0.9639	0.000	0.5956E-01	0.000
6	1.000	0.000	0.000	2.006	0.000	0.2523	0.000
7	1.200	0.000	0.000	3.764	0.000	0.6536	0.000
8	1.400	0.000	0.000	6.239	0.000	1.406	0.000
9	1.600	0.000	0.000	9.432	0.000	2.654	0.000
10	1.800	0.000	0.000	13.36	0.000	4.541	0.000
11	2.000	0.000	0.000	18.03	0.000	7.213	0.000
12	2.200	0.000	0.000	23.43	0.000	10.82	0.000
13	2.400	0.000	0.000	27.07	0.000	15.51	0.000
14	2.600	0.000	0.000	31.11	0.000	20.92	0.000
15	2.800	0.000	0.000	35.56	0.000	27.14	0.000
16	3.000	0.000	0.000	40.41	0.000	34.25	0.000
17	3.200	0.000	0.000	45.66	0.000	42.34	0.000
18	3.400	0.000	0.000	51.31	0.000	51.47	0.000
19	3.600	0.000	0.000	57.37	0.000	61.73	0.000
20	3.800	0.000	0.000	63.83	0.000	73.20	0.000
21	4.000	0.000	0.000	70.69	0.000	85.97	0.000
22	4.200	0.000	0.000	61.56	0.000	100.1	0.000
23	4.400	0.000	0.000	52.55	0.000	112.4	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

24 4.600 0.000 0.000 43.70 0.000 122.9 0.000

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25	4.800	0.000	0.000	34.98	0.000	131.7	0.000
26	5.000	0.000	0.000	26.39	0.000	138.7	0.000
27	5.200	0.000	0.000	17.91	0.000	143.9	0.000
28	5.400	0.000	0.000	9.509	0.000	147.5	0.000
29	5.600	0.000	0.000	1.170	0.000	149.4	0.000
30	5.800	0.000	0.000	-7.134	0.000	149.7	0.000
31	6.000	0.000	0.000	-15.43	0.000	148.2	0.000
32	6.200	0.000	0.000	-23.74	0.000	145.1	0.000
33	6.400	0.000	0.000	-32.10	0.000	140.4	0.000
34	6.600	0.000	0.000	-40.12	0.000	134.0	0.000
35	6.800	0.000	0.000	-46.82	0.000	126.0	0.000
36	7.000	0.000	0.000	-47.59	0.000	116.6	0.000
37	7.200	0.000	0.000	-48.29	0.000	107.1	0.000
38	7.400	0.000	0.000	-48.93	0.000	97.41	0.000
39	7.600	0.000	0.000	-49.51	0.000	87.62	0.000
40	7.800	0.000	0.000	-50.08	0.000	77.72	0.000
41	8.000	0.000	0.000	-50.54	0.000	67.71	0.000
42	8.200	0.000	0.000	-49.94	0.000	57.60	0.000
43	8.400	0.000	0.000	-48.09	0.000	47.61	0.000
44	8.600	0.000	0.000	-45.03	0.000	37.99	0.000
45	8.800	0.000	0.000	-40.80	0.000	28.99	0.000
46	9.000	0.000	0.000	-35.44	0.000	20.83	0.000
47	9.200	0.000	0.000	-28.95	0.000	13.74	0.000
48	9.400	0.000	0.000	-21.55	0.000	7.948	0.000
49	9.600	0.000	0.000	-13.47	0.000	3.638	0.000
50	9.800	0.000	0.000	-4.716	0.000	0.9433	0.000
51	10.000	0.000	0.000	-4.716	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 2 at x= 200.0000 [mm]

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selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 0.2978 kN , VplRd = 1117. kN, ratio = 0.2666E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 0.9639 kN , VplRd = 1117. kN, ratio = 0.8630E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 2.006 kN , VplRd = 1117. kN, ratio = 0.1796E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.002
max. resist. ratio (max. among above)= 0.002
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 3.764 kN , VplRd = 1117. kN, ratio = 0.3370E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 6.239 kN , VplRd = 1117. kN, ratio = 0.5586E-02

betab 1.000
Wply 0.3269E+07
fy 275.0

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.002
resist. ratio according to 5.4 = 0.006
max. resist. ratio (max. among above)= 0.006
web buckling ratio (5.7) = 0.000

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 9.432 kN , VplRd = 1117. kN, ratio = 0.8445E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.003
resist. ratio according to 5.4 = 0.008
max. resist. ratio (max. among above)= 0.008
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = 13.36      kN , VplRd = 1117.      kN, ratio = 0.1196E-01

        betab      1.000
        Wply      0.3269E+07
        fy      275.0
        gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.    10 at x= 1800.000      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.005
resist. ratio according to 5.4      = 0.012
max. resist. ratio (max. among above)= 0.012
web buckling ratio (5.7)          = 0.000

Section no.    11 at x= 2000.000      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = 18.03      kN , VplRd = 1117.      kN, ratio = 0.1614E-01

        betab      1.000
        Wply      0.3269E+07
        fy      275.0
        gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

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Section no.    11 at x= 2000.000      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.008
resist. ratio according to 5.4      = 0.016
max. resist. ratio (max. among above)= 0.016
web buckling ratio (5.7)          = 0.000

Section no.    12 at x= 2200.000      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = 23.43      kN , VplRd = 1117.      kN, ratio = 0.2098E-01

        betab      1.000
        Wply      0.3269E+07
        fy      275.0
        gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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VASCHE DI PRIMA PIOGGIA
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5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.013
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.021
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 27.07 kN , VplRd = 1117. kN, ratio = 0.2424E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.018
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.024
web buckling ratio (5.7) = 0.000

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 31.11 kN , VplRd = 1117. kN, ratio = 0.2786E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.024
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.028
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 35.56 kN , VplRd = 1117. kN, ratio = 0.3184E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.032
resist. ratio according to 5.4 = 0.032
max. resist. ratio (max. among above)= 0.032
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 40.41 kN , VplRd = 1117. kN, ratio = 0.3618E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.040
resist. ratio according to 5.4 = 0.036
max. resist. ratio (max. among above)= 0.040
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 45.66 kN , VplRd = 1117. kN, ratio = 0.4088E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

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resist. ratio according to 5.1 = 0.049
resist. ratio according to 5.4 = 0.041
max. resist. ratio (max. among above) = 0.049
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 51.31 kN , VplRd = 1117. kN, ratio = 0.4594E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.060
resist. ratio according to 5.4 = 0.046
max. resist. ratio (max. among above) = 0.060
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 57.37 kN , VplRd = 1117. kN, ratio = 0.5136E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.072
resist. ratio according to 5.4 = 0.051
max. resist. ratio (max. among above) = 0.072
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 63.83 kN , VplRd = 1117. kN, ratio = 0.5715E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.085
resist. ratio according to 5.4 = 0.057
max. resist. ratio (max. among above)= 0.085
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 70.69 kN , VplRd = 1117. kN, ratio = 0.6329E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.100
resist. ratio according to 5.4 = 0.063
max. resist. ratio (max. among above)= 0.100
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 61.56 kN , VplRd = 1117. kN, ratio = 0.5511E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.117
resist. ratio according to 5.4 = 0.055
max. resist. ratio (max. among above)= 0.117
web buckling ratio (5.7) = 0.000

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Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 52.55 kN , VplRd = 1117. kN, ratio = 0.4705E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.131
resist. ratio according to 5.4 = 0.047
max. resist. ratio (max. among above)= 0.131
web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 43.70 kN , VplRd = 1117. kN, ratio = 0.3912E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.144
resist. ratio according to 5.4 = 0.039
max. resist. ratio (max. among above)= 0.144
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Z direction : Shear Area Av = 7386. mm2
Vsd = 34.98 kN , VplRd = 1117. kN, ratio = 0.3132E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.154
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.154
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 26.39 kN , VplRd = 1117. kN, ratio = 0.2363E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.1 = 0.162
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.162
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 17.91 kN , VplRd = 1117. kN, ratio = 0.1603E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.168
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.168
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

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Vsd = 9.509 kN , VplRd = 1117. kN, ratio = 0.8514E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.172
resist. ratio according to 5.4 = 0.009
max. resist. ratio (max. among above)= 0.172
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

Vsd = 1.170 kN , VplRd = 1117. kN, ratio = 0.1048E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.175
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.175
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Vsd = -7.134 kN , VplRd = 1117. kN, ratio = 0.6387E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.175
resist. ratio according to 5.4 = 0.006
max. resist. ratio (max. among above)= 0.175
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -15.43 kN , VplRd = 1117. kN, ratio = 0.1381E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.173

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

resist. ratio according to 5.4 = 0.014
max. resist. ratio (max. among above)= 0.173
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -23.74 kN , VplRd = 1117. kN, ratio = 0.2126E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.170
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.170
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -32.10 kN , VplRd = 1117. kN, ratio = 0.2874E-01

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.164
resist. ratio according to 5.4 = 0.029
max. resist. ratio (max. among above)= 0.164
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -40.12 kN , VplRd = 1117. kN, ratio = 0.3592E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.156
resist. ratio according to 5.4 = 0.036
max. resist. ratio (max. among above)= 0.156
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -46.82 kN , VplRd = 1117. kN, ratio = 0.4192E-01

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.147
resist. ratio according to 5.4 = 0.042
max. resist. ratio (max. among above)= 0.147
web buckling ratio (5.7) = 0.000

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -47.59 kN , VplRd = 1117. kN, ratio = 0.4261E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 36 at x= 6999.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.136
resist. ratio according to 5.4 = 0.043

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max. resist. ratio (max. among above)= 0.136
web buckling ratio (5.7) = 0.000

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -48.29 kN , VplRd = 1117. kN, ratio = 0.4323E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 37 at x= 7199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.125
resist. ratio according to 5.4 = 0.043
max. resist. ratio (max. among above)= 0.125
web buckling ratio (5.7) = 0.000

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -48.93 kN , VplRd = 1117. kN, ratio = 0.4381E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.114
resist. ratio according to 5.4 = 0.044
max. resist. ratio (max. among above)= 0.114
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -49.51 kN , VplRd = 1117. kN, ratio = 0.4433E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.102
resist. ratio according to 5.4 = 0.044
max. resist. ratio (max. among above)= 0.102
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -50.08 kN , VplRd = 1117. kN, ratio = 0.4483E-01

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.091
resist. ratio according to 5.4 = 0.045
max. resist. ratio (max. among above)= 0.091

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web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386$ mm²
Vsd = -50.54 kN , VplRd = 1117. kN, ratio = 0.4525E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.079
resist. ratio according to 5.4 = 0.045
max. resist. ratio (max. among above)= 0.079

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386$ mm²
Vsd = -49.94 kN , VplRd = 1117. kN, ratio = 0.4471E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.067
resist. ratio according to 5.4 = 0.045
max. resist. ratio (max. among above)= 0.067
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area $A_v = 7386$ mm²
Vsd = -48.09 kN , VplRd = 1117. kN, ratio = 0.4306E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.056
resist. ratio according to 5.4 = 0.043
max. resist. ratio (max. among above)= 0.056
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -45.03 kN , VplRd = 1117. kN, ratio = 0.4032E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.044
resist. ratio according to 5.4 = 0.040
max. resist. ratio (max. among above)= 0.044
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -40.80 kN , VplRd = 1117. kN, ratio = 0.3653E-01

betab 1.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.034
resist. ratio according to 5.4 = 0.037
max. resist. ratio (max. among above)= 0.037
web buckling ratio (5.7) = 0.000

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -35.44 kN , VplRd = 1117. kN, ratio = 0.3173E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.024
resist. ratio according to 5.4 = 0.032
max. resist. ratio (max. among above)= 0.032
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -28.95 kN , VplRd = 1117. kN, ratio = 0.2592E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.016
resist. ratio according to 5.4 = 0.026
max. resist. ratio (max. among above)= 0.026
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -21.55 kN , VplRd = 1117. kN, ratio = 0.1930E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.009
resist. ratio according to 5.4 = 0.019
max. resist. ratio (max. among above)= 0.019
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -13.47 kN , VplRd = 1117. kN, ratio = 0.1206E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.004
resist. ratio according to 5.4 = 0.012
max. resist. ratio (max. among above)= 0.012
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -4.716 kN , VplRd = 1117. kN, ratio = 0.4223E-02

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.004
max. resist. ratio (max. among above)= 0.004
web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -4.716 kN , VplRd = 1117. kN, ratio = 0.4223E-02

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.004
max. resist. ratio (max. among above)= 0.004
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Summary of resistance checks over all the sections
max selected class: 2, at station no. 51
maximum resistance ratio = 0.175
maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
zstart = 0.000000 [mm] zend= 4050.000 [mm]
buckl. length about x-x = 4050.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3	:	XMIN =	0.0000	XMAX =	4050.0
		BXMIN=	0.0000	BXMAX=	0.89502E+08
		X(1) =	0.0000	X(N) =	10000.
		M(1) =	0.0000	M(N) =	0.0000

Table B.3 : ERR Q M - BILINEAR 0.19604E+17

" " : ERR Q M - PARABOLA CENTR. 0.21141E+17

Table B.3 : PSI 0.0000

" " ALPHA 0.85628E-01

" " Cm unif. 0.40000

" " Cm conc. 0.40000

" " Cm avrg. 0.40000

" " Cm . 0.40000

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.40000
Max. bending moment (abs value) [kNm]= 89.502

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

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VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
zstart = 4050.000 [mm] zend= 10000.00 [mm]
buckl. length about x-x = 5950.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 4050.0 XMAX = 10000.
BXMIN= 0.89502E+08 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.24756E+17
" " : ERR Q M - PARABOLA CENTR. 0.49462E+17

Table B.3 : PSI 0.0000
" " ALPHA 0.77560
" " Cm unif. 0.98878
" " Cm conc. 0.97756
" " Cm avrg. 0.98130
" " Cm . 0.97756

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.97756
Max. bending moment (abs value) [kNm]= 149.66

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

LCASE 3 SUBCASE 1
FOUND AT ACTION FILE LINE N. 384
EC3_EN_1993-5:20 RESISTANCE RATIO 0.175
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

PRESCRIBED ACTIONS FOR CASE 4 SUBCASE 1

PT	X	N	T2	T3	MT	M2	M3
	m	kN	kN	kN	kN*m	kN*m	kN*m
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	0.200	0.000	0.000	0.000	0.000	0.000	0.000
3	0.400	0.000	0.000	0.000	0.000	0.000	0.000
4	0.600	0.000	0.000	0.3099	0.000	0.000	0.000
5	0.800	0.000	0.000	1.003	0.000	0.6199E-01	0.000
6	1.000	0.000	0.000	2.088	0.000	0.2626	0.000
7	1.200	0.000	0.000	3.776	0.000	0.6802	0.000
8	1.400	0.000	0.000	6.070	0.000	1.435	0.000
9	1.600	0.000	0.000	8.970	0.000	2.649	0.000
10	1.800	0.000	0.000	12.50	0.000	4.443	0.000
11	2.000	0.000	0.000	16.65	0.000	6.942	0.000
12	2.200	0.000	0.000	21.42	0.000	10.27	0.000
13	2.400	0.000	0.000	24.22	0.000	14.56	0.000
14	2.600	0.000	0.000	27.33	0.000	19.40	0.000
15	2.800	0.000	0.000	30.75	0.000	24.87	0.000
16	3.000	0.000	0.000	34.48	0.000	31.02	0.000
17	3.200	0.000	0.000	38.52	0.000	37.91	0.000
18	3.400	0.000	0.000	42.87	0.000	45.62	0.000
19	3.600	0.000	0.000	47.53	0.000	54.19	0.000
20	3.800	0.000	0.000	52.50	0.000	63.69	0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

21	4.000	0.000	0.000	57.77	0.000	74.19	0.000
22	4.200	0.000	0.000	49.14	0.000	85.75	0.000
23	4.400	0.000	0.000	40.68	0.000	95.58	0.000
24	4.600	0.000	0.000	32.40	0.000	103.7	0.000
25	4.800	0.000	0.000	24.30	0.000	110.2	0.000
26	5.000	0.000	0.000	16.36	0.000	115.1	0.000
27	5.200	0.000	0.000	8.696	0.000	118.3	0.000
28	5.400	0.000	0.000	1.447	0.000	120.1	0.000
29	5.600	0.000	0.000	-5.377	0.000	120.4	0.000
30	5.800	0.000	0.000	-11.83	0.000	119.3	0.000
31	6.000	0.000	0.000	-17.94	0.000	116.9	0.000
32	6.200	0.000	0.000	-23.72	0.000	113.3	0.000
33	6.400	0.000	0.000	-29.19	0.000	108.6	0.000
34	6.600	0.000	0.000	-34.35	0.000	102.7	0.000
35	6.800	0.000	0.000	-39.25	0.000	95.87	0.000
36	7.000	0.000	0.000	-38.93	0.000	88.02	0.000
37	7.200	0.000	0.000	-38.45	0.000	80.23	0.000
38	7.400	0.000	0.000	-37.81	0.000	72.54	0.000
39	7.600	0.000	0.000	-37.02	0.000	64.98	0.000
40	7.800	0.000	0.000	-36.10	0.000	57.58	0.000
41	8.000	0.000	0.000	-35.07	0.000	50.36	0.000

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42	8.200	0.000	0.000	-33.93	0.000	43.35	0.000
43	8.400	0.000	0.000	-34.29	0.000	36.56	0.000
44	8.600	0.000	0.000	-33.41	0.000	29.70	0.000
45	8.800	0.000	0.000	-31.26	0.000	23.02	0.000
46	9.000	0.000	0.000	-27.87	0.000	16.77	0.000
47	9.200	0.000	0.000	-23.25	0.000	11.20	0.000
48	9.400	0.000	0.000	-17.59	0.000	6.547	0.000
49	9.600	0.000	0.000	-11.17	0.000	3.029	0.000
50	9.800	0.000	0.000	-3.978	0.000	0.7956	0.000
51	10.000	0.000	0.000	-3.978	0.000	0.000	0.000

EC3: CSTVEREC3P MODULE: START

Partial safety factors as used in this code
Gamma M0 = 1.050
Gamma M1 = 1.050
Gamma M2 = 1.250

EC3 PILING: START RESISTANCE CHECKS

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 1 at x= 0.000000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 2 at x= 200.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 3 at x= 400.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

web buckling ratio (5.7) = 0.000

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 0.3099 kN , VplRd = 1117. kN, ratio = 0.2775E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 4 at x= 600.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.000
max. resist. ratio (max. among above)= 0.000
web buckling ratio (5.7) = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 1.003 kN , VplRd = 1117. kN, ratio = 0.8982E-03

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 5 at x= 800.0000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.001
web buckling ratio (5.7) = 0.000

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 2.088 kN , VplRd = 1117. kN, ratio = 0.1869E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 6 at x= 1000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.000
resist. ratio according to 5.4 = 0.002
max. resist. ratio (max. among above)= 0.002
web buckling ratio (5.7) = 0.000

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 3.776 kN , VplRd = 1117. kN, ratio = 0.3380E-02

betab 1.000

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Wply 0.3269E+07
fy 275.0
gammaM0 1.050

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 7 at x= 1200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.003
max. resist. ratio (max. among above)= 0.003
web buckling ratio (5.7) = 0.000

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 6.070 kN , VplRd = 1117. kN, ratio = 0.5434E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 8 at x= 1400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.002
resist. ratio according to 5.4 = 0.005
max. resist. ratio (max. among above)= 0.005
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 8.970 kN , VplRd = 1117. kN, ratio = 0.8031E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 9 at x= 1600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.003
resist. ratio according to 5.4 = 0.008
max. resist. ratio (max. among above)= 0.008
web buckling ratio (5.7) = 0.000

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Vsd = 12.50 kN , VplRd = 1117. kN, ratio = 0.1119E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 10 at x= 1800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.005
resist. ratio according to 5.4 = 0.011
max. resist. ratio (max. among above)= 0.011
web buckling ratio (5.7) = 0.000

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 16.65 kN , VplRd = 1117. kN, ratio = 0.1491E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 11 at x= 2000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.008
resist. ratio according to 5.4 = 0.015
max. resist. ratio (max. among above)= 0.015
web buckling ratio (5.7) = 0.000

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 21.42 kN , VplRd = 1117. kN, ratio = 0.1918E-01

betab 1.000
Wply 0.3269E+07

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fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 12 at x= 2200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.012
resist. ratio according to 5.4 = 0.019
max. resist. ratio (max. among above)= 0.019
web buckling ratio (5.7) = 0.000

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 24.22 kN , VplRd = 1117. kN, ratio = 0.2169E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 13 at x= 2400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.017
resist. ratio according to 5.4 = 0.022
max. resist. ratio (max. among above)= 0.022
web buckling ratio (5.7) = 0.000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 27.33 kN , VplRd = 1117. kN, ratio = 0.2447E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 14 at x= 2600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.023
resist. ratio according to 5.4 = 0.024
max. resist. ratio (max. among above)= 0.024
web buckling ratio (5.7) = 0.000

Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 30.75 kN , VplRd = 1117. kN, ratio = 0.2753E-01

betab 1.000
Wply 0.3269E+07
fy 275.0

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 15 at x= 2800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.029
resist. ratio according to 5.4 = 0.028
max. resist. ratio (max. among above)= 0.029
web buckling ratio (5.7) = 0.000

Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 34.48 kN , VplRd = 1117. kN, ratio = 0.3087E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09
Section no. 16 at x= 3000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.036
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.036
web buckling ratio (5.7) = 0.000

Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 38.52 kN , VplRd = 1117. kN, ratio = 0.3449E-01

betab 1.000
Wply 0.3269E+07
fy 275.0

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gammaM0 1.050
5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 17 at x= 3200.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.044
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.044
web buckling ratio (5.7) = 0.000

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 42.87 kN , VplRd = 1117. kN, ratio = 0.3838E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 18 at x= 3400.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.053
resist. ratio according to 5.4 = 0.038
max. resist. ratio (max. among above)= 0.053
web buckling ratio (5.7) = 0.000

Section no. 19 at x= 3600.001 [mm]

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selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 47.53 kN , VplRd = 1117. kN, ratio = 0.4255E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 19 at x= 3600.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.063
resist. ratio according to 5.4 = 0.043
max. resist. ratio (max. among above)= 0.063
web buckling ratio (5.7) = 0.000

Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 52.50 kN , VplRd = 1117. kN, ratio = 0.4700E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 20 at x= 3800.001 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.074
resist. ratio according to 5.4 = 0.047
max. resist. ratio (max. among above)= 0.074
web buckling ratio (5.7) = 0.000

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 57.77 kN , VplRd = 1117. kN, ratio = 0.5173E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 21 at x= 4000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.087
resist. ratio according to 5.4 = 0.052
max. resist. ratio (max. among above)= 0.087
web buckling ratio (5.7) = 0.000

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 49.14 kN , VplRd = 1117. kN, ratio = 0.4400E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 22 at x= 4200.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.100
resist. ratio according to 5.4 = 0.044
max. resist. ratio (max. among above)= 0.100

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web buckling ratio (5.7) = 0.000

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 40.68 kN , VplRd = 1117. kN, ratio = 0.3642E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 23 at x= 4400.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.112
resist. ratio according to 5.4 = 0.036
max. resist. ratio (max. among above)= 0.112
web buckling ratio (5.7) = 0.000

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 32.40 kN , VplRd = 1117. kN, ratio = 0.2901E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 24 at x= 4600.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.121
resist. ratio according to 5.4 = 0.029
max. resist. ratio (max. among above)= 0.121
web buckling ratio (5.7) = 0.000

Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 24.30 kN , VplRd = 1117. kN, ratio = 0.2175E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

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Section no. 25 at x= 4800.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.129
resist. ratio according to 5.4 = 0.022
max. resist. ratio (max. among above)= 0.129
web buckling ratio (5.7) = 0.000

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 16.36 kN , VplRd = 1117. kN, ratio = 0.1464E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 26 at x= 5000.000 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.134
resist. ratio according to 5.4 = 0.015
max. resist. ratio (max. among above)= 0.134
web buckling ratio (5.7) = 0.000

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = 8.696 kN , VplRd = 1117. kN, ratio = 0.7786E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 27 at x= 5199.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.138
resist. ratio according to 5.4 = 0.008
max. resist. ratio (max. among above)= 0.138
web buckling ratio (5.7) = 0.000

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = 1.447 kN , VplRd = 1117. kN, ratio = 0.1295E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 28 at x= 5399.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.140
resist. ratio according to 5.4 = 0.001
max. resist. ratio (max. among above)= 0.140
web buckling ratio (5.7) = 0.000

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2

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5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -5.377 kN , VplRd = 1117. kN, ratio = 0.4814E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 29 at x= 5599.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.141
resist. ratio according to 5.4 = 0.005
max. resist. ratio (max. among above)= 0.141
web buckling ratio (5.7) = 0.000

Section no. 30 at x= 5799.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -11.83 kN , VplRd = 1117. kN, ratio = 0.1059E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 30 at x= 5799.999 [mm]

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selected class for current cross section = 2
resist. ratio according to 5.1 = 0.139
resist. ratio according to 5.4 = 0.011
max. resist. ratio (max. among above)= 0.139
web buckling ratio (5.7) = 0.000

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -17.94 kN , VplRd = 1117. kN, ratio = 0.1606E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 31 at x= 5999.999 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.137
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.137
web buckling ratio (5.7) = 0.000

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -23.72 kN , VplRd = 1117. kN, ratio = 0.2124E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 32 at x= 6199.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.132
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.132
web buckling ratio (5.7) = 0.000

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -29.19 kN , VplRd = 1117. kN, ratio = 0.2614E-01

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betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 33 at x= 6399.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.127
resist. ratio according to 5.4 = 0.026
max. resist. ratio (max. among above)= 0.127
web buckling ratio (5.7) = 0.000

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

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Z direction : Shear Area Av = 7386. mm2
Vsd = -34.35 kN , VplRd = 1117. kN, ratio = 0.3076E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 34 at x= 6599.998 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.120
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.120
web buckling ratio (5.7) = 0.000

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -39.25 kN , VplRd = 1117. kN, ratio = 0.3514E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 35 at x= 6799.998 [mm]
selected class for current cross section = 2

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resist. ratio according to 5.1      = 0.112
resist. ratio according to 5.4      = 0.035
max. resist. ratio (max. among above)= 0.112
web buckling ratio (5.7)           = 0.000

Section no.    36 at x= 6999.998      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -38.93      kN , VplRd = 1117.      kN, ratio = 0.3486E-01

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.    36 at x= 6999.998      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.103
resist. ratio according to 5.4      = 0.035
max. resist. ratio (max. among above)= 0.103
web buckling ratio (5.7)           = 0.000

Section no.    37 at x= 7199.997      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -38.45      kN , VplRd = 1117.      kN, ratio = 0.3442E-01

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

5.2.2(2):      McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1
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Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000      M(V,Rd)= 0.8562E+09

Section no.    37 at x= 7199.997      [mm]
selected class for current cross section = 2
resist. ratio according to 5.1      = 0.094
resist. ratio according to 5.4      = 0.034
max. resist. ratio (max. among above)= 0.094
web buckling ratio (5.7)           = 0.000

Section no.    38 at x= 7399.997      [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386.      mm2
Vsd = -37.81      kN , VplRd = 1117.      kN, ratio = 0.3385E-01

    betab      1.000
    Wply      0.3269E+07
    fy        275.0
    gammaM0    1.050

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5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 38 at x= 7399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.085
resist. ratio according to 5.4 = 0.034
max. resist. ratio (max. among above)= 0.085
web buckling ratio (5.7) = 0.000

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

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Vsd = -37.02 kN , VplRd = 1117. kN, ratio = 0.3314E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 39 at x= 7599.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.076
resist. ratio according to 5.4 = 0.033
max. resist. ratio (max. among above)= 0.076
web buckling ratio (5.7) = 0.000

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2

Vsd = -36.10 kN , VplRd = 1117. kN, ratio = 0.3232E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 40 at x= 7799.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.067

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resist. ratio according to 5.4 = 0.032
max. resist. ratio (max. among above) = 0.067
web buckling ratio (5.7) = 0.000

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -35.07 kN , VplRd = 1117. kN, ratio = 0.3140E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 41 at x= 7999.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.059
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above) = 0.059
web buckling ratio (5.7) = 0.000

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -33.93 kN , VplRd = 1117. kN, ratio = 0.3038E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 42 at x= 8199.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.051
resist. ratio according to 5.4 = 0.030
max. resist. ratio (max. among above) = 0.051
web buckling ratio (5.7) = 0.000

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -34.29 kN , VplRd = 1117. kN, ratio = 0.3070E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 43 at x= 8399.997 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.043
resist. ratio according to 5.4 = 0.031
max. resist. ratio (max. among above)= 0.043
web buckling ratio (5.7) = 0.000

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -33.41 kN , VplRd = 1117. kN, ratio = 0.2991E-01

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 44 at x= 8599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.035
resist. ratio according to 5.4 = 0.030
max. resist. ratio (max. among above)= 0.035
web buckling ratio (5.7) = 0.000

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check

Z direction : Shear Area Av = 7386. mm2
Vsd = -31.26 kN , VplRd = 1117. kN, ratio = 0.2799E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 45 at x= 8799.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.027
resist. ratio according to 5.4 = 0.028

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

max. resist. ratio (max. among above)= 0.028
web buckling ratio (5.7) = 0.000

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -27.87 kN , VplRd = 1117. kN, ratio = 0.2495E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 46 at x= 8999.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.020
resist. ratio according to 5.4 = 0.025
max. resist. ratio (max. among above)= 0.025
web buckling ratio (5.7) = 0.000

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -23.25 kN , VplRd = 1117. kN, ratio = 0.2081E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 47 at x= 9199.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.013
resist. ratio according to 5.4 = 0.021
max. resist. ratio (max. among above)= 0.021
web buckling ratio (5.7) = 0.000

Section no. 48 at x= 9399.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -17.59 kN , VplRd = 1117. kN, ratio = 0.1575E-01

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 48 at x= 9399.996 [mm]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

selected class for current cross section = 2
resist. ratio according to 5.1 = 0.008
resist. ratio according to 5.4 = 0.016
max. resist. ratio (max. among above)= 0.016
web buckling ratio (5.7) = 0.000

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -11.17 kN , VplRd = 1117. kN, ratio = 0.9999E-02

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 49 at x= 9599.996 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.004
resist. ratio according to 5.4 = 0.010
max. resist. ratio (max. among above)= 0.010
web buckling ratio (5.7) = 0.000

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2
Vsd = -3.978 kN , VplRd = 1117. kN, ratio = 0.3562E-02

betab 1.000
Wply 0.3269E+07
fy 275.0
gammaM0 1.050

5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 50 at x= 9799.995 [mm]
selected class for current cross section = 2
resist. ratio according to 5.1 = 0.001
resist. ratio according to 5.4 = 0.004
max. resist. ratio (max. among above)= 0.004

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

web buckling ratio (5.7) = 0.000

Section no. 51 at x= 10000.00 [mm]
selected class for current cross section = 2

5.2.2(5.4) Shear resistance check
Z direction : Shear Area Av = 7386. mm2

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

Vsd = -3.978 kN , VplRd = 1117. kN, ratio = 0.3562E-02
 betab 1.000
 Wply 0.3269E+07
 fy 275.0
 gammaM0 1.050
 5.2.2(2): McRd= 0.8562E+09

Moment resistance: no need to consider shear reduction

5.2.2(5.9): rho= 0.000 M(V,Rd)= 0.8562E+09

Section no. 51 at x= 10000.00 [mm]
 selected class for current cross section = 2
 resist. ratio according to 5.1 = 0.000
 resist. ratio according to 5.4 = 0.004
 max. resist. ratio (max. among above)= 0.004
 web buckling ratio (5.7) = 0.000

Summary of resistance checks over all the sections
 max selected class: 2, at station no. 51
 maximum resistance ratio = 0.141
 maximum web buckling ratio = 0.000

EC3 PILING: START BUCKLING CHECKS

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 1
 zstart = 0.000000 [mm] zend= 4050.000 [mm]
 buckl. length about x-x = 4050.000 [mm]

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

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 CHECK OF DIRECTLY INPUT MEMBER LW0_S1

TABLE B.3 : XMIN = 0.0000 XMAX = 4050.0
 BXMIN= 0.0000 BXMAX= 0.77083E+08
 X(1) = 0.0000 X(N) = 10000.
 M(1) = 0.0000 M(N) = 0.0000

Table B.3 : ERR Q M - BILINEAR 0.14231E+17
 " " : ERR Q M - PARABOLA CENTR. 0.15490E+17
 Table B.3 : PSI 0.0000
 " " ALPHA 0.95462E-01
 " " Cm unif. 0.40000
 " " Cm conc. 0.40000
 " " Cm avrg. 0.40000
 " " Cm . 0.40000

Annex B: TABLE B.3

Moment about axis: Y
 Bracing in direction: Z
 Equiv. uniform moment factor Cm = 0.40000
 Max. bending moment (abs value) [kNm]= 77.083

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****
 ***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

CSTVEREC3P: STABILITY CHECKS FOR PARTIAL SPAN NO. 2
 zstart = 4050.000 [mm] zend= 10000.00 [mm]
 buckl. length about x-x = 5950.000 [mm]

VASCHE DI PRIMA PIOGGIA
RELAZIONE GEOTECNICA E DI CALCOLO

CSTVEREC3P: EQUIVALENT MOMENTS CALCULATION

Start calculation - Moment:Y Bracing:Z

TABLE B.3 : XMIN = 4050.0 XMAX = 10000.
BXMIN= 0.77083E+08 BXMAX= 0.0000
X(1) = 0.0000 X(N) = 10000.
M(1) = 0.0000 M(N) = 0.0000

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CHECK OF DIRECTLY INPUT MEMBER LW0_S1

Table B.3 : ERR Q M - BILINEAR 0.17303E+17
" " : ERR Q M - PARABOLA CENTR. 0.32233E+17
Table B.3 : PSI 0.0000
" " ALPHA 0.88854
" " Cm unif. 0.99428
" " Cm conc. 0.98855
" " Cm avrg. 0.99055
" " Cm . 0.98855

Annex B: TABLE B.3

Moment about axis: Y
Bracing in direction: Z
Equiv. uniform moment factor Cm = 0.98855
Max. bending moment (abs value) [kNm]= 120.35

End calculation - Moment:Y Bracing:Z

***** STABILITY CHECK *****

***** EUROCODE 3 PART 5 - 2007 *****

No axial compression: skipping buckling

LCASE 4 SUBCASE 1
FOUND AT ACTION FILE LINE N. 504
EC3_EN_1993-5:20 RESISTANCE RATIO 0.141
AXIAL BUCKLING RATIO 0.000
LATERAL BUCKLING RATIO 0.000
LOCAL BUCKLING RATIO 0.000
RETURNED ERROR CODE 0

MEMBER LW0_S1
MAX RESISTANCE RATIO 0.175 FOR LCASE 3
MAX AXIAL BUCKLING RATIO 0.000 FOR LCASE 4
MAX LATERAL BUCKLING RATIO 0.000 FOR LCASE 4
MAX LOCAL BUCKLING RATIO 0.000 FOR LCASE 4