Direzione Progettazione e Realizzazione Lavori

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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PROTOCOLLO	DATA
	MARZO 2019

IDROLOGIA ED IDRAULICA

Relazione di calcolo vasche di prima pioggia

CODICE PROGETTO (PROGETTO / LIV. PROG. / N. PROG.)	NOME FILE	REVISIONE	SCALA:
DPFI12 E 1801	T00-ID00-IDR-RE03	A	-
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REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
A	Emissione	29/03/2019	F.Macchioni	V.Rotisciani	N.Granieri

INDICE

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.

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).

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.

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
Da -7.20 a -16.20	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 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.

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 ($R_{ck} = 40$ 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	$f_{ck} = 0.83 \cdot R_{ck} = 33.2$ N/mm^2
Resistenza media a compressione	$f_{cm} = f_{ck} + 8 = 41.2$ N/mm^2
Resistenza media a trazione semplice	$f_{ctm} = 0.30 \cdot f_{ck}^{2/3} = 3.1$ N/mm^2
Resistenza caratteristica a trazione semplice	$f_{ctk} = 0.7 \cdot f_{ctm} = 2.17$ 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	$f_{cd} = \frac{\alpha_{cc} \cdot f_{ck}}{\gamma_c} = 18.81\ N/mm^2$
Resistenza di calcolo a trazione	$f_{ctd} = \frac{f_{ctk}}{\gamma_c} = 1.44\ N/mm^2$
Modulo di elasticità	$E_{cm} = 22000 \cdot \left[\frac{f_{cm}}{10}\right]^{0.3} = 33642.8\ N/mm^2$
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	$f_{tk} = 540\ N/mm^2$
Tensione di snervamento nominale	$f_{yk} = 450\ N/mm^2$
Allungamento a rottura caratteristico	$(A_{gt})_k \geq 7.5\ \%$
Coefficiente parziale di sicurezza:	$\phi_s = 1.15$
Tensione di snervamento di calcolo:	$f_{yd} = \frac{f_{yk}}{\gamma_s} = 391\ N/mm^2$

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.

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 x8.80 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.

5.2.1Copertura

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/m^2

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/m^2

CARICHI VARIABILI

Copertura carrabile ..... 20.00 kN/m^2

Carico variabile totale Q_{1k} 20.00 kN/m^2

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/m^2

CARICHI PERMANENTI NON STRUTTURALI

Massetto (sp = 15 cm) ..... 3.75 kN/m^2

Carico permanente non strutturale totale G_{2k} 3.75 kN/m^2

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/m^2:

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

dove:

γ_w = 10 kN/m^3, peso specifico dell'acqua;
H_w = 2.00 m, altezza massima dell'invaso;
z' = 2.00 m, quota a cui viene calcolata la pressione;
a_g = 0.046 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:

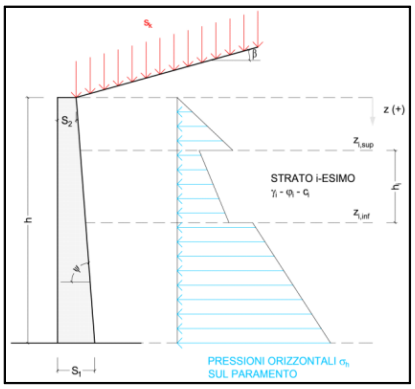
γ_k= 19,0	kN/m^3	peso di volume caratteristico;
φ'_k = 35	°	angolo di operativo attrito caratteristico.

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/m^2.

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

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



GEOMETRIA MURO E RINTERRO

γ_M=	25	kN/m³	Peso per unità di volume
s_1=	0,3	m	Spessore alla base
s_2=	0,3	m	Spessore in testa
h_f=	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

E — Categoria suolo

T1 - Superficie pianeggiante, pendii e rilievi isolati con inclinazione media i<=15° — 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_c^*=	0,273	s	Periodo di inizio del tratto a velocità costante dello spettro in accelerazione orizzontale
C_C=	1,933		Coefficiente che modifica il valore del periodo T_C
S_s=	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

g_{1k}	g_{2k}	q_{1k}		
0	0	20	kN/m²	Carico uniformemente distribuito a tergo del paramento

S_{q1k}	S_{q2k}	S_{q1k}	
1	1	0,3	Coefficiente di riduzione della massa del sovraccarico

Coefficiente parziali di sicurezza dei carichi

γ_{G1}	γ_{G2}	γ_Q	γ_E	
1	1	1	-	Coefficiente parziali di sicurezza dei carichi SLE
1,3	1,5	1,5	-	Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 1 (A1) E APPROCCIO 2
1	1,3	1,3	-	Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 2 (A2)
1	1	1	1	Coefficiente parziali di sicurezza dei carichi in combinazione sismica SLV

Coefficiente parziali di sicurezza per i parametri geotecnici del terreno

γ_γ	γ_φ	$\gamma_{c'}$	
1	1	1	Coefficiente parziali di sicurezza dei parametri geotecnici SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV
1	1,25	1,25	Coefficiente parziali di sicurezza dei parametri geotecnici - SLU - APPROCCIO 1 - COMB 2 (M2)

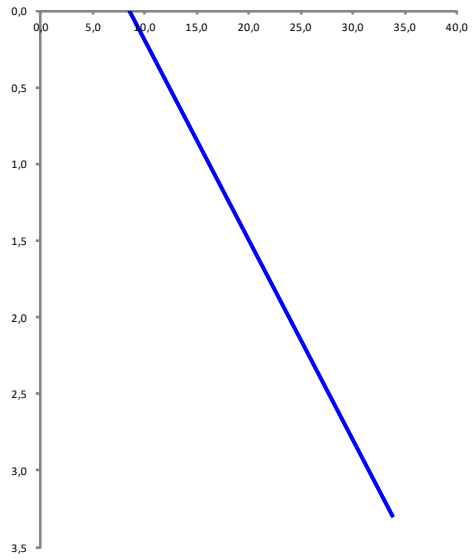
CARATTERISTICHE STRATI TERRENO

				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)**			
Strato	z_{sup} [m]	z_{inf} [m]	h [m]	γ_k [kN/m³]	φ_k [°]	δ_k [°]	c_k' [kN/m²]	γ_d [kN/m³]	φ_d [°]	δ_d [°]	c_d' [kN/m²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ea,d}$ [-]	$k_{eb,d}$ [-]	γ_d [kN/m³]	φ_d [°]	δ_d [°]	c_d' [kN/m²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ea,d}$ [-]	$k_{eb,d}$ [-]
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

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

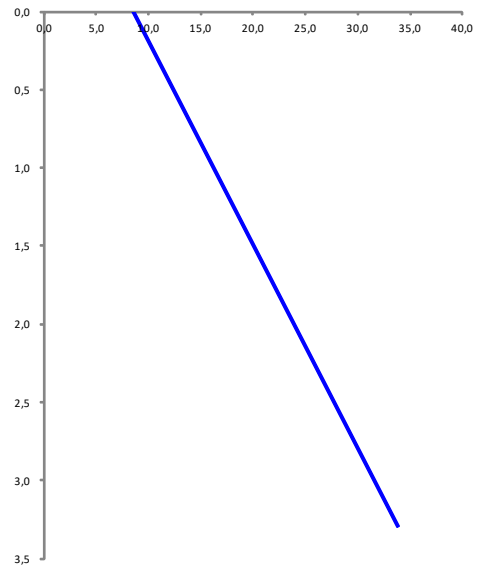
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLE**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	8,53	**8,53**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
2	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
3	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
4	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
5	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
6	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
7	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
8	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
9	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
10	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**



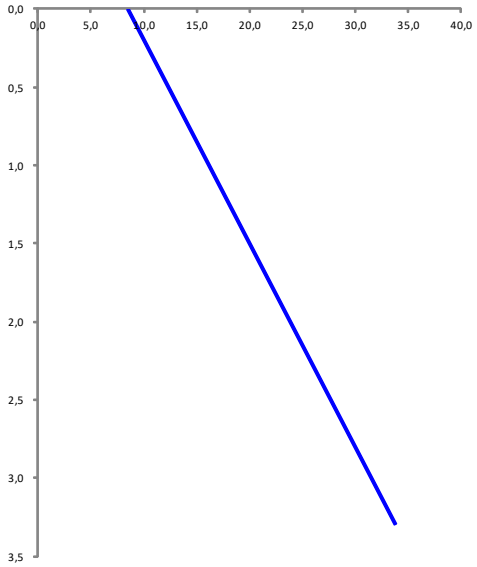
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLU APPROCCIO 1 - COMBINAZIONE 1 E APPROCCIO 2**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	12,79	**12,79**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
2	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
3	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
4	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
5	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
6	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
7	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
8	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
9	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
10	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**



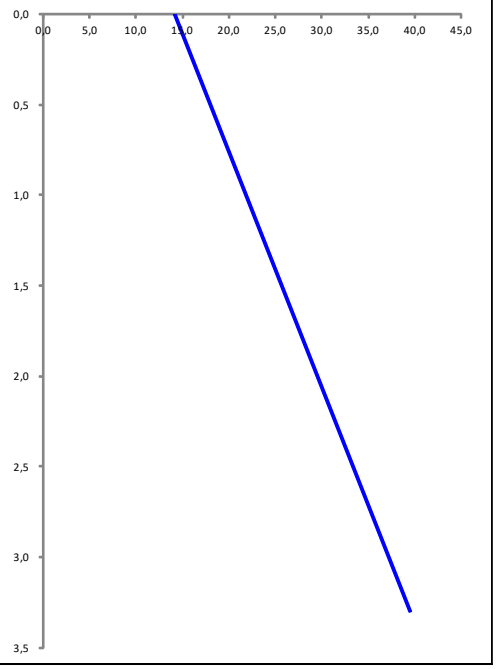
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLU APPROCCIO 1 - COMBINAZIONE 2**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,51	0,0	0,00	0,00	0,00	13,29	**13,29**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
2	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
3	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
4	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
5	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
6	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
7	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
8	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
9	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
10	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**



PRESSIONI DI PROGETTO CONDIZIONI SISMICHE **SLV**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	Pressione della forza d'inerzia agente sul paramento [kN/m²]	Pressione dell'incremento sismico di spinta [kN/m²]	Pressione incremento sismico spinta sovraccarichi permanenti strutturali [kN/m²]	Pressione incremento sismico spinta sovraccarichi permanenti non strutturali [kN/m²]	Pressione incremento sismico spinta sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**14,17**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
2	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
3	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
4	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
5	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
6	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
7	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
8	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
9	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
10	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**
	3,30		59,4	25,33	0,00	0,00	8,53	0,55	4,90	0,00	0,00	0,19	**39,50**



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.

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 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.

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):

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

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

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

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

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

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.

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

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
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
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	Tr y 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
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	Tr x SLV	Tr y SLV	Tr z 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

Nome	Nome breve	Y SLV	Z SLV	EY SLV	EX SLV	Tr x SLV	Tr y SLV	Tr z SLV
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 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.

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/m^2]
E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m^2]

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.
fyk: resistenza caratteristica. [kN/m²]
σamm.: 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	fyk	σamm.	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	D.M. 17-01-18 (N.T.C.)
Tipo di costruzione	2 - Costruzioni con livelli di prestazioni ordinari
Vn	50
Classe d'uso	II
Vr	50
Tipo di analisi	Lineare dinamica
Località	Livorno, Piombino, Colmata; Latitudine ED50 42,9604° (42° 57' 37''); Longitudine ED50 10,5508° (10° 33' 3''); Altitudine s.l.m. 165,06 m.
Categoria del suolo	E - Terreni con caratteristiche e valori di velocità equivalente riconducibili a quelle definite per le categorie C o D, con profondità del substrato non superiore a 30 m
Categoria topografica	T1 - Superficie pianeggiante, pendii e rilievi isolati con

	inclinazione media i<=15°	
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	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
γs (fattore di sicurezza parziale per l'acciaio)	1.15
γc (fattore di sicurezza parziale per il calcestruzzo)	1.5
Limite σc/fck in combinazione rara	0.6
Limite σc/fck in combinazione quasi permanente	0.45
Limite σf/fyk 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

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 rigidezza 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 rigidezza 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

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 - Sfioro	Fondazione	Sfioro

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
	Spinta acqua	0	2	20	0

Rappresentazione grafica modello input

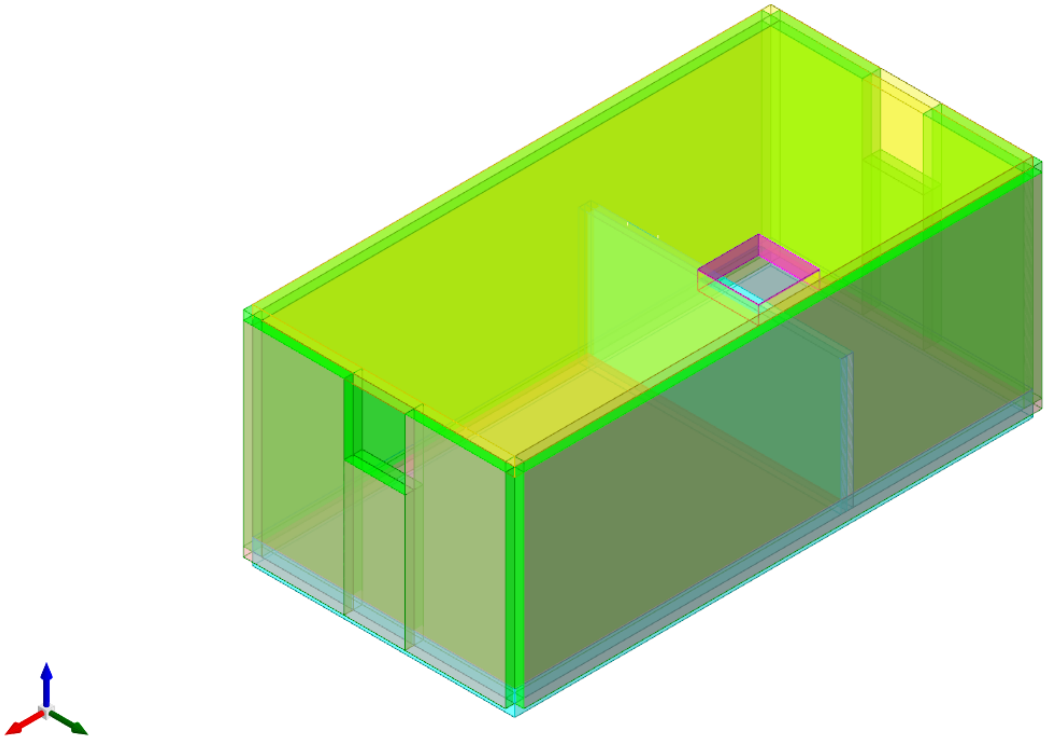


Figura 1 - Rappresentazione Grafica del Modello di Calcolo

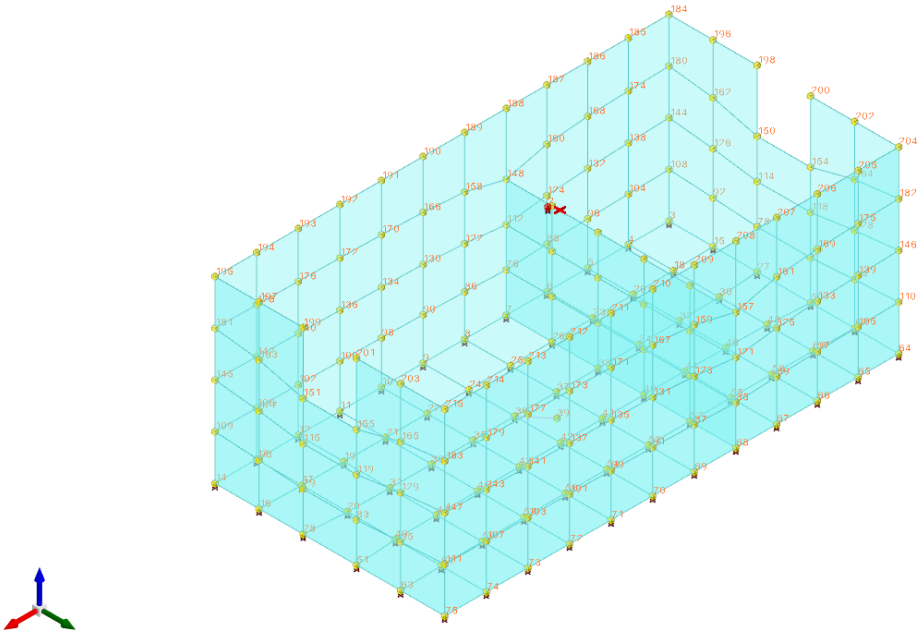


Figura 2 - Rappresentazione Grafica del Modello di Calcolo – Numerazione NODI

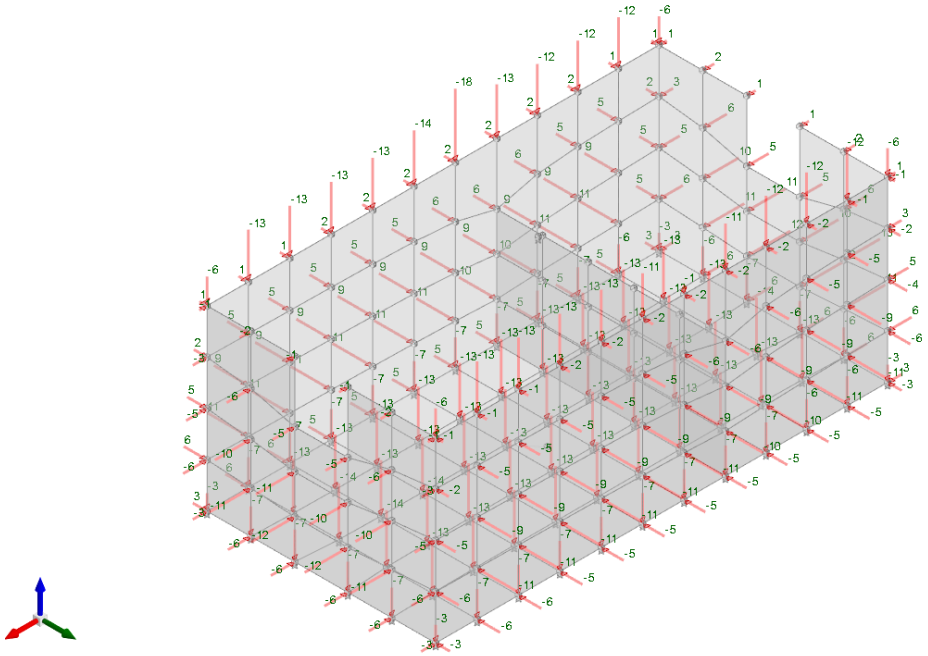


Figura 3 - Condizione carichi permanenti strutturali

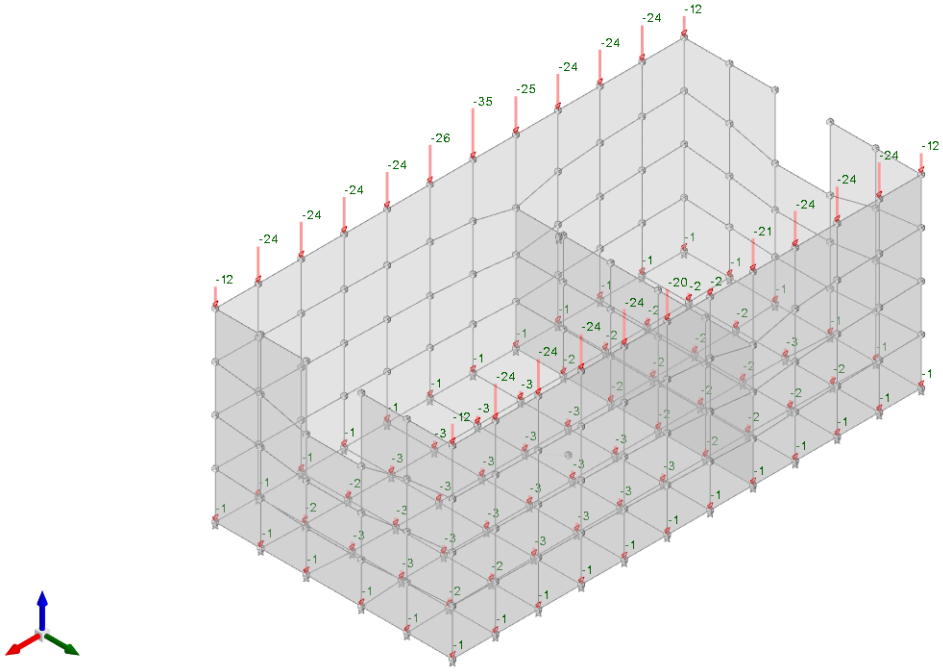


Figura 4 - Condizione carichi permanenti non strutturali

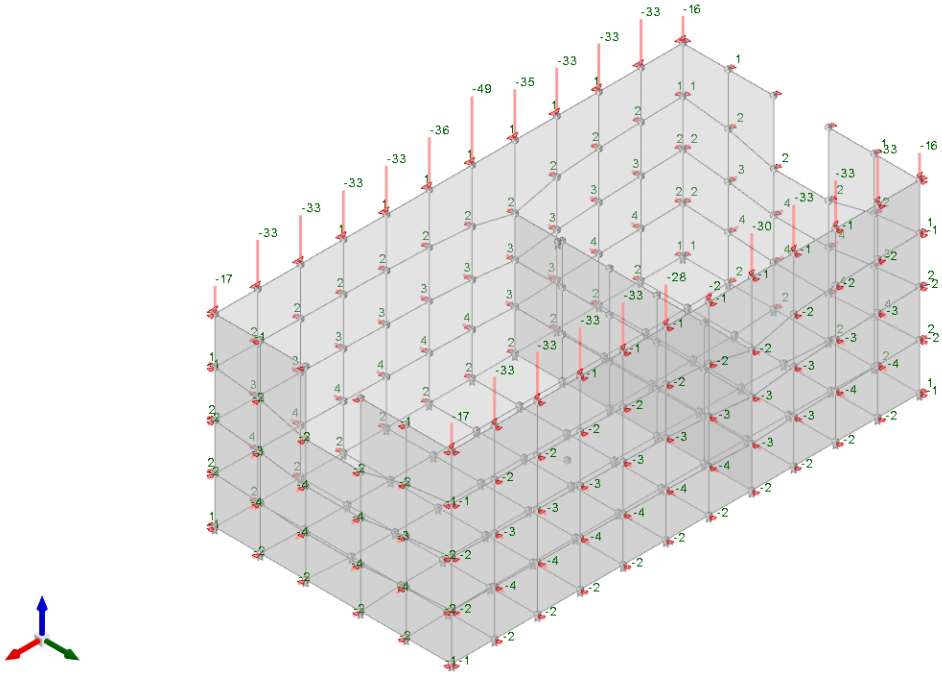


Figura 5 - Condizione sovraccarico accidentale (variabile traffico)

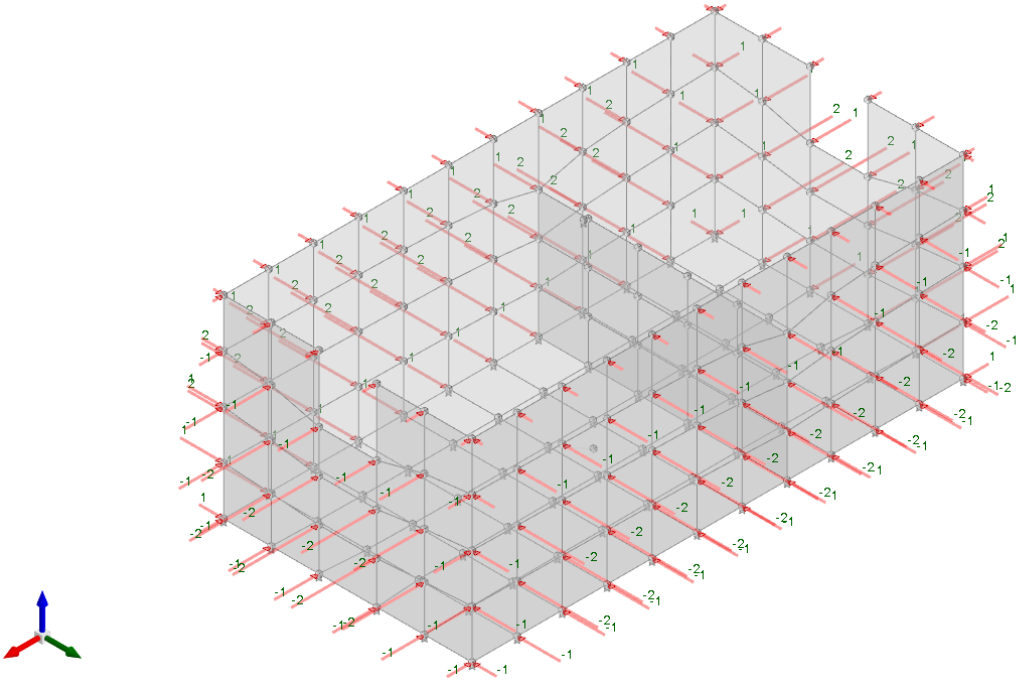


Figura 6 - Condizione spinta sismica terreno

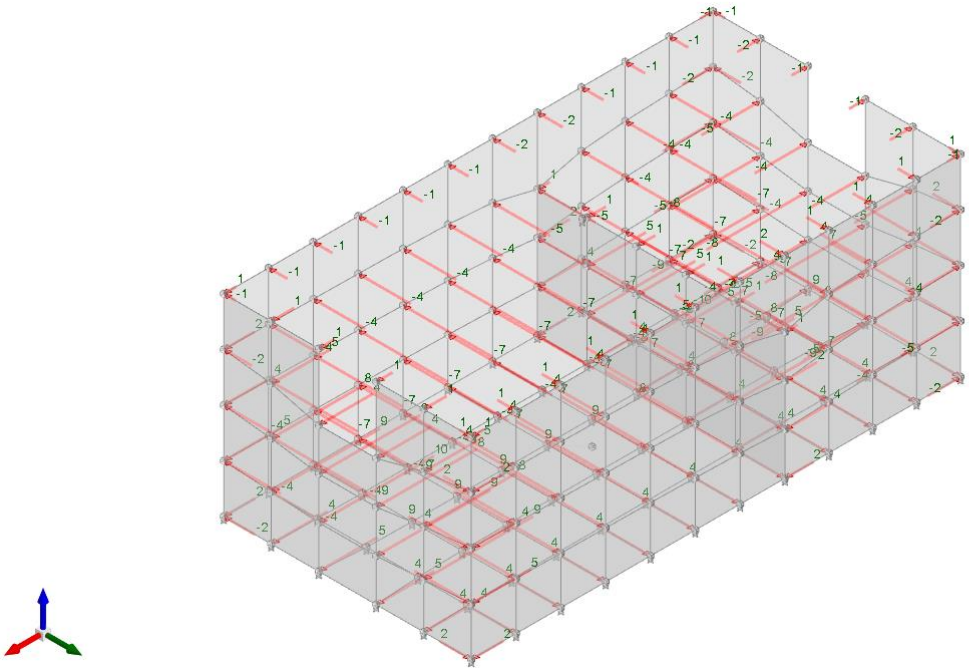


Figura 7 - Condizione spinta acqua

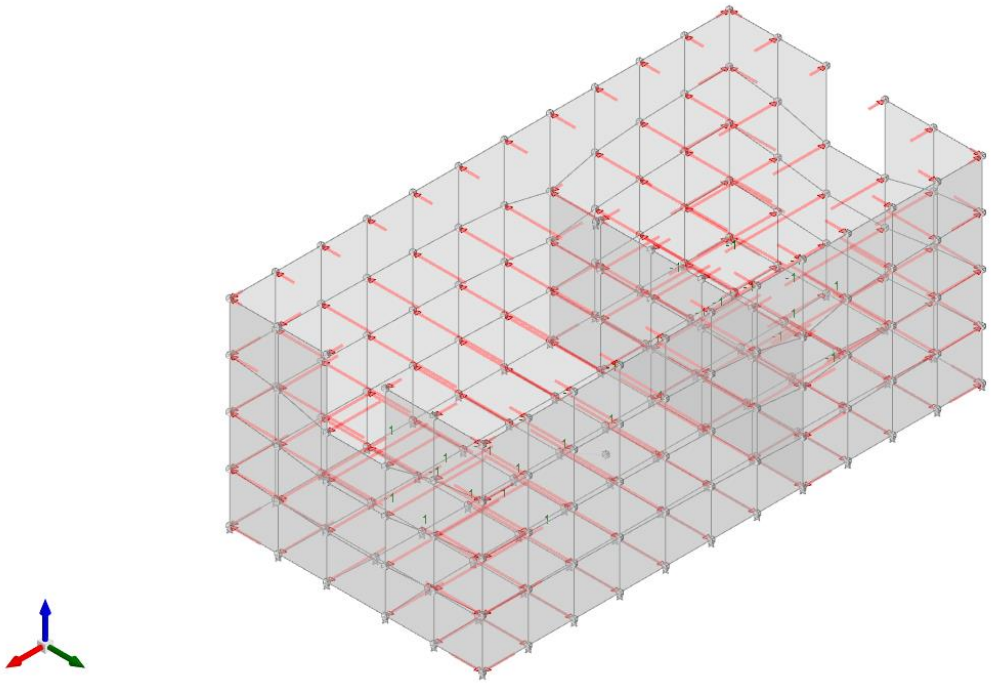


Figura 8 - Condizione spinta sismica acqua

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;

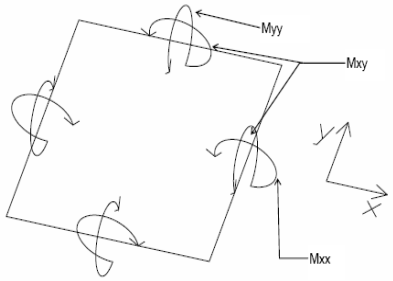
- F3: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di F3 positivo viene disegnato lungo l'asta dalla parte del semiasse 3 positivo;

- 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 Mxx, Myy, Mxy.



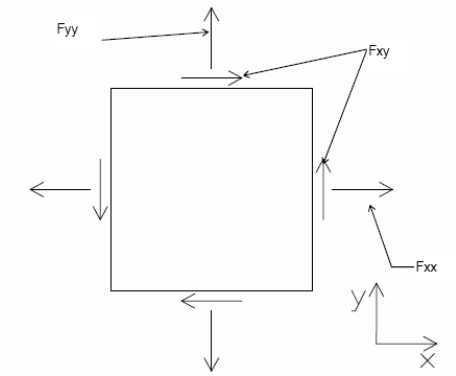
si definiscono:

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

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

Mxy: 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 Fxx, Fyy, Fxy.



Si definiscono:

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

Fyy: 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);

Fxy: 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:

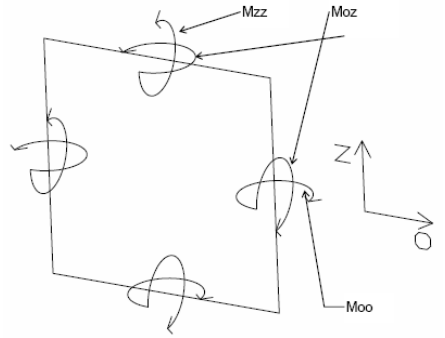
Vx: taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse x (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti);

Vy: 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 destrogira". 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.

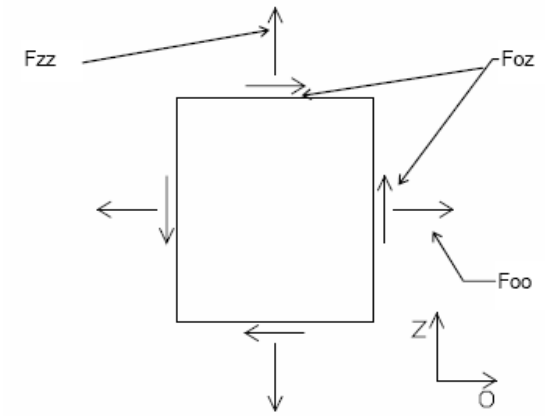
In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione Moo, Mzz, Moz.



Moo: 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);

Mzz: 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);

Moz: 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 Foo, Fzz, Foz sono rispettivamente:



Fzz: 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);

Foo: 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);

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

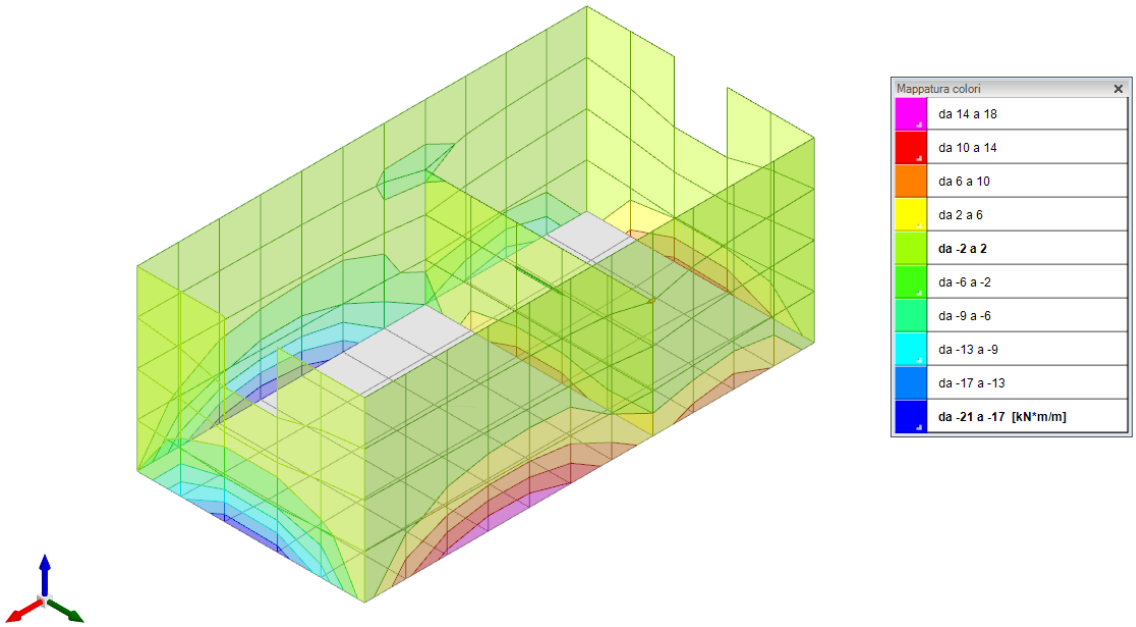


Figura 9 - Inviluppo momento flettente Mzz

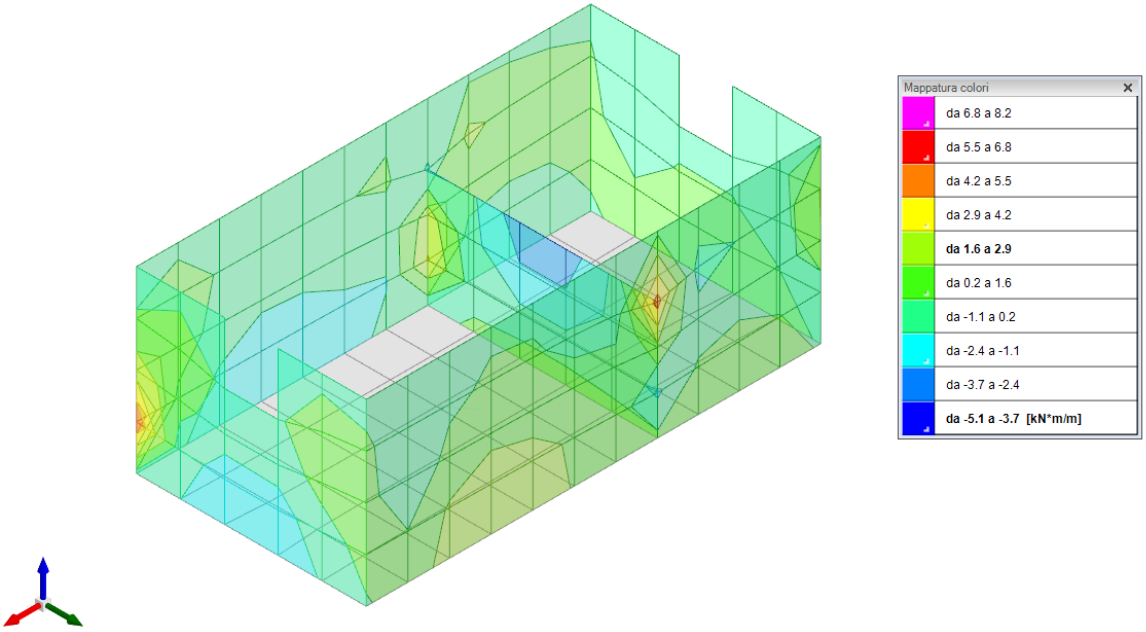


Figura 10 - Inviluppo momento flettente Moo

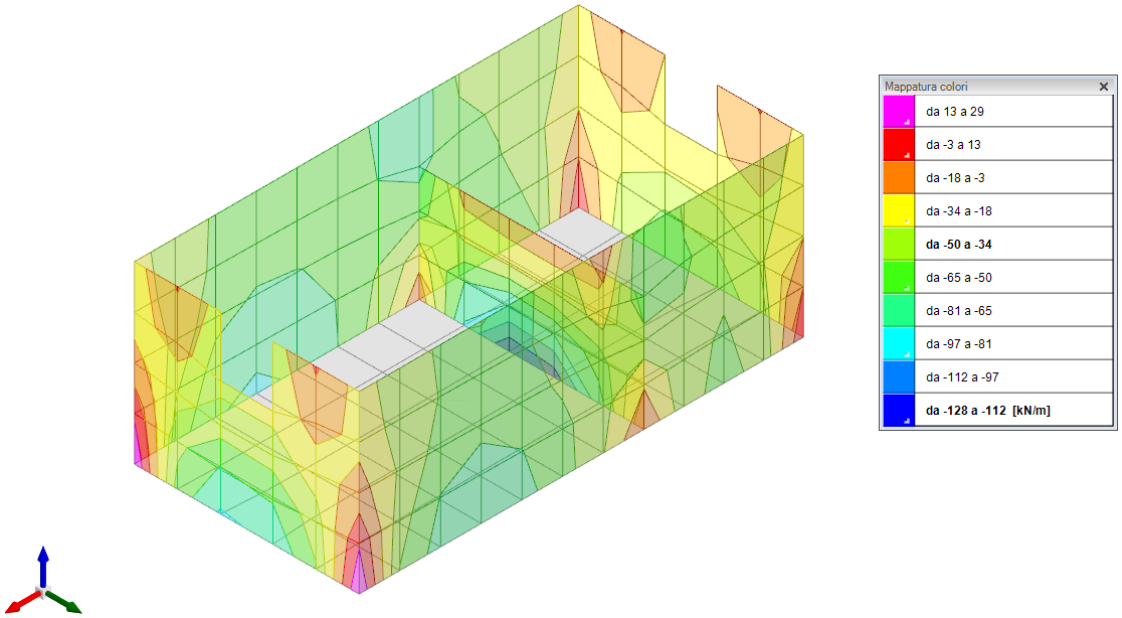


Figura 11 - Inviluppo sforzo di taglio Fzz

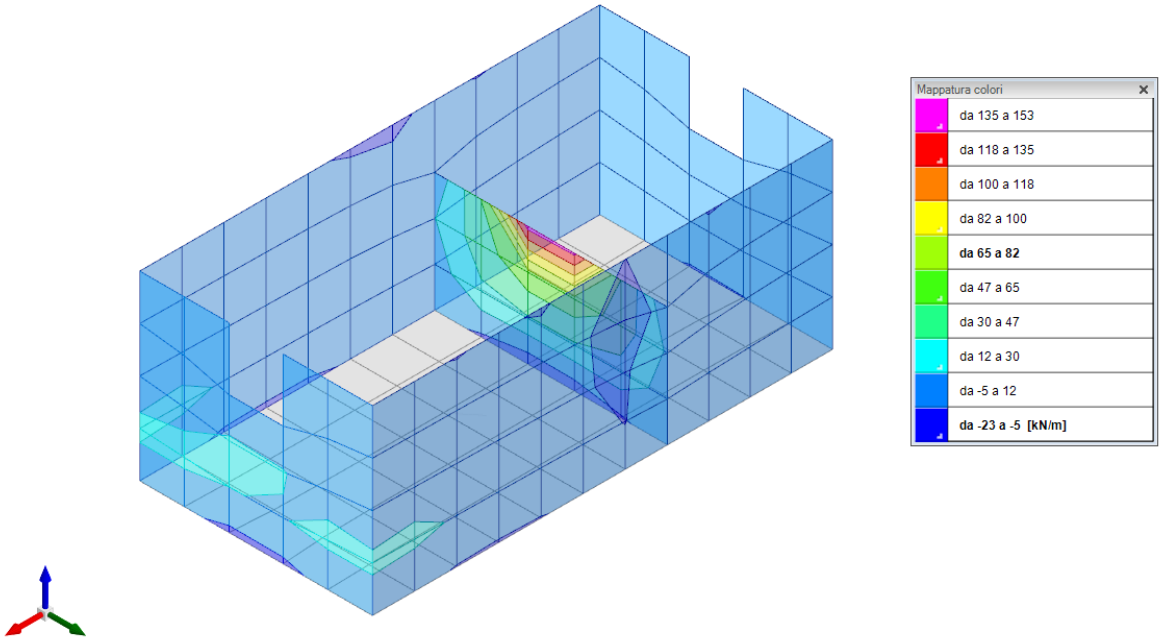


Figura 12 - Inviluppo sforzo di taglio F_{OO}

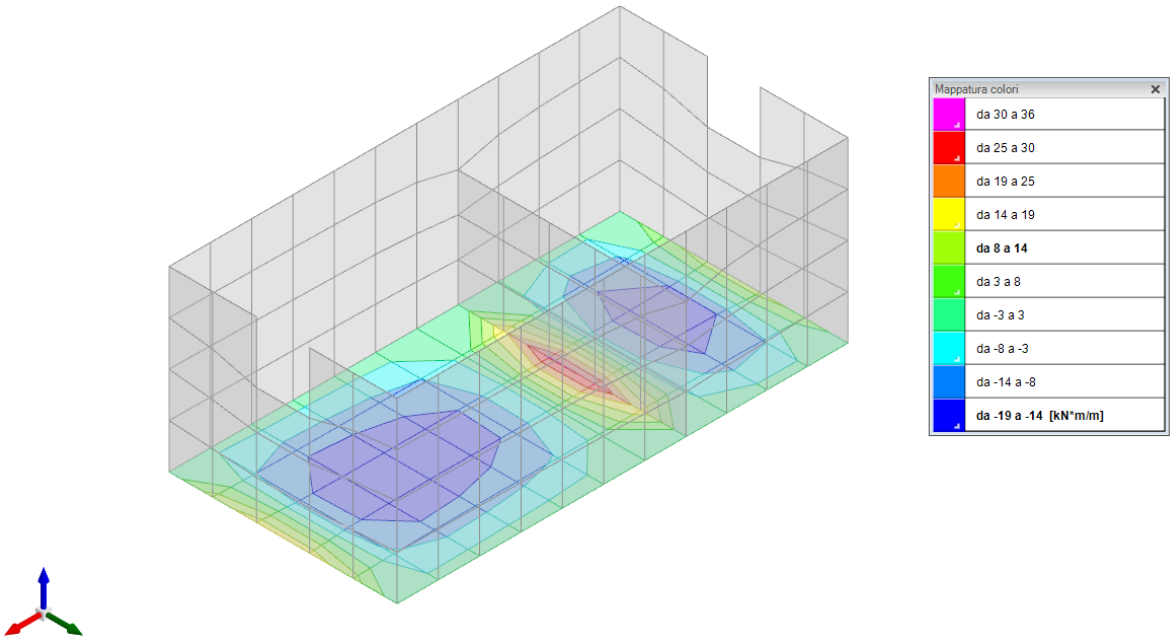


Figura 13 - Inviluppo momento flettente Mxx

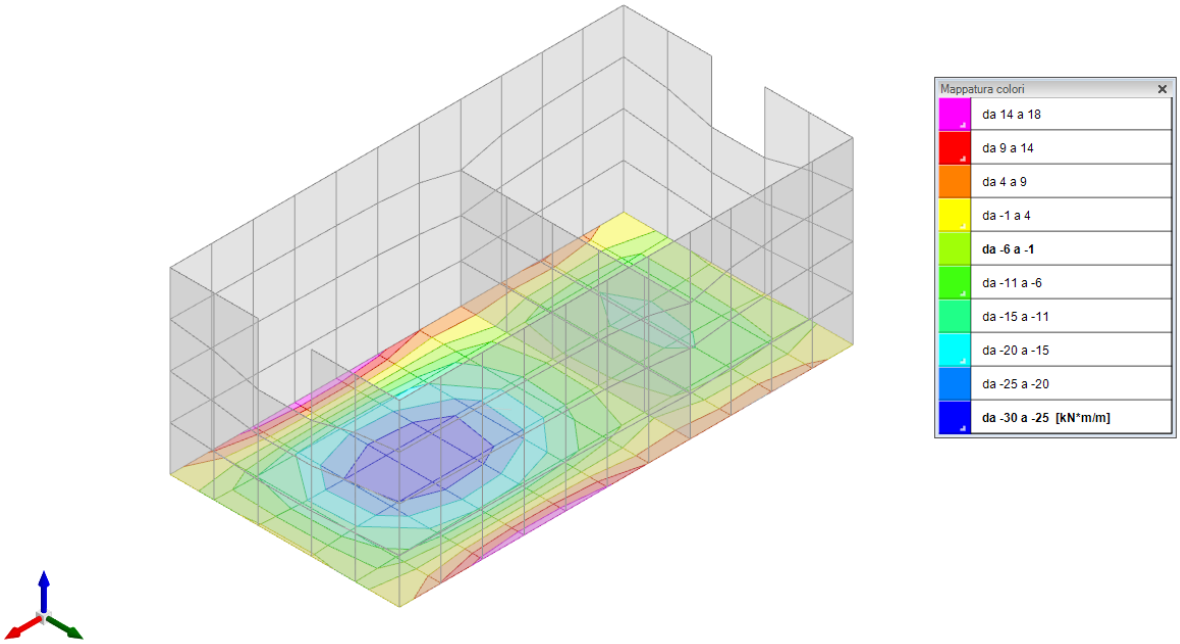


Figura 14 - Inviluppo momento flettente Myy

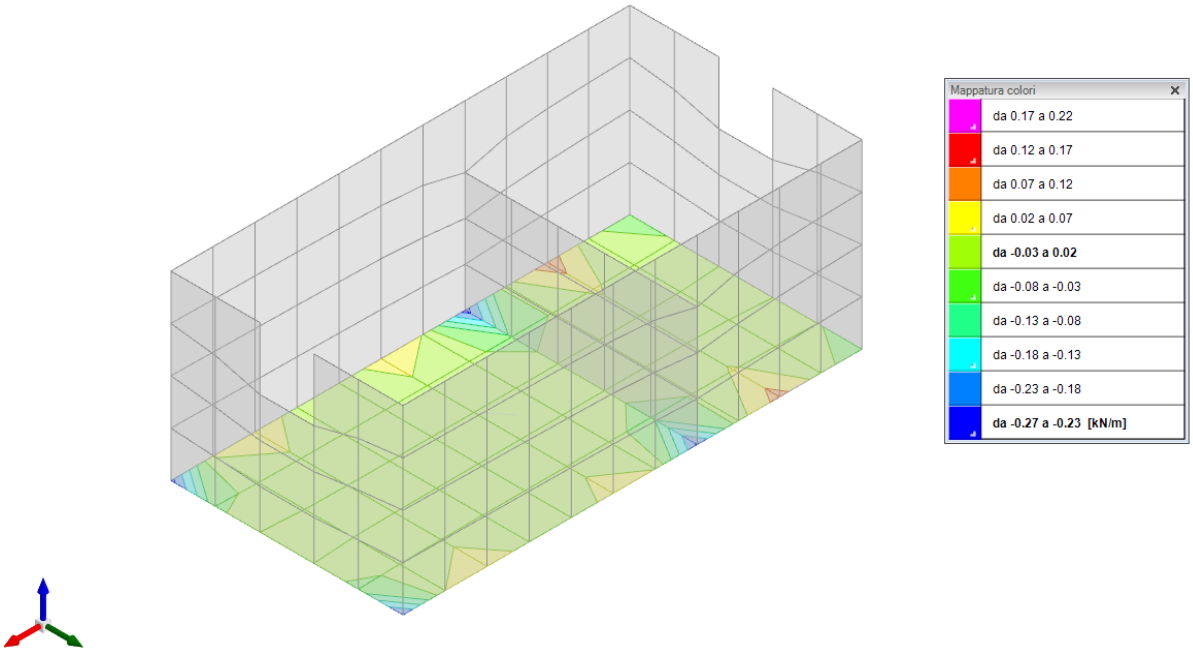


Figura 15 - Inviluppo sforzo di taglio Fxx

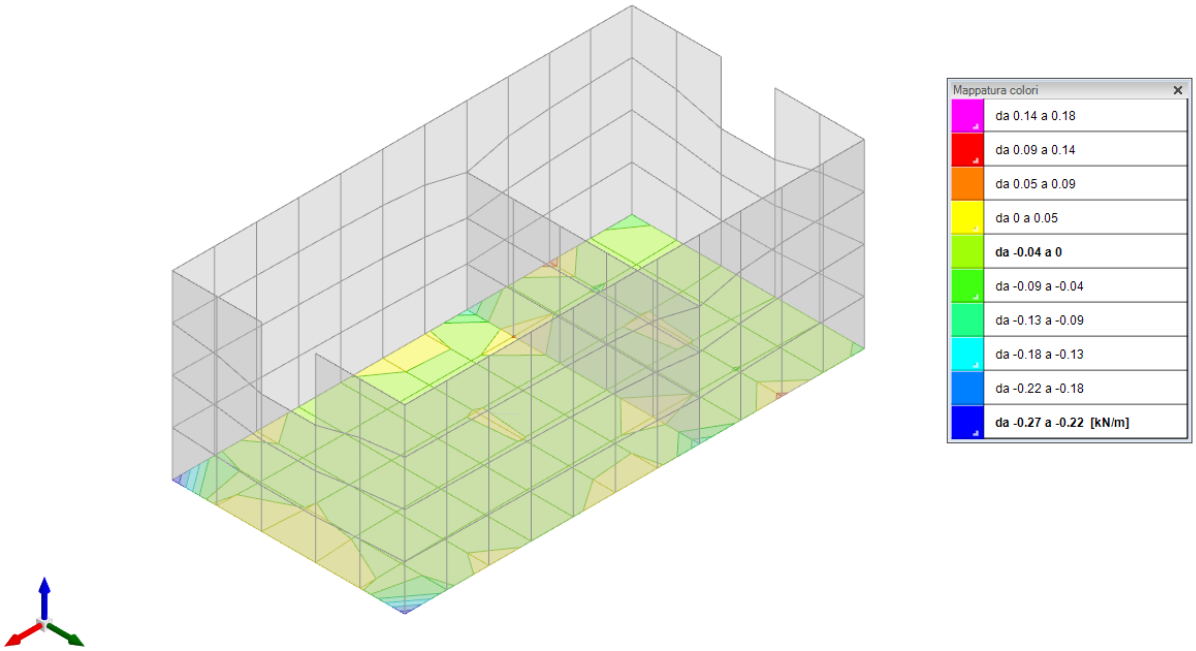


Figura 16 - Inviluppo sforzo di taglio Fyy

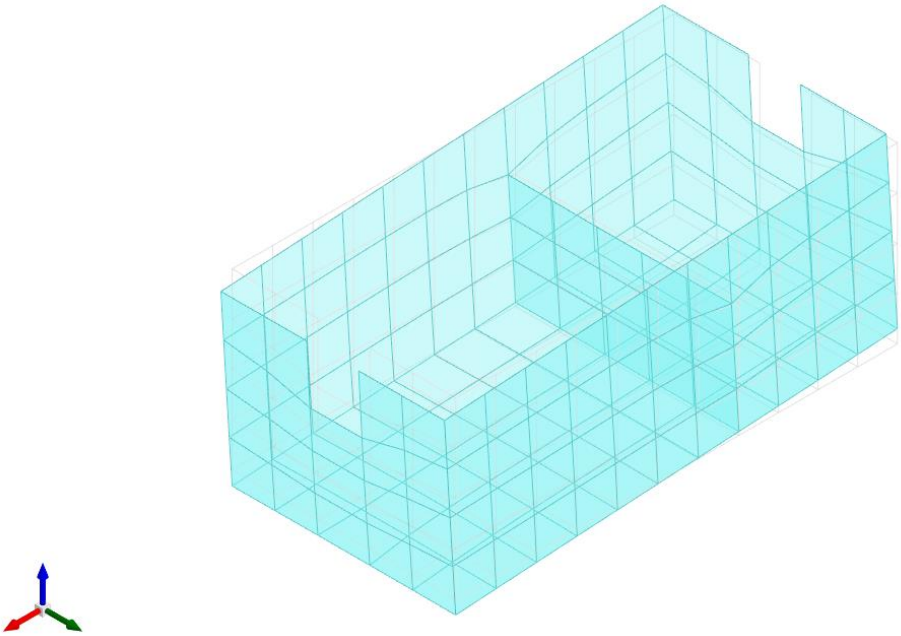


Figura 17 – Spostamenti condizione sisma X SLV

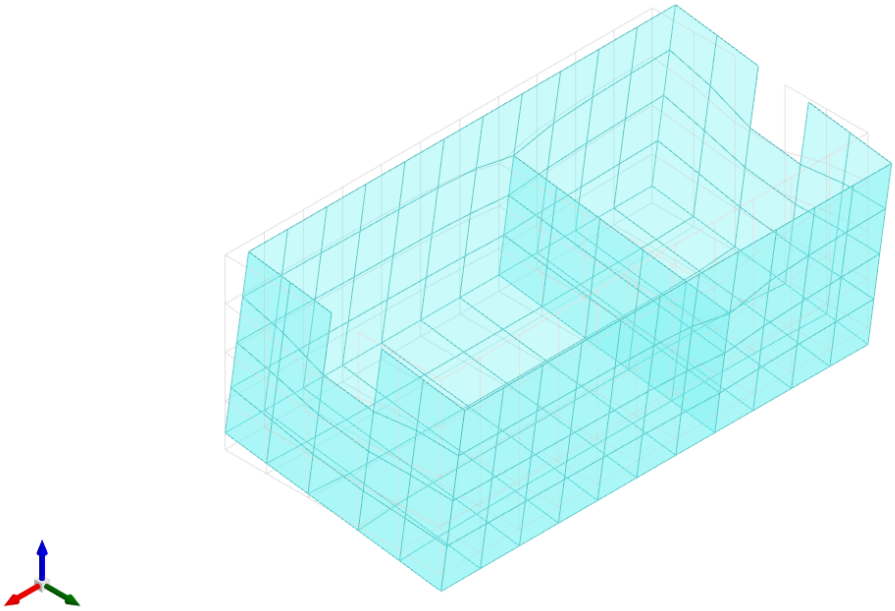


Figura 18 – Spostamenti condizione sisma Y SLV

5.7 VERIFICHE STRUTTURALI

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

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 orizzotale 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
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	0.00999.00	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	0.00999.00	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	0.00999.00	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	0.00999.00	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	-6.45E03	-2.00E03	0.00999.00	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	0.00999.00	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	0.00999.00	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	0.00999.00	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)	Wklim	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)	Wklim	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
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.
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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.
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Parete a "Fondazione - Copertura"

```
Parete fra le coordinate in pianta (5713;6055) (4833;6055)
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
   71   o 100  30  10.1  10.1  7.0  7.0    2.854   23 SLU   -12689  -466678   -36212 -1331766     5229    14469
        v  70  30   3.4   3.4  5.6  5.6   20.075   23 SLU     -557   -25505   -11186  -512017      262     9127
   72   o 100  30  10.1  10.1  7.0  7.0    2.846   23 SLU   -12913  -469656   -36752 -1336658     5258    14495
        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 - Sfioro"

```
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      Vcd
   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 -1.80E02   0.00  0.20  0.0    0.0 1 q.
        v  50  20   2.4   2.4  5.5  5.5  -8.9 4 q.  5.60E03  1.52E04 2202.1 6 q.  7.30E03  1.39E04   0.00  0.20 11.2    0.0 1 q.
  153   o 100  20   5.7   5.7  6.6  6.6  -0.3 6 q. -6.35E02 -1.50E02   -4.4 5 q. -6.37E02  4.10E01   0.00  0.20  0.0    0.0 1 q.
        v  50  20   2.4   2.4  5.5  5.5  -9.3 4 q.  5.44E03  1.52E04 2192.7 6 q.  7.26E03  1.38E04   0.00  0.20 11.1    0.0 1 q.
```

5.7.2 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]*
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
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

5.8.1Valutazione 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/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 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 x 1568 = 62754 kN/m^3. Pertanto in sede di modellazione è stato assunto un valore della costante di sottofondo pari a 63000 kN/m^3.

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:

AZIONI IN TESTA ALLA FONDAZIONE

F_x=	0,00	kN	Forza di taglio in direzione X (Direzione parallela alla base)
F_y=	0,00	kN	Forza di taglio in direzione Y (Direzione parallela alla lunghezza)
F_z=	0,00	kN	Forza in direzione verticale (>0 se di compressione)
M_x=	0,00	kNm	Momento in direzione X
M_y=	0,00	kNm	Momento in direzione Y

CARATTERISTICHE FONDAZIONE

B=	4,60	m	Base
L=	8,80	m	Lunghezza
H=	0,40	m	Altezza
D=	3,70	m	Profondità piano di posa
α=	0	°	Inclinazione del piano di posa

☐ Considera peso proprio fondazione

γ_D=	25,00	kN/m³	Peso per unità di volume fondazione
P_D=	0,00	kN	Peso proprio plinto

AZIONI DALLA BASE DELLA FONDAZIONE

☐ Considera momenti di trasporto

F_{xd}=	0,00	kN	Forza di taglio in direzione X
F_{yd}=	0,00	kN	Forza di taglio in direzione Y
F_{zd}=	0,00	kN	Forza in direzione verticale (>0 se di compressione)
M_{xd}=	0,00	kNm	Momento in direzione X
M_{yd}=	0,00	kNm	Momento in direzione Y

V=	0,00	kN	Componente verticale del carico
H=	0,00	kN	Componente orizzontale del carico
θ_V=	0,00	°	Inclinazione del carico rispetto alla verticale
θ_H=	90,00	°	Inclinazione del carico orizzontale rispetto alla direzione della lunghezza

e_x=	0,00	m	Eccentricità in direzione X
e_y=	0,00	m	Eccentricità in direzione Y

CARATTERISTICHE FONDAZIONE RIDOTTA

B'=	4,60	m	Base ridotta
L'=	8,80	m	Lunghezza ridotta
A'=	40,48		Area ridotta

PARAMETRI DEL TERRENO

γ=	17	kN/m³	Peso per unità di volume del terreno di fondazione
φ'=	24	°	Angolo di attrito
c'=	10	kN/m²	Coesione efficace
c_u=	0	kN/m²	Coesione non drenata
γ_r=	25	kN/m³	Peso per unità di volume del terreno di riempimento laterale

K_p=	2,371		Coefficiente di spinta passiva

q=	92,50	kN/m²	Pressione litostatica alla profondità del piano di posa

PARAMETRI DI PORTANZA DELLA FONDAZIONE (BRINCH-HANSEN)

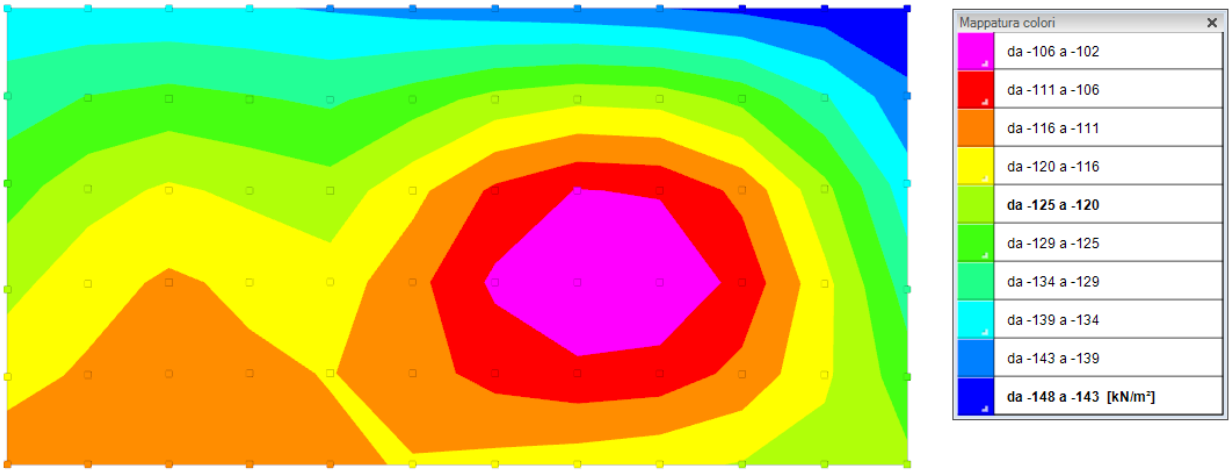
$k=$	0,80	Fattore di profondità
$m_B=$	1,66	Parametro di forma per carico agente in direzione della base
$m_L=$	1,34	Parametro di forma per carico agente in direzione della lunghezza
$m=$	1,66	Parametro di forma complessivo
$N_c=$	19,32	
$N_q=$	9,60	Fattori di capacità portante
$N_\gamma=$	7,66	
$s_c=$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



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

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 x11.30 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.

6.2.1Copertura

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/m^2

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/m^2

CARICHI VARIABILI

Copertura carrabile ..... 20.00 kN/m^2

Carico variabile totale Q_{1k} 20.00 kN/m^2

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/m^2

CARICHI PERMANENTI NON STRUTTURALI

Massetto (sp = 15 cm) ..... 3.75 kN/m^2

Carico permanente non strutturale totale G_{2k} 3.75 kN/m^2

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/m^2:

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

dove:

γ_w = 10 kN/m^3, peso specifico dell'acqua;
H_w = 2.00 m, altezza massima dell'invaso;
z' = 2.00 m, quota a cui viene calcolata la pressione;
a_g = 0.046 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:

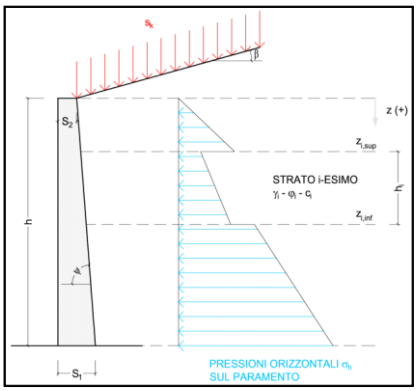
γ_k= 19,0	kN/m^3	peso di volume caratteristico;
φ'_k = 35	°	angolo di operativo attrito caratteristico.

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/m^2.

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

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



GEOMETRIA MURO E RINTERRO

γ_M=	25	kN/m³	Peso per unità di volume
s_1=	0,3	m	Spessore alla base
s_2=	0,3	m	Spessore in testa
h_f=	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° — 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_c*=	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_s=	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)
β_m=	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

g_{1k}	g_{2k}	q_{1k}		
0	0	20	kN/m²	Carico uniformemente distribuito a tergo del paramento
S_{g1k}	S_{g2k}	S_{q1k}		
1	1	0,3		Coefficiente di riduzione della massa del sovraccarico

Coefficiente parziali di sicurezza dei carichi

γ_{G1}	γ_{G2}	γ_Q	γ_E	
1	1	1	-	Coefficiente parziali di sicurezza dei carichi SLE
1,3	1,5	1,5	-	Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 1 (A1) E APPROCCIO 2
1	1,3	1,3	-	Coefficiente parziali di sicurezza dei carichi SLU - APPROCCIO 1 - COMB 2 (A2)
1	1	1	1	Coefficiente parziali di sicurezza dei carichi in combinazione sismica SLV

Coefficiente parziali di sicurezza per i parametri geotecnici del terreno

γ_γ	γ_φ	$\gamma_{c'}$	
1	1	1	Coefficiente parziali di sicurezza dei parametri geotecnici SLE / SLU - APPROCCIO 1 - COMB 1 (M1), APPROCCIO 2 / SLV
1	1,25	1,25	Coefficiente parziali di sicurezza dei parametri geotecnici - SLU - APPROCCIO 1 - COMB 2 (M2)

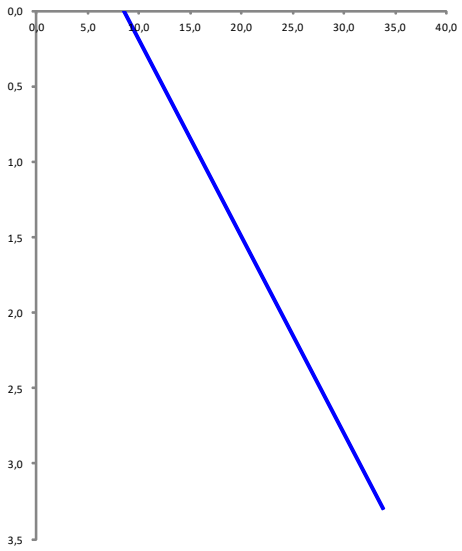
CARATTERISTICHE STRATI TERRENO

				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)**			
Strato	z_{sup} [m]	z_{inf} [m]	h [m]	γ_k [kN/m³]	φ_k [°]	δ_k [°]	c_k' [kN/m²]	γ_d [kN/m³]	φ_d [°]	δ_d [°]	c_d' [kN/m²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ea,d}$ [-]	$k_{eb,d}$ [-]	γ_d [kN/m³]	φ_d [°]	δ_d [°]	c_d' [kN/m²]	$k_{0,d}$ [-]	$k_{s,d}$ [-]	$k_{ea,d}$ [-]	$k_{eb,d}$ [-]
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

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

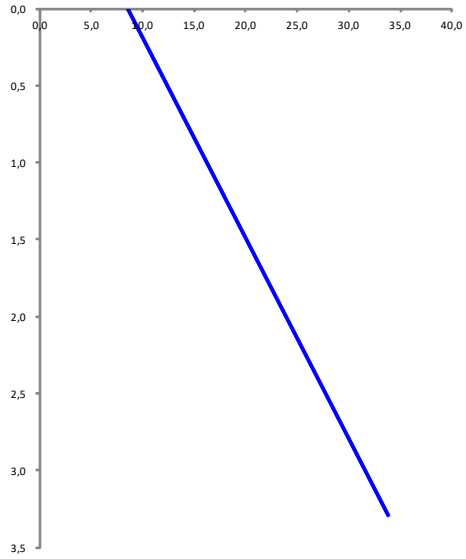
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLE**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	8,53	**8,53**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
2	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
3	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
4	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
5	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
6	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
7	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
8	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
9	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**
10	3,30	0,43	59,4	25,33	0,00	0,00	8,53	**33,86**
	3,30		59,4	25,33	0,00	0,00	8,53	**33,86**



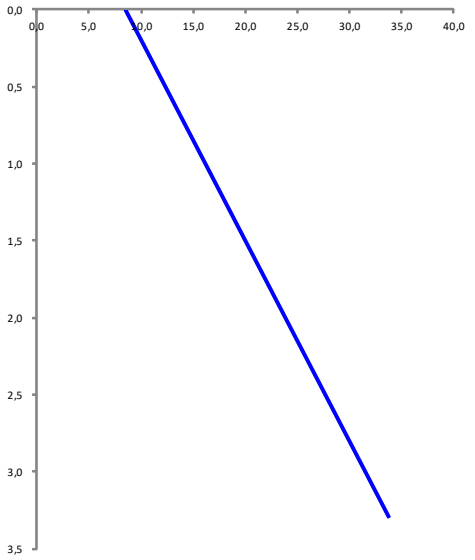
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLU APPROCCIO 1 - COMBINAZIONE 1 E APPROCCIO 2**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	12,79	**12,79**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
2	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
3	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
4	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
5	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
6	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
7	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
8	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
9	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**
10	3,30	0,43	59,4	32,93	0,00	0,00	12,79	**45,72**
	3,30		59,4	32,93	0,00	0,00	12,79	**45,72**



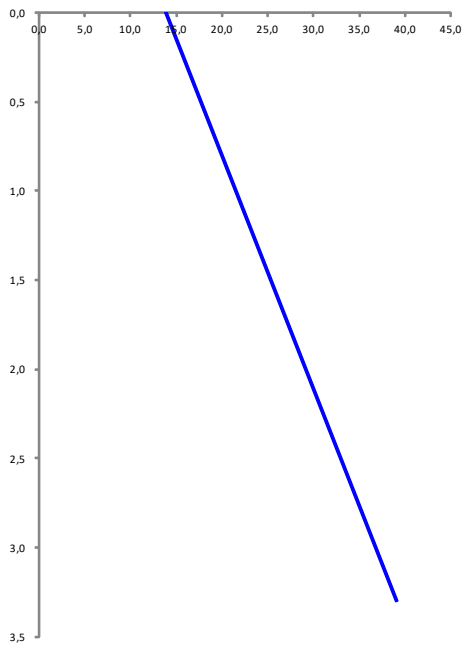
PRESSIONI DI PROGETTO CONDIZIONI STATICHE **SLU APPROCCIO 1 - COMBINAZIONE 2**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,51	0,0	0,00	0,00	0,00	13,29	**13,29**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
2	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
3	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
4	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
5	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
6	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
7	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
8	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
9	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**
10	3,30	0,51	59,4	30,37	0,00	0,00	13,29	**43,66**
	3,30		59,4	30,37	0,00	0,00	13,29	**43,66**



PRESSIONI DI PROGETTO CONDIZIONI SISMICHE **SLV**

STRATO	z_{sup} / z_{inf} [m]	k_{hd} [-]	Tensione verticale litostatica σ_{vd} [kN/m²]	σ_{hd} Terreno [kN/m²]	σ_{hd} Sovraccarichi permanenti strutturali [kN/m²]	σ_{hd} Sovraccarichi permanenti non strutturali [kN/m²]	σ_{hd} Sovraccarichi variabili [kN/m²]	Pressione della forza d'inerzia agente sul paramento [kN/m²]	Pressione dell'incremento sismico di spinta [kN/m²]	Pressione incremento sismico spinta sovraccarichi permanenti strutturali [kN/m²]	Pressione incremento sismico spinta sovraccarichi permanenti non strutturali [kN/m²]	Pressione incremento sismico spinta sovraccarichi variabili [kN/m²]	**Pressione orizzontale totale di progetto $\sigma_{hd,tot}$ [kN/m²]**
1	0,00	0,43	0,0	0,00	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**13,82**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
2	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
3	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
4	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
5	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
6	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
7	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
8	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
9	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
10	3,30	0,43	59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**
	3,30		59,4	25,33	0,00	0,00	8,53	0,52	4,60	0,00	0,00	0,18	**39,15**



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.

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.

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):

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

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

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

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

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

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.

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

Nome	Nome breve	Pesi	Port.	Variabile traffico	spinta sismica terreno	spinta sismica acqua	spinta acqua	ΔT
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
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	Tr y 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
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	Tr x SLV	Tr y SLV	Tr z 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

Nome	Nome breve	Y SLV	Z SLV	EY SLV	EX SLV	Tr x SLV	Tr y SLV	Tr z SLV
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.

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/m^2]
E: modulo di elasticità longitudinale del materiale per edifici o materiali nuovi. [kN/m^2]

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.
fyk: resistenza caratteristica. [kN/m²]
σamm.: 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	fyk	σamm.	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	D.M. 17-01-18 (N.T.C.)
Tipo di costruzione	2 - Costruzioni con livelli di prestazioni ordinari
Vn	50
Classe d'uso	II
Vr	50
Tipo di analisi	Lineare dinamica
Località	Livorno, Piombino, Colmata; Latitudine ED50 42,9604° (42° 57' 37''); Longitudine ED50 10,5508° (10° 33' 3''); Altitudine s.l.m. 165,06 m.
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<=15°	
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
γs (fattore di sicurezza parziale per l'acciaio)	1.15
γc (fattore di sicurezza parziale per il calcestruzzo)	1.5
Limite σc/fck in combinazione rara	0.6
Limite σc/fck in combinazione quasi permanente	0.45
Limite σf/fyk 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

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 rigidezza 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 rigidezza 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

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 - Sfioro	Fondazione	Sfioro

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

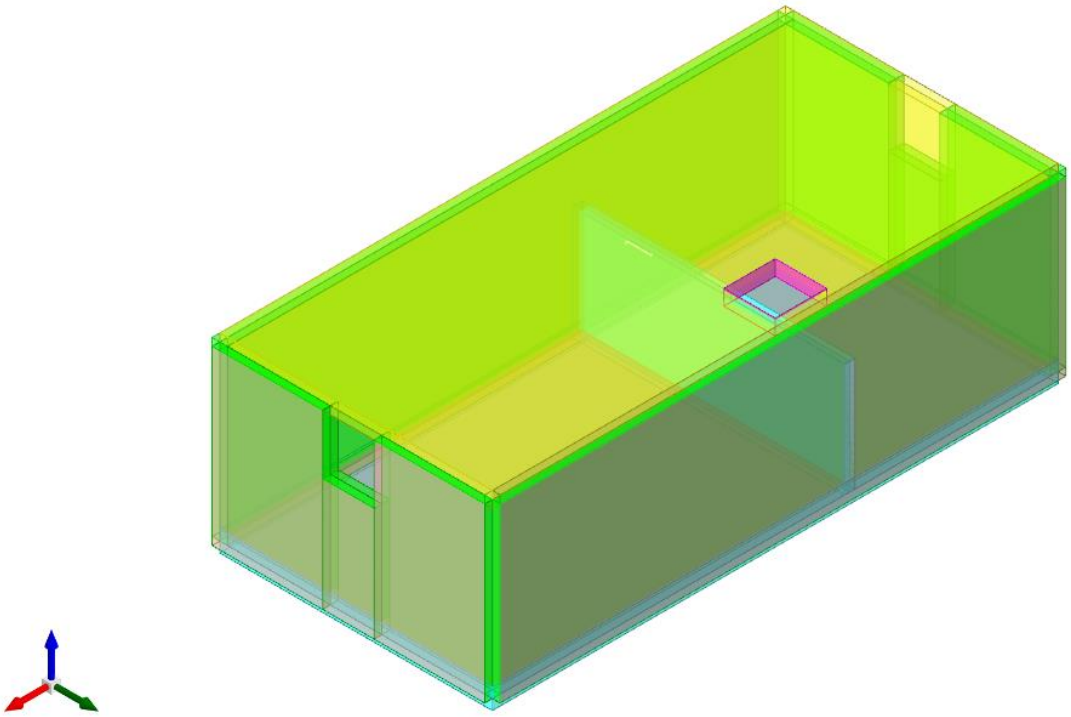


Figura 19 - Rappresentazione Grafica del Modello di Calcolo

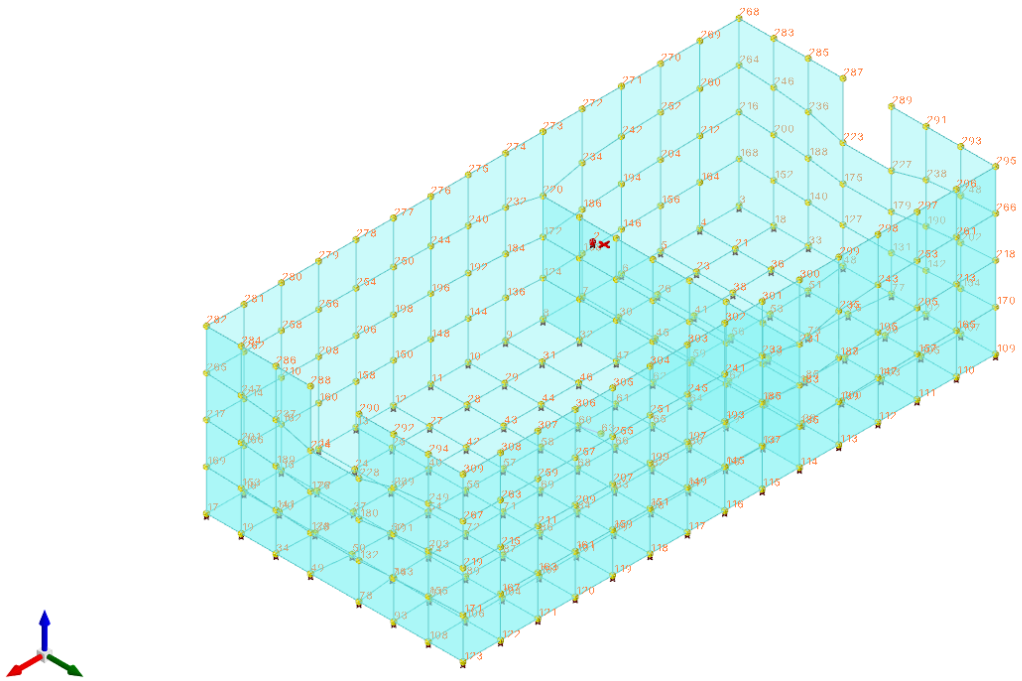


Figura 20 - Rappresentazione Grafica del Modello di Calcolo – Numerazione NODI

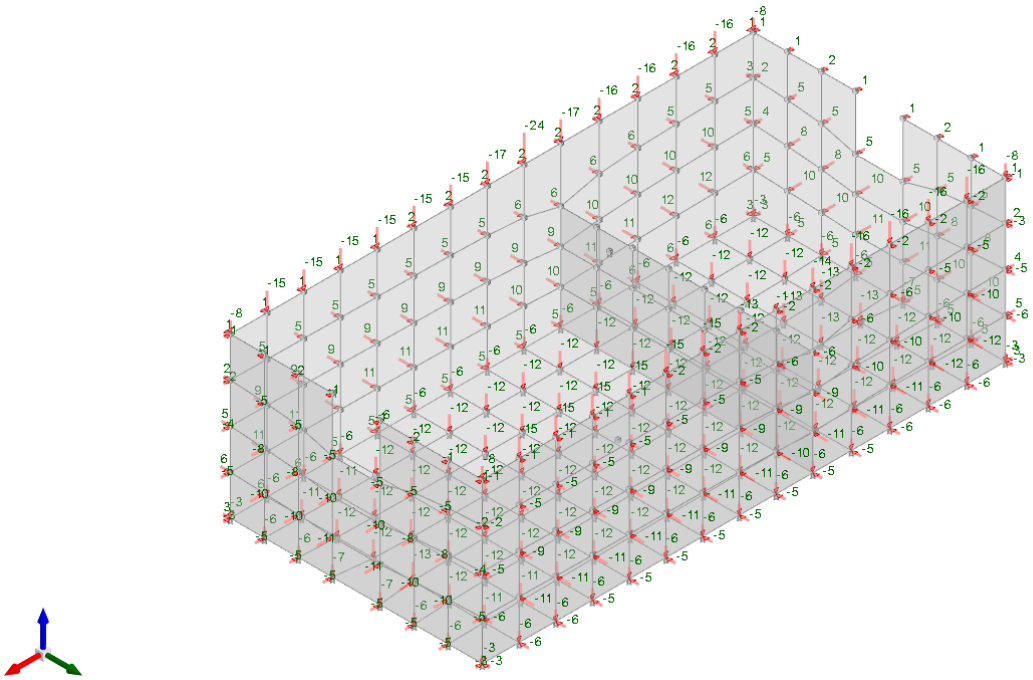


Figura 21 - Condizione carichi permanenti strutturali

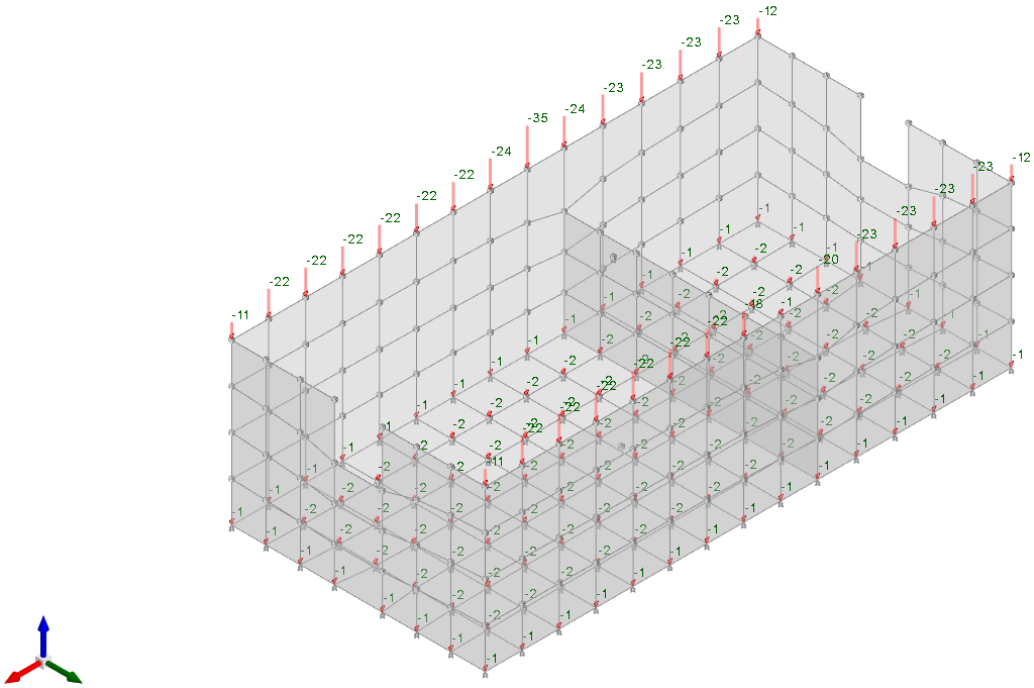


Figura 22 - Condizione carichi permanenti non strutturali

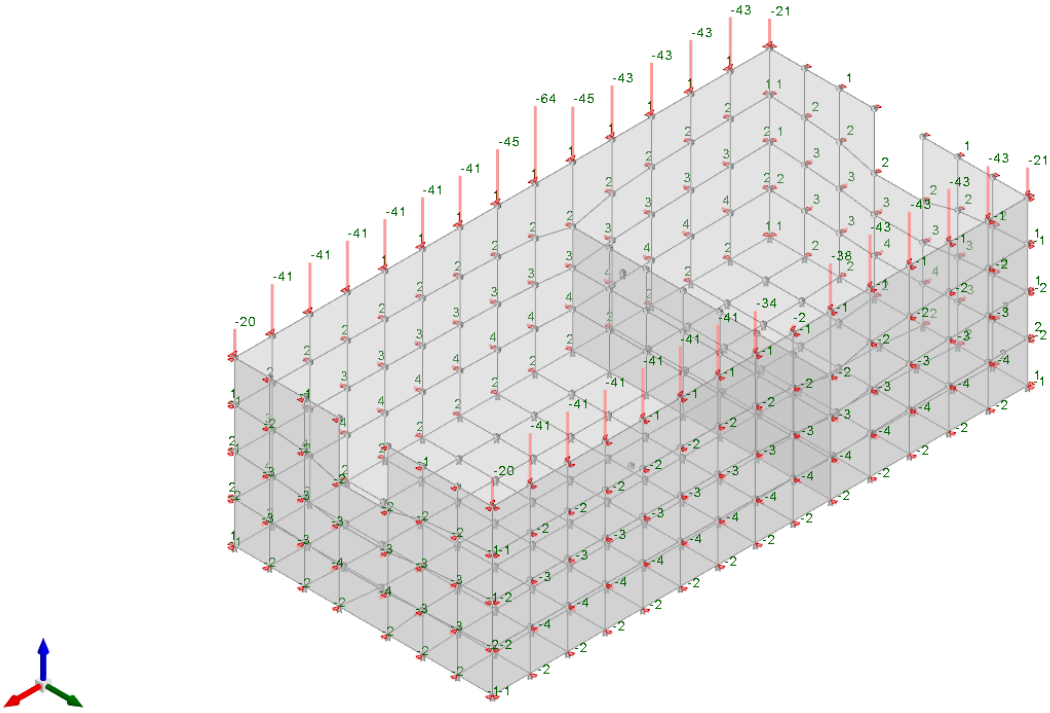


Figura 23 - Condizione sovraccarico accidentale (variabile traffico)

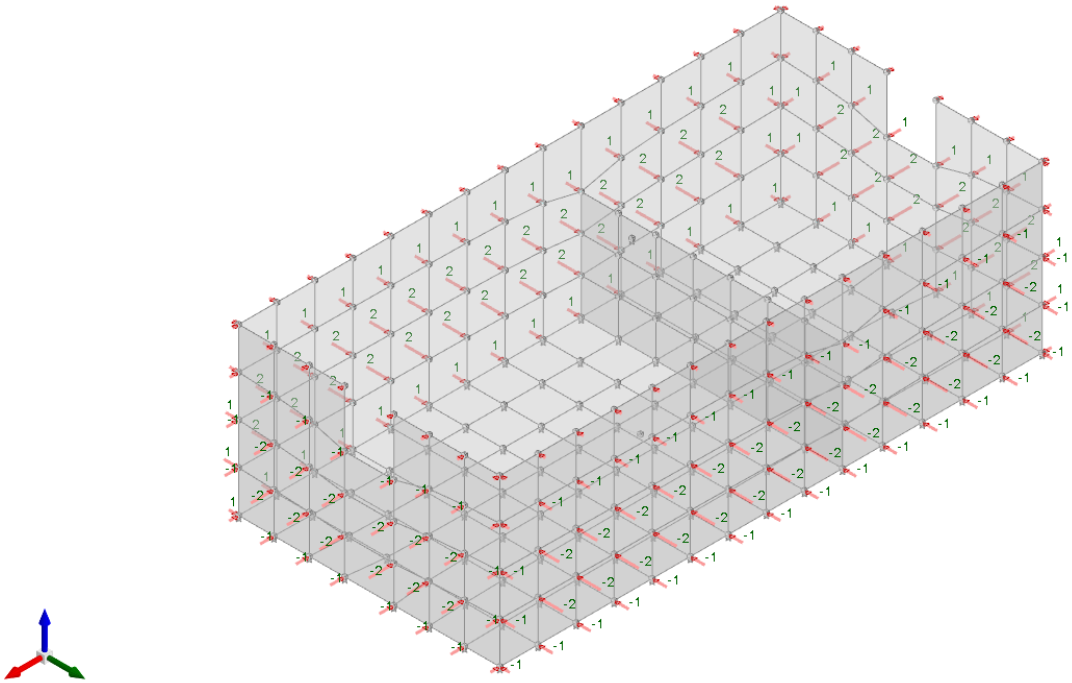


Figura 24 - Condizione spinta sismica terreno

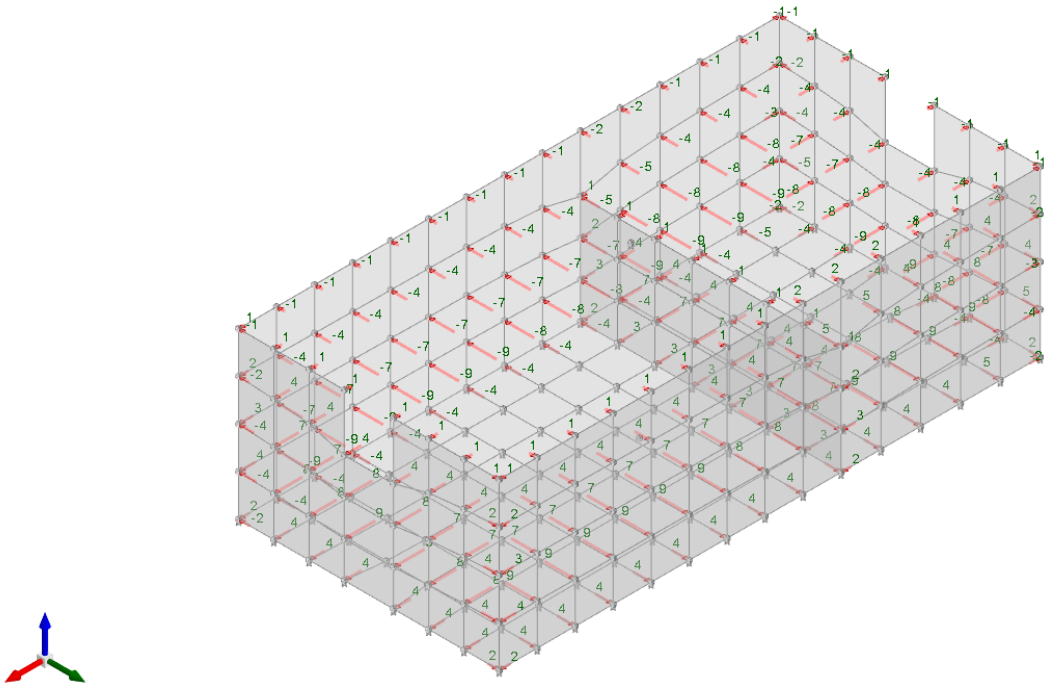


Figura 25 - Condizione spinta acqua

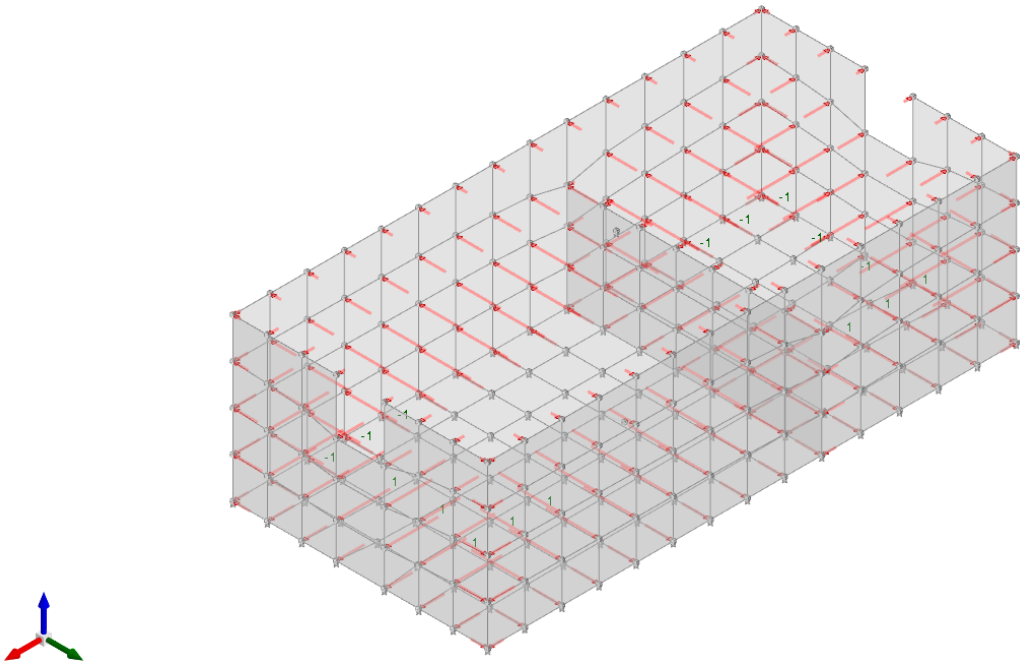


Figura 26 - Condizione spinta sismica acqua

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;

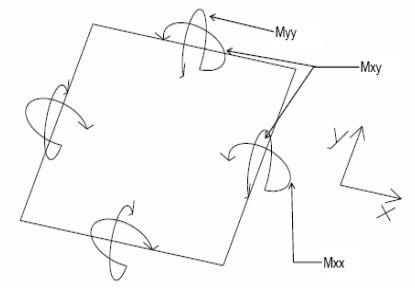
- F3: viene rappresentato nel piano individuato dagli assi 1 e 3. Nel caso di F3 positivo viene disegnato lungo l'asta dalla parte del semiasse 3 positivo;

- 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 Mxx, Myy, Mxy.



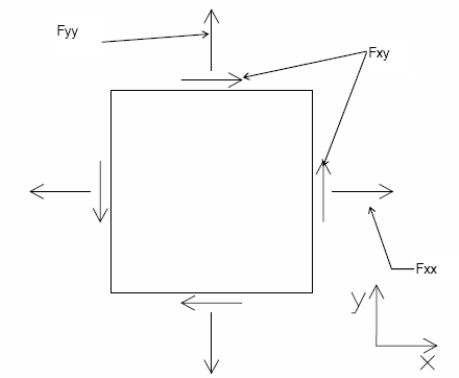
si definiscono:

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

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

Mxy: 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 Fxx, Fyy, Fxy.



Si definiscono:

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

Fyy: 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);

Fxy: 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:

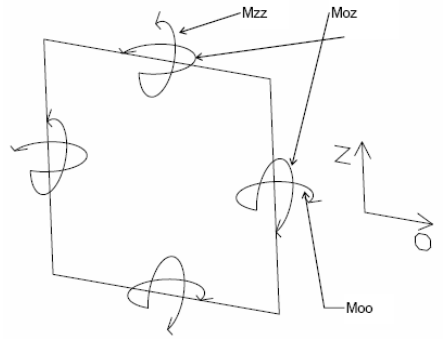
Vx: taglio fuori piano [Forza/Lunghezza] applicato al bordo di normale parallela all'asse x (per il segno si veda l'immagine relativa ai tagli fuori piano nel sistema locale 1, 2, 3 riportata più avanti);

Vy: 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 destrogira". 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.

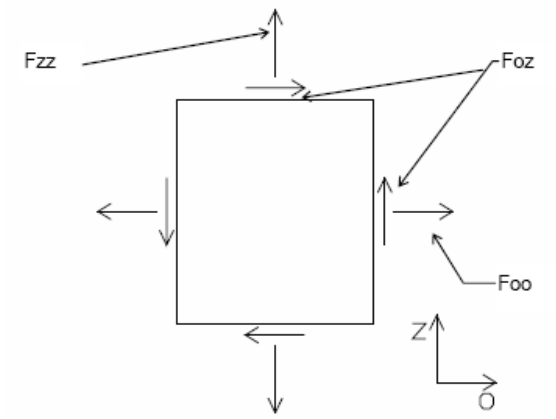
In figura è mostrato un elemento infinitesimo di shell orizzontale con indicato il sistema di riferimento e i parametri di sollecitazione Moo, Mzz, Moz.



Moo: 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);

Mzz: 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);

Moz: 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 Foo, Fzz, Foz sono rispettivamente:



Fzz: 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);

Foo: 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);

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

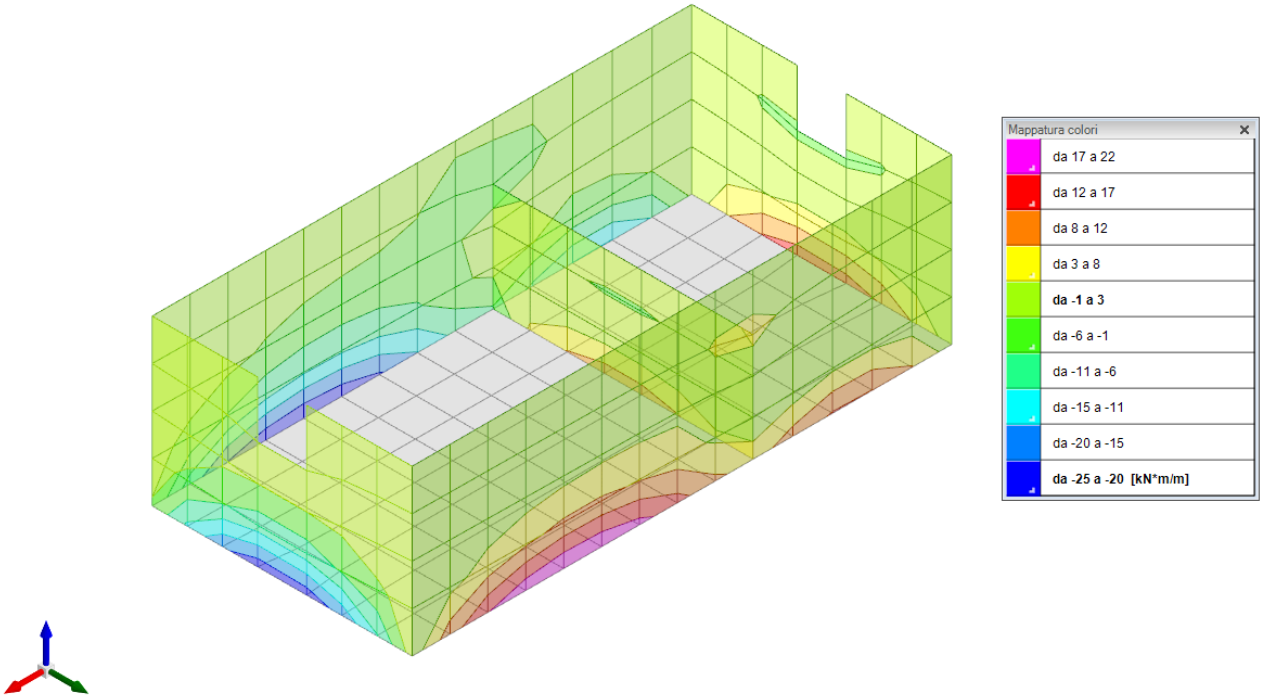


Figura 27 - Inviluppo momento flettente Mzz

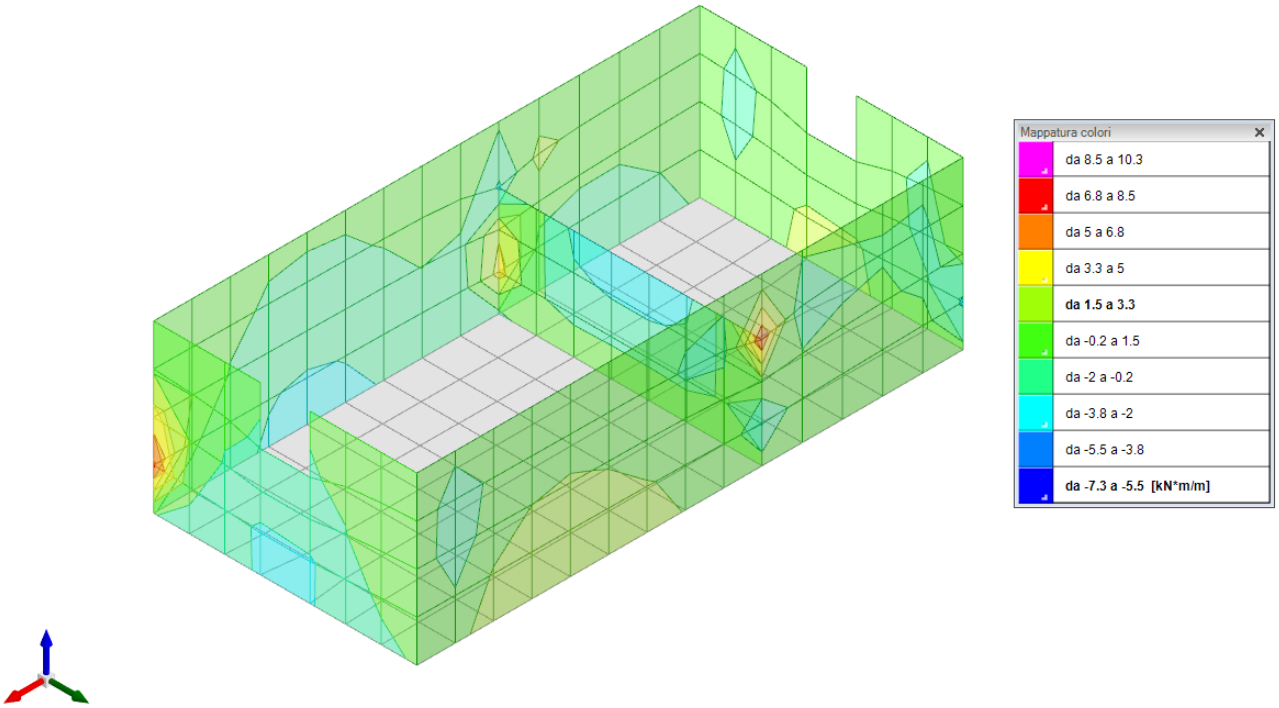


Figura 28 - Inviluppo momento flettente Moo

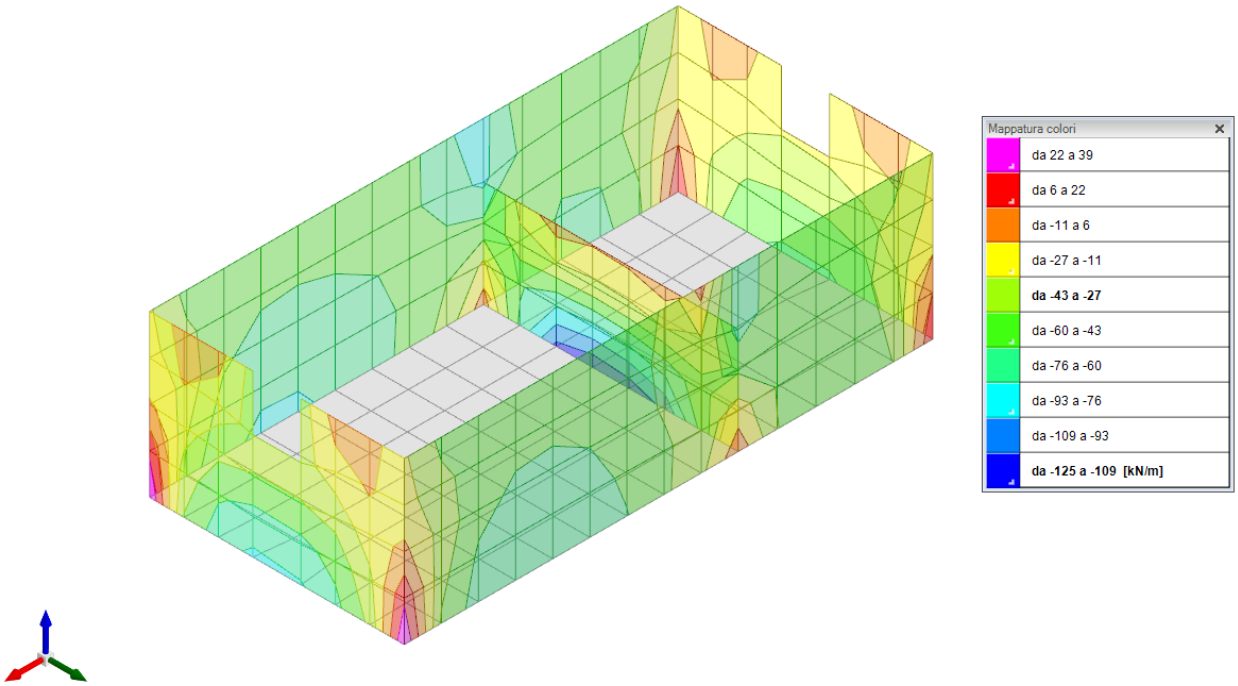


Figura 29 - Inviluppo sforzo di taglio Fzz

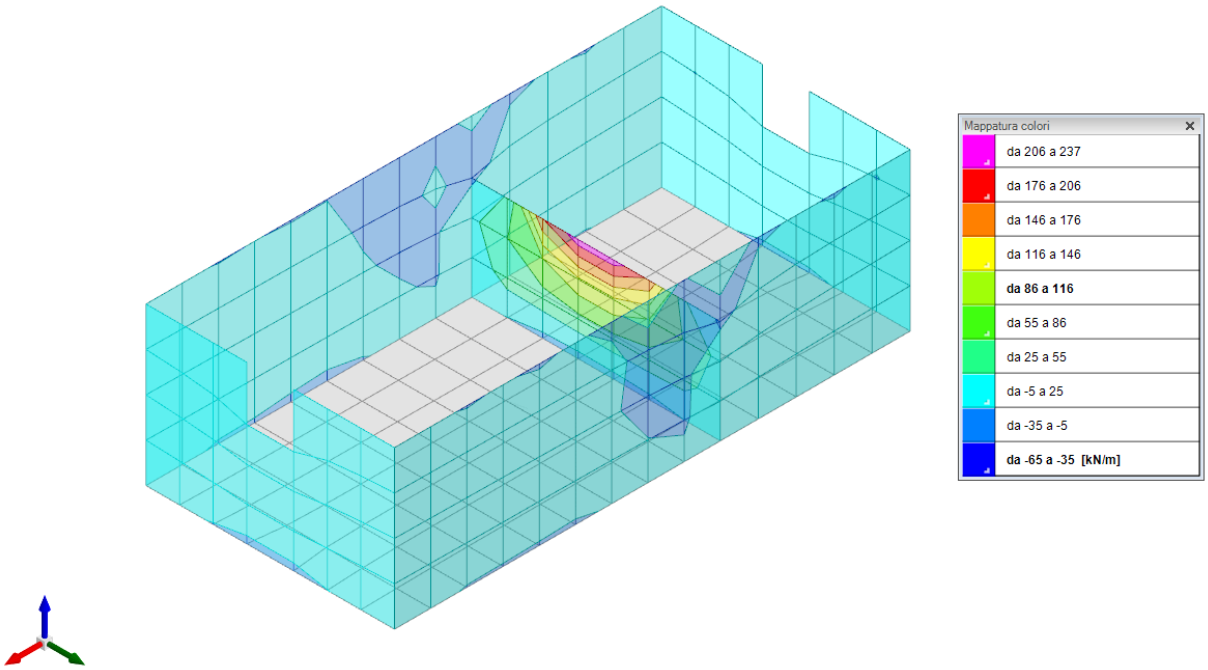


Figura 30 - Inviluppo sforzo di taglio F_{OO}

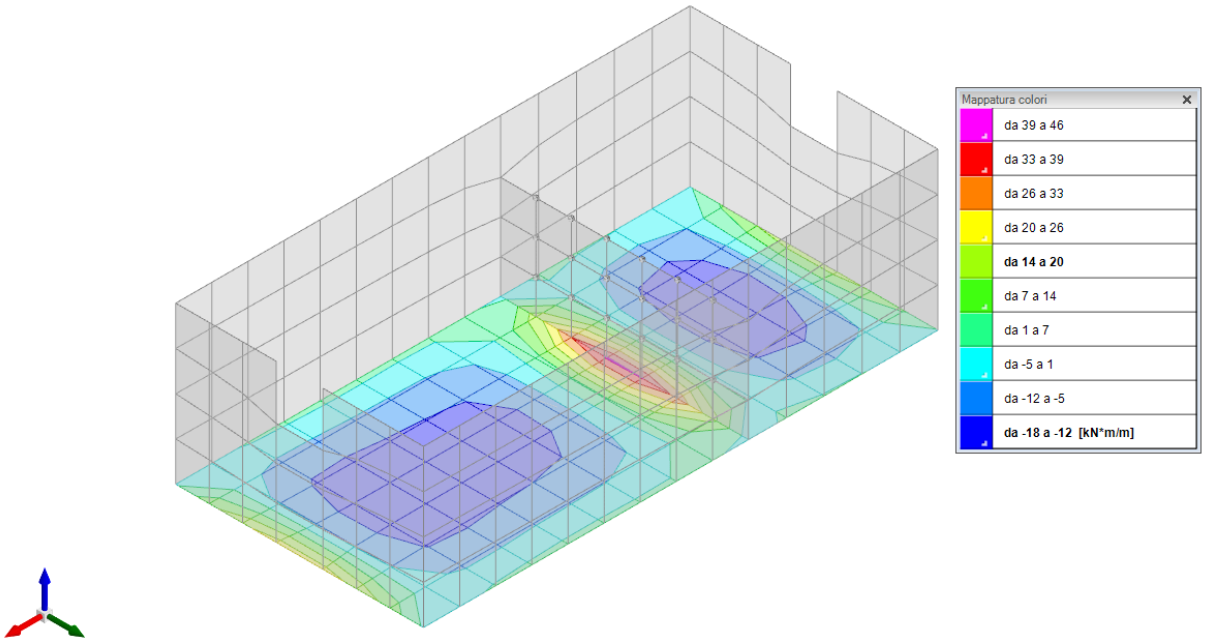


Figura 31 - Inviluppo momento flettente Mxx

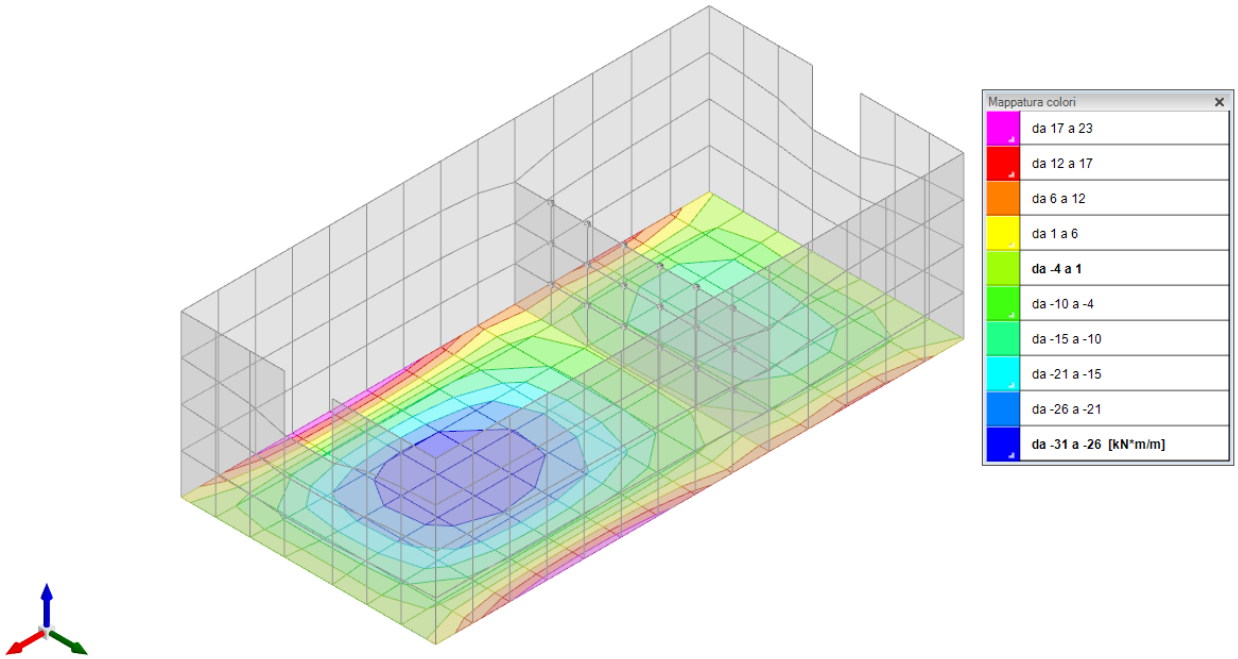


Figura 32 - Inviluppo momento flettente Myy

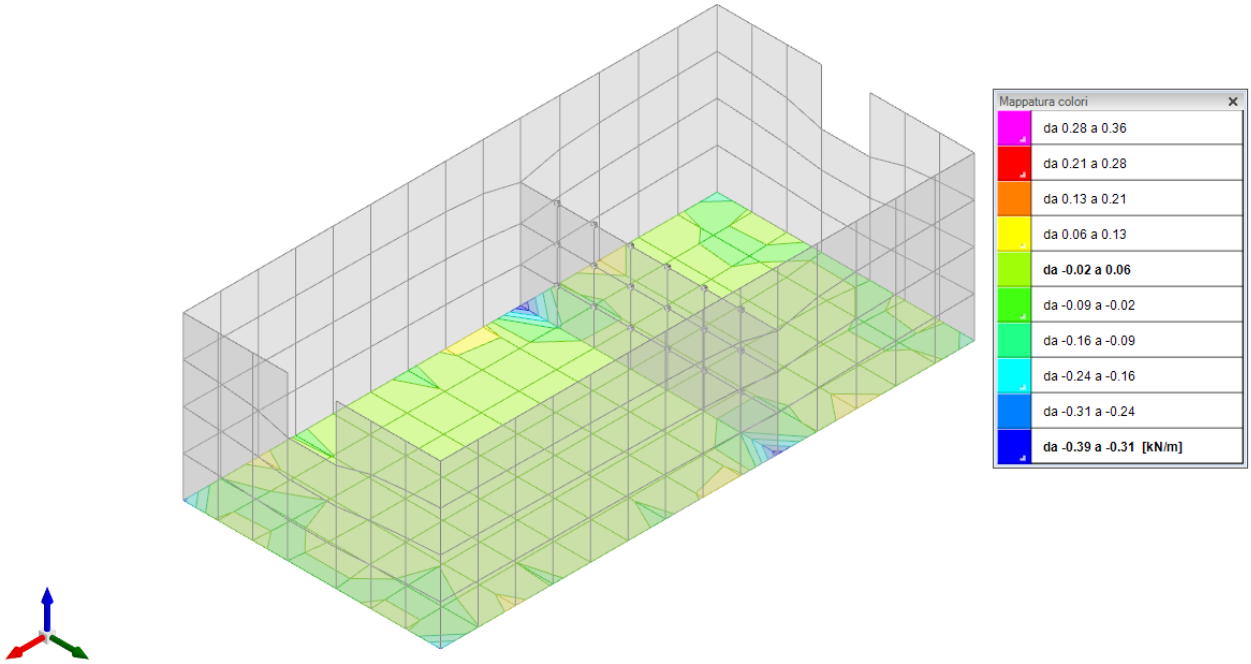


Figura 33 - Inviluppo sforzo di taglio Fxx

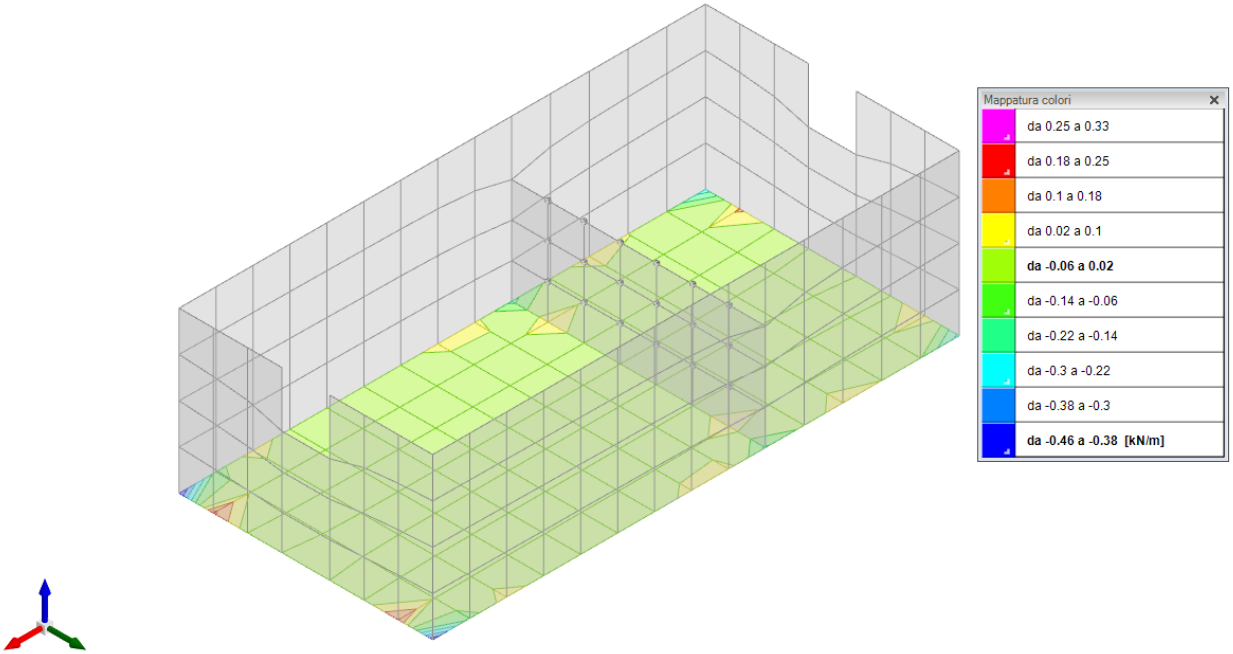


Figura 34 - Inviluppo sforzo di taglio Fyy

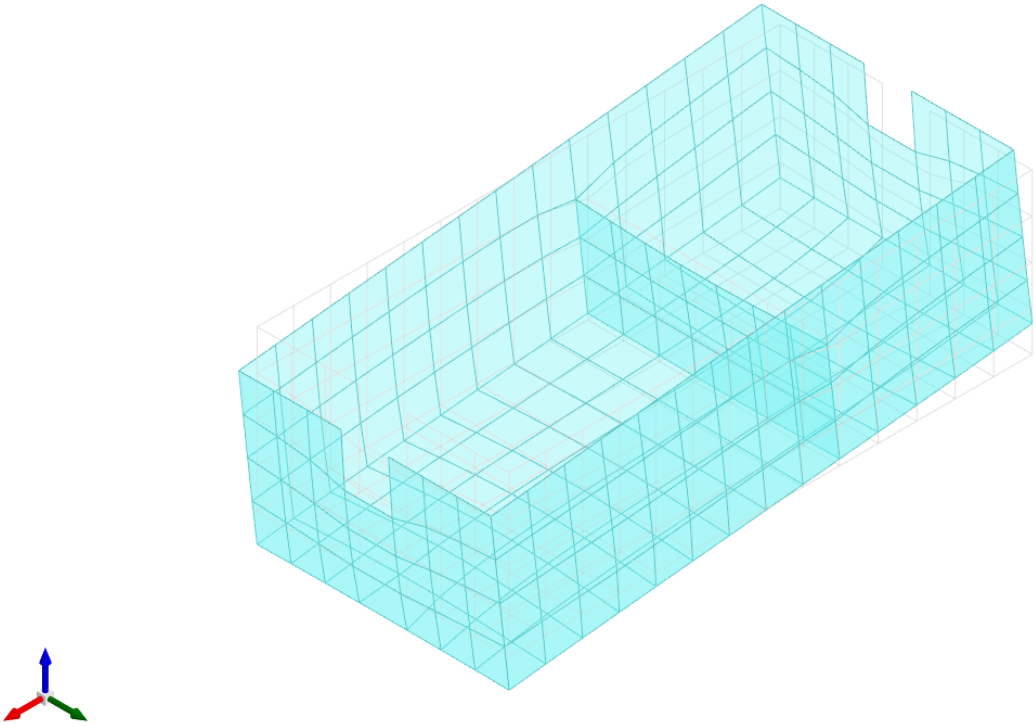


Figura 35 – Spostamenti condizione sisma X SLV

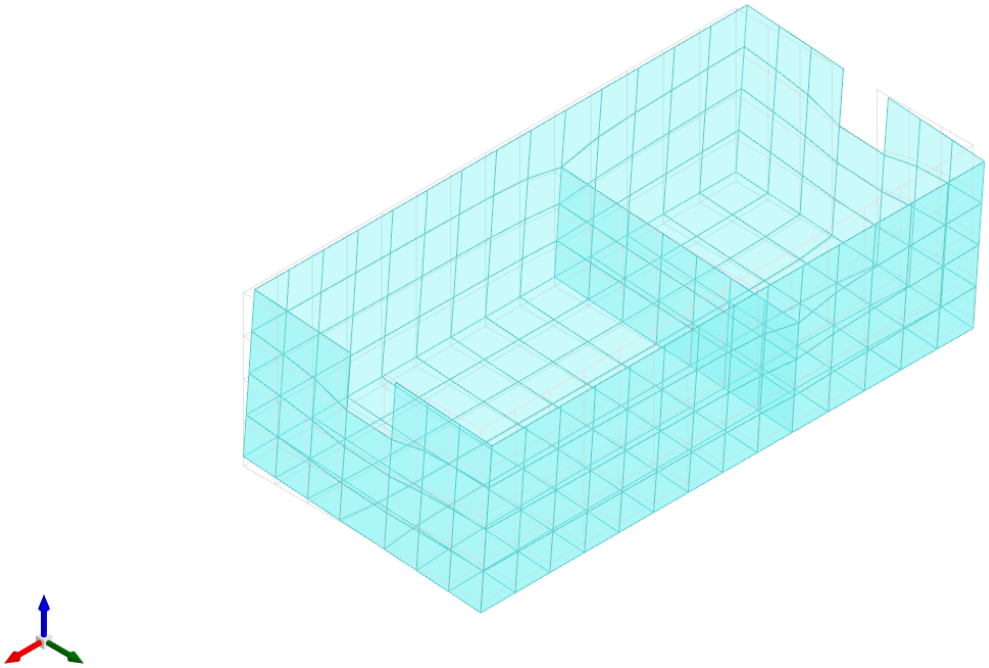


Figura 36 – Spostamenti condizione sisma Y SLV

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
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 orizzotale 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
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
	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
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
	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
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
	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

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
	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
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
	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
78	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)	Wklim	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
	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	0.00999.00	2.1		0.0	1 ra
158	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	0.00999.00	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	0.00999.00	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 - Sfioro"

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	0.00999.00	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	0.00999.00	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	0.00999.00	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	0.00999.00	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	0.00999.00	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	0.00999.00	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]*
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
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	Vrcd	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

6.8 CAPACITÀ PORTANTE DEL TERRENO

6.8.1Valutazione 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 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 x 1614 = 64581 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:

AZIONI IN TESTA ALLA FONDAZIONE

F_x=	0,00	kN	Forza di taglio in direzione X (Direzione parallela alla base)
F_y=	0,00	kN	Forza di taglio in direzione Y (Direzione parallela alla lunghezza)
F_z=	0,00	kN	Forza in direzione verticale (>0 se di compressione)
M_x=	0,00	kNm	Momento in direzione X
M_y=	0,00	kNm	Momento in direzione Y

CARATTERISTICHE FONDAZIONE

B=	5,60	m	Base
L=	11,30	m	Lunghezza
H=	0,40	m	Altezza
D=	3,70	m	Profondità piano di posa
α=	0	°	Inclinazione del piano di posa

☐ Considera peso proprio fondazione

γ_D=	25,00	kN/m³	Peso per unità di volume fondazione
P_D=	0,00	kN	Peso proprio plinto

AZIONI DALLA BASE DELLA FONDAZIONE

☐ Considera momenti di trasporto

F_{xd}=	0,00	kN	Forza di taglio in direzione X
F_{yd}=	0,00	kN	Forza di taglio in direzione Y
F_{zd}=	0,00	kN	Forza in direzione verticale (>0 se di compressione)
M_{xd}=	0,00	kNm	Momento in direzione X
M_{yd}=	0,00	kNm	Momento in direzione Y

V=	0,00	kN	Componente verticale del carico
H=	0,00	kN	Componente orizzontale del carico
θ_V=	0,00	°	Inclinazione del carico rispetto alla verticale
θ_H=	90,00	°	Inclinazione del carico orizzontale rispetto alla direzione della lunghezza

e_x=	0,00	m	Eccentricità in direzione X
e_y=	0,00	m	Eccentricità in direzione Y

CARATTERISTICHE FONDAZIONE RIDOTTA

B'=	5,60	m	Base ridotta
L'=	11,30	m	Lunghezza ridotta
A'=	63,28		Area ridotta

PARAMETRI DEL TERRENO

γ=	17	kN/m³	Peso per unità di volume del terreno di fondazione
φ'=	24	°	Angolo di attrito
c'=	10	kN/m²	Coesione efficace
c_u=	0	kN/m²	Coesione non drenata
γ_r=	25	kN/m³	Peso per unità di volume del terreno di riempimento laterale

K_p=	2,371		Coefficiente di spinta passiva

q=	92,50	kN/m²	Pressione litostatica alla profondità del piano di posa

PARAMETRI DI PORTANZA DELLA FONDAZIONE (BRINCH-HANSEN)

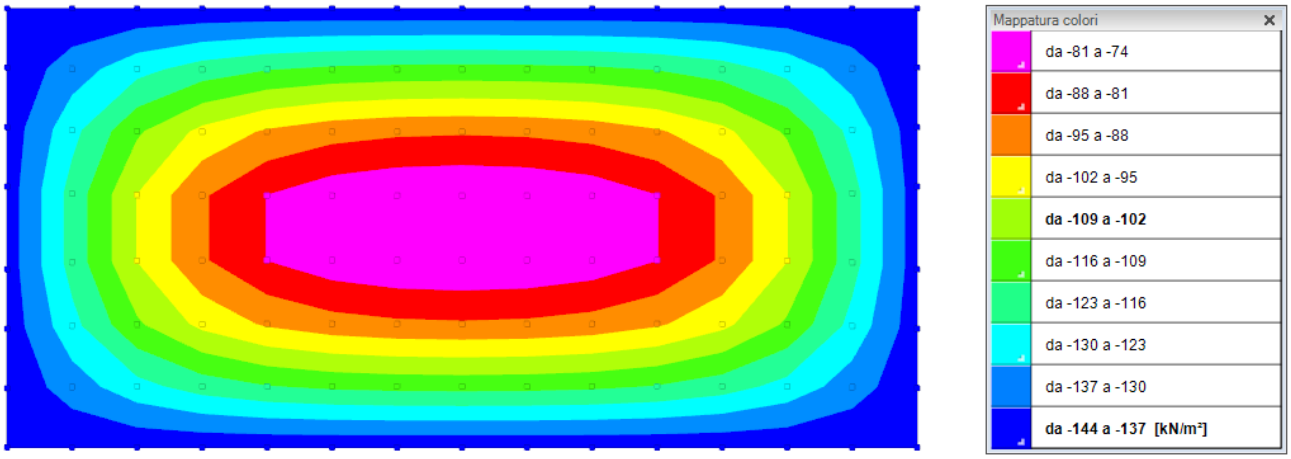
k=	0,66	Fattore di profondità
m_B=	1,67	Parametro di forma per carico agente in direzione della base
m_L=	1,33	Parametro di forma per carico agente in direzione della lunghezza
m=	1,67	Parametro di forma complessivo
N_c=	19,32	
N_q=	9,60	Fattori di capacità portante
N_γ=	7,66	
s_c=	1,22	
s_q=	1,20	Fattori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



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

7. OPERE PROVVISIONALI

7.1 GEOMETRIA DELLE OPERE

Nei successivi paragrafi sono riportate le analisi e le verifiche statiche delle opere provvisionali 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

Strato di Terreno	Terreno	γ dry kN/m3	γ sat kN/m3	ø' °	c' kPa	Modulo Elastico	Kvc kN/m3	Kur kN/m3
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)
(-20;-6.9)
(0;-6.9)
(20;-6.9)
(27;-6.9)
(30;-30)
(-30;-30)
OCR : 1

Tipo : POLYLINE
Punti
(-25;-8.2)
(-20;-8.2)
(0;-8.2)
(20;-8.2)
(27;-8.2)
(27;-11)
(-25;-11)
OCR : 1

Tipo : POLYLINE
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)
(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.

		Coefficiente γ_F	EQU	A1 STR	A2 GEO
Carichi permanenti	favorevoli sfavorevoli	γ_{G1}	0,9 1,1	1,0 1,3	1,0 1,0
Carichi permanenti non strutturali[1]	favorevoli sfavorevoli	γ_{G2}	0,0 1,5	0,0 1,5	0,0 1,3
Carichi variabili	favorevoli sfavorevoli	γ_{Qi}	0,0 1,5	0,0 1,5	0,0 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	$\tan \varphi'_k$	$\gamma_{\varphi'}$	1,0	1,25
Coesione efficace	c'_k	$\gamma_{c'}$	1,0	1,25
Resistenza non drenata	c_{uk}	γ_{cu}	1,0	1,4
Peso dell'unità di volume	γ	γ_γ	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 caratteristichei).

Le cominazioni 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	γG	γG	γQ	γQ	γG	γG	γGdst	γGstb	γQdst	γGdst	γGstb	γQdst
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

Coefficienti M

Nome	Parziale su tan(ø')	Parziale su c'	Parziale su Su	Parziale su qu	Parziale su peso specifico
Simbolo	γφ	γc	γcu	γqu	γγ
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. Kp)	Parziale resistenza tiranti permanenti	Parziale resistenza Tiranti temporanei	Parziale elementi strutturali
Simbolo	γRe	γap	γat	
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/m^2.

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.

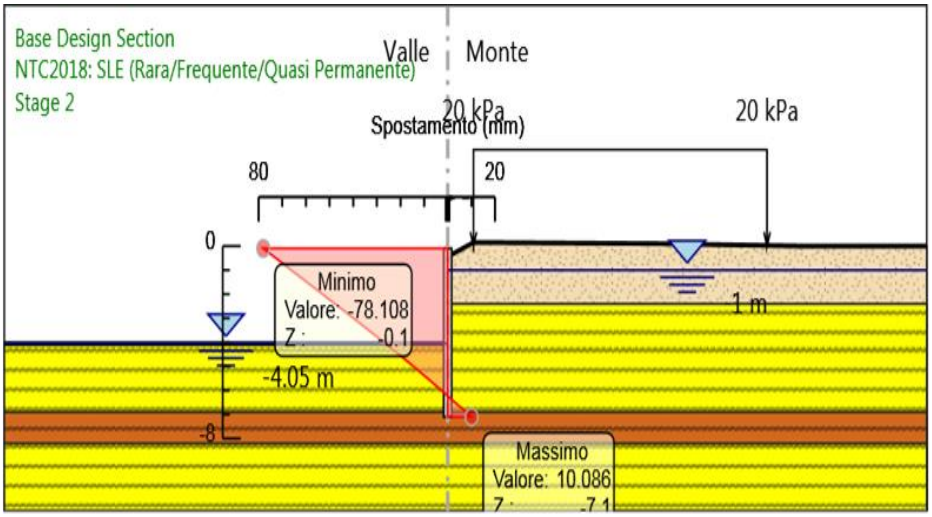


Figura 37 – SLE – Inviluppo spostamenti

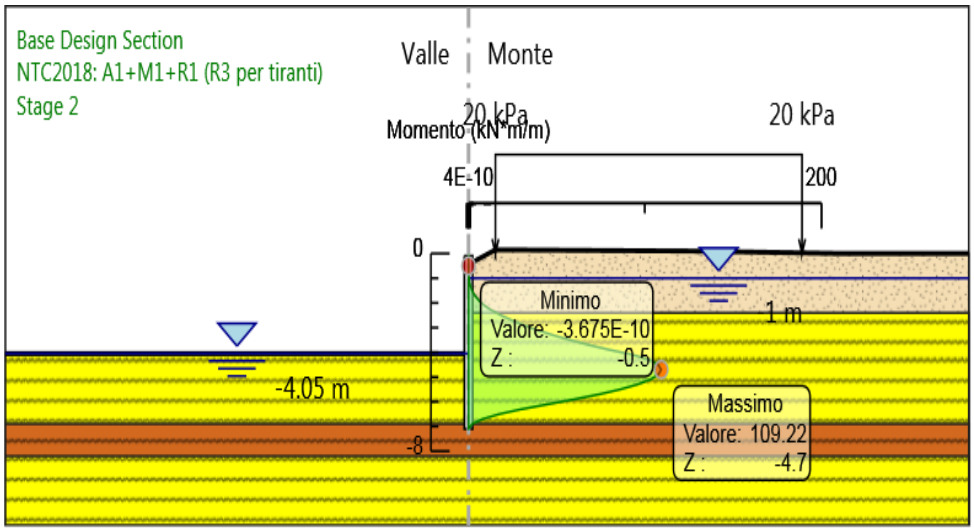


Figura 38 – SLU (A1-M1-R1) – Inviluppo momento flettente

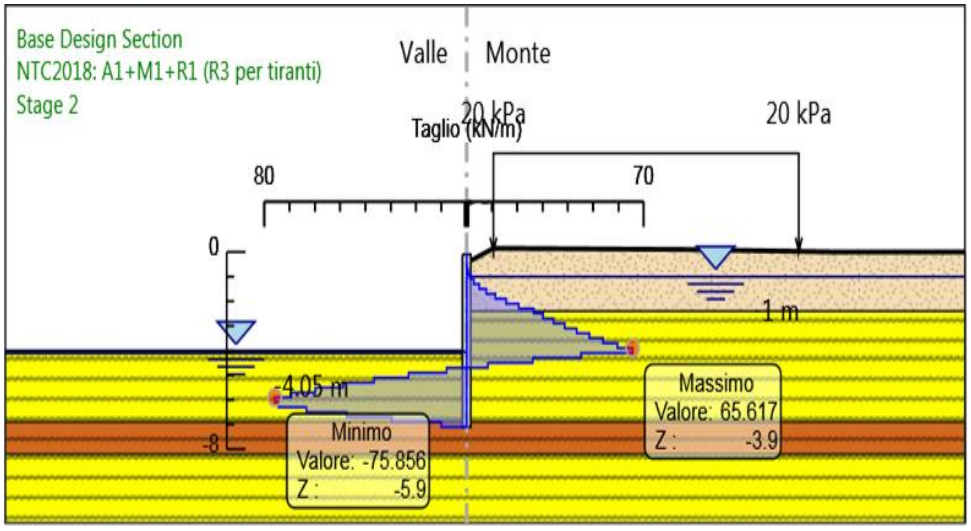


Figura 39 – SLU (A1-M1-R1) – Inviluppo taglio

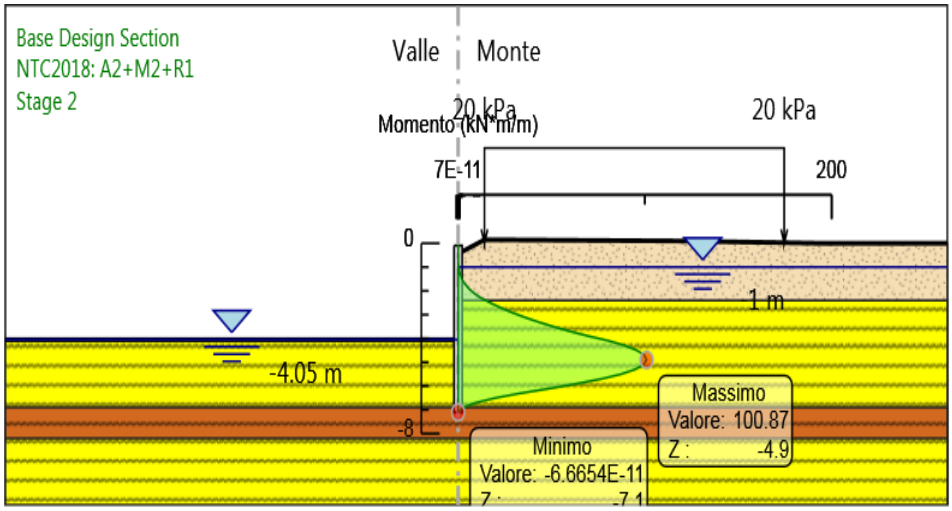


Figura 40 – SLU (A2-M2-R2) – Inviluppo momento flettente

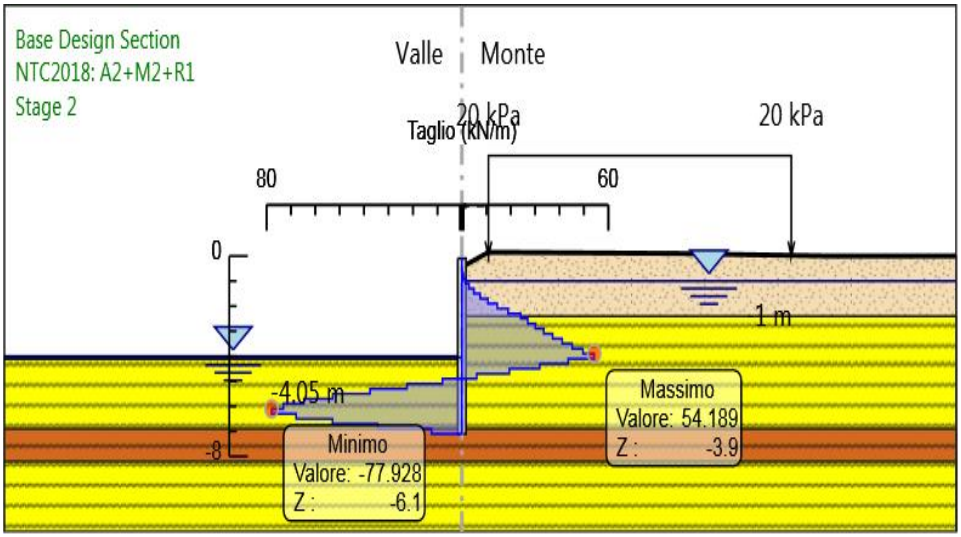


Figura 41 – SLU (A2-M2-R2) – Inviluppo taglio

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

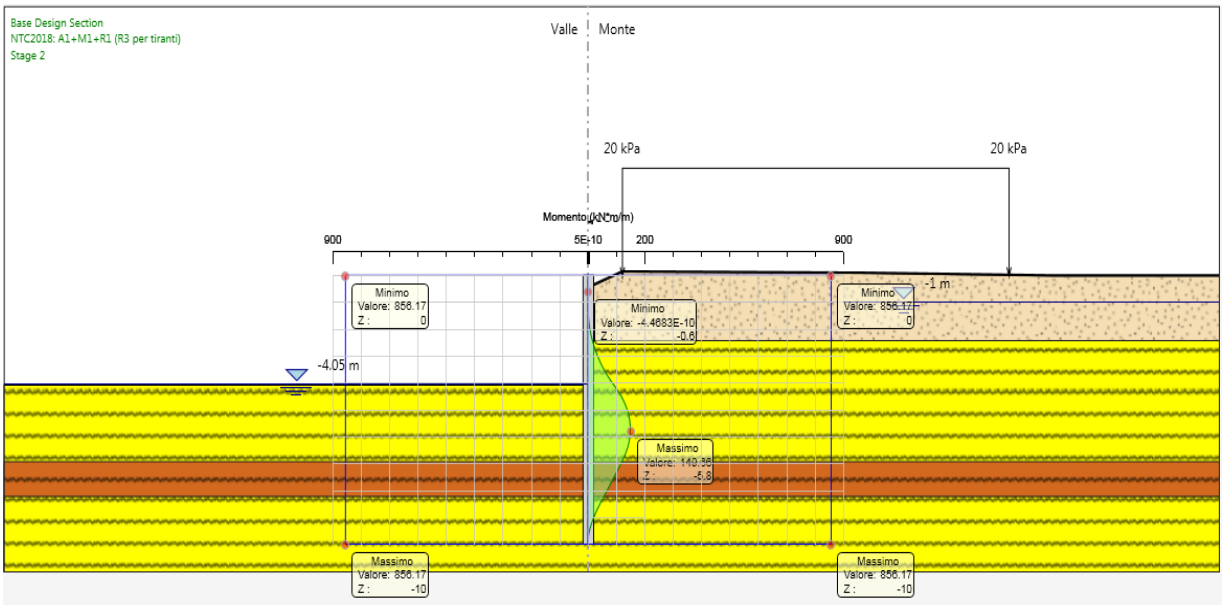
Combinazione GEO (A2-M2-R1)

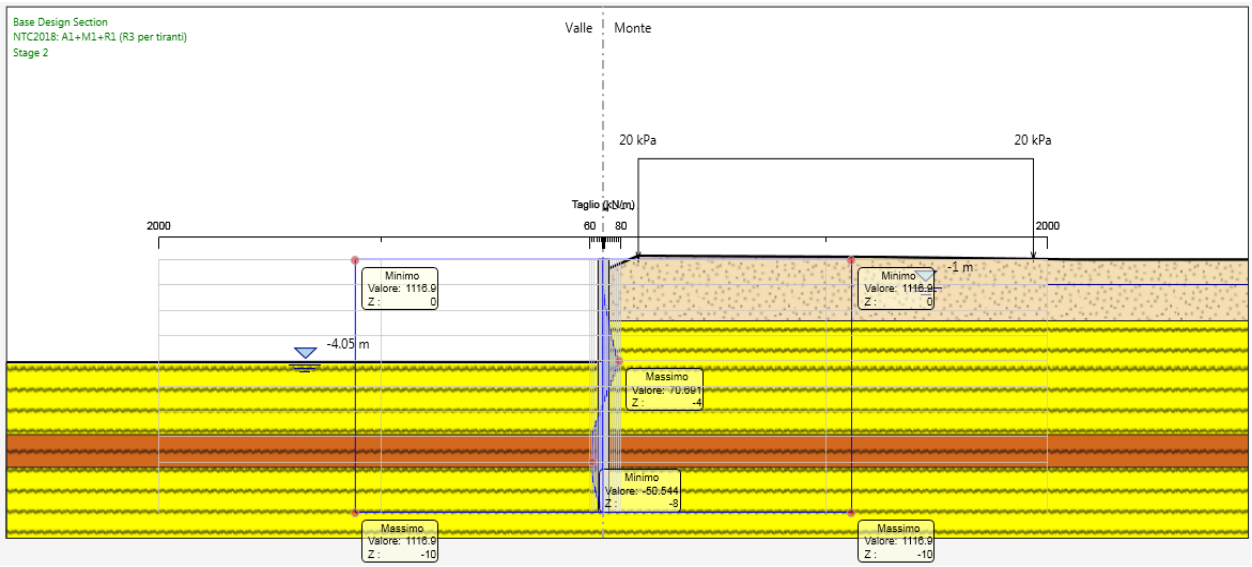
7.7 VERIFICHE STRUTTURALI

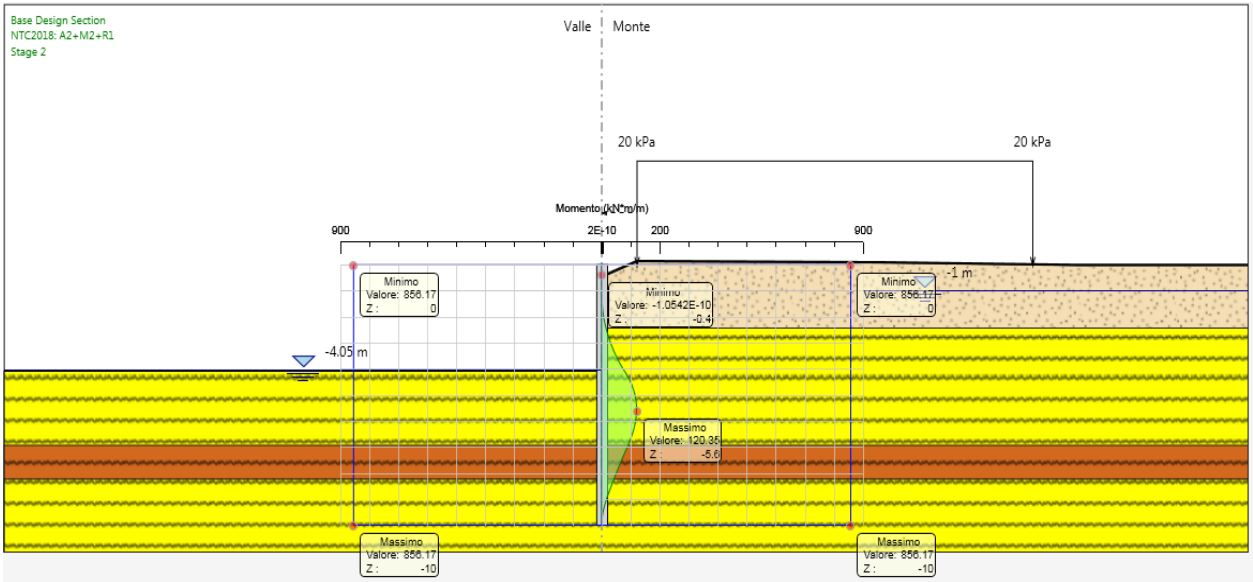
Il palancolato è previsto con profili PU28 in acciaio S275.

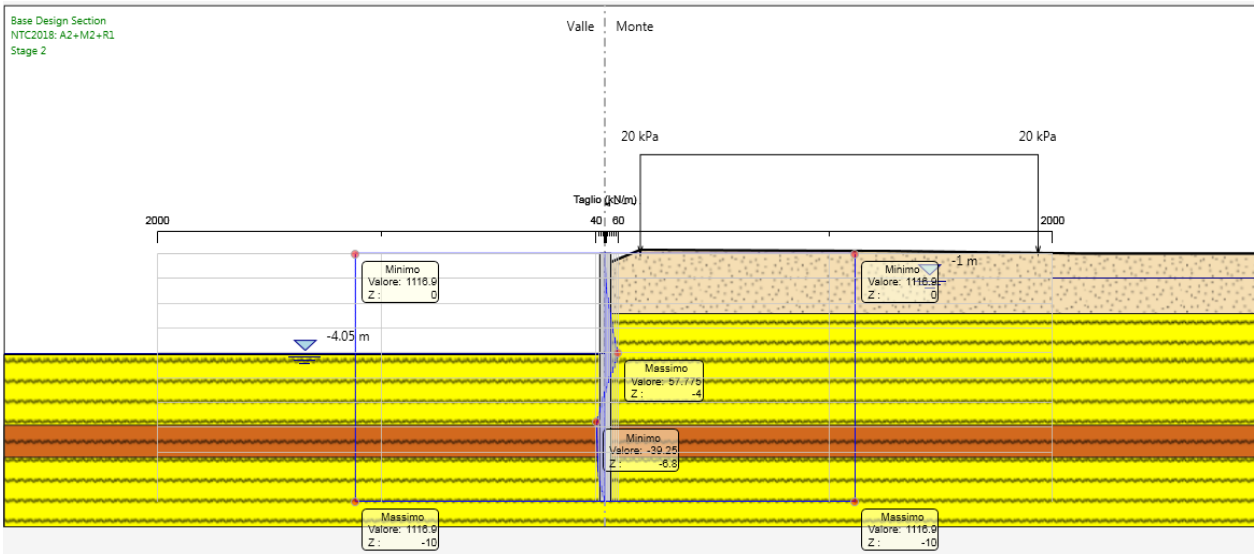
Si riporta di seguito il confronto tra le sollecitazioni massime agenti, di momento flettente e taglio, e le capacità resistenti nell'inviluppo allo SLU per entrambe le combinazioni considerate, per ciascuna paratia analizzata.

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


Base Design Section
NTC2018: A1+M1+R1 (R3 per tiranti)
Stage 2
Valle
Monte
20 kPa
20 kPa
Momento (kNm/m)
900
5E-10
200
900
-1 m
Minimo
Valore: 856.17
Z : 0
Minimo
Valore: -4.4683E-10
Z : -0.6
Minimo
Valore: 856.17
Z : 0
-4.05 m
Massimo
Valore: 140.98
Z : -5.8
Massimo
Valore: 856.17
Z : -10
Massimo
Valore: 856.17
Z : -10


Base Design Section
NTC2018: A1+M1+R1 (R3 per tiranti)
Stage 2
Valle
Monte
20 kPa
20 kPa
Taglio (kN/m)
2000
60
80
2000
-1 m
Minimo
Valore: 1116.9
Z : 0
Minimo
Valore: 1116.9
Z : 0
-4.05 m
Massimo
Valore: 70.661
Z : -4
Minimo
Valore: -50.544
Z : -8
Massimo
Valore: 1116.9
Z : -10
Massimo
Valore: 1116.9
Z : -10


Base Design Section
NTC2018: A2+M2+R1
Stage 2
Valle
Monte
20 kPa
20 kPa
Momento (kN*m/m)
900
2E-10
200
900
-1 m
-4.05 m
Minimo
Valore: 856.17
Z : 0
Minimo
Valore: -1.0542E-10
Z : -0.4
Minimo
Valore: 856.17
Z : 0
Massimo
Valore: 120.35
Z : -5.6
Massimo
Valore: 856.17
Z : -10
Massimo
Valore: 856.17
Z : -10


Base Design Section
NTC2018: A2+M2+R1
Stage 2
Valle
Monte
20 kPa
20 kPa
Taglio (kN/m)
40
60
2000
2000
-1 m
-4.05 m
Minimo
Valore: 1116.9
Z: 0
Minimo
Valore: 1116.9
Z: 0
Massimo
Valore: 57.775
Z: -4
Minimo
Valore: -39.25
Z: -6.8
Massimo
Valore: 1116.9
Z: -10
Massimo
Valore: 1116.9
Z: -10

APPENDICE "A" – TABULATI DI CALCOLO OPERE PROVVISIONALI

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: Spostamento Muro: LEFT

Stage	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 Paratia Muro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0

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

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
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

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

Stage	Z (m)	Spostamento (mm)
Stage 2	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 Paratia Muro: LEFT

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

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

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 2	-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	0.05	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) Risultati Paratia Muro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0

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

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	-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

5.2.2. 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 Paratia Muro: 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	61.56
Stage 2	-4.6	122.93	52.55
Stage 2	-4.8	131.67	43.7
Stage 2	-5	138.66	34.98
Stage 2	-5.2	143.94	26.39
Stage 2	-5.4	147.52	17.91
Stage 2	-5.6	149.42	9.51
Stage 2	-5.8	149.66	1.17
Stage 2	-6	148.23	-7.13
Stage 2	-6.2	145.15	-15.43
Stage 2	-6.4	140.4	-23.74
Stage 2	-6.6	133.98	-32.1
Stage 2	-6.8	125.95	-40.12
Stage 2	-7	116.59	-46.82
Stage 2	-7.2	107.07	-47.59
Stage 2	-7.4	97.41	-48.29
Stage 2	-7.6	87.62	-48.93
Stage 2	-7.8	77.72	-49.51
Stage 2	-8	67.71	-50.08
Stage 2	-8.2	57.6	-50.54
Stage 2	-8.4	47.61	-49.94
Stage 2	-8.6	37.99	-48.09
Stage 2	-8.8	28.99	-45.03
Stage 2	-9	20.83	-40.8
Stage 2	-9.2	13.74	-35.44
Stage 2	-9.4	7.95	-28.95
Stage 2	-9.6	3.64	-21.55
Stage 2	-9.8	0.94	-13.47
Stage 2	-10	0	-4.72

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 Paratia Muro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
Stage 1	0	0	0
Stage 1	-0.2	0	0
Stage 1	-0.4	0	0
Stage 1	-0.6	0	0
Stage 1	-0.8	0	0
Stage 1	-1	0	0
Stage 1	-1.2	0	0
Stage 1	-1.4	0	0
Stage 1	-1.6	0	0
Stage 1	-1.8	0	0
Stage 1	-2	0	0
Stage 1	-2.2	0	0
Stage 1	-2.4	0	0
Stage 1	-2.6	0	0
Stage 1	-2.8	0	0
Stage 1	-3	0	0
Stage 1	-3.2	0	0
Stage 1	-3.4	0	0
Stage 1	-3.6	0	0
Stage 1	-3.8	0	0
Stage 1	-4	0	0
Stage 1	-4.2	0	0
Stage 1	-4.4	0	0
Stage 1	-4.6	0	0
Stage 1	-4.8	0	0
Stage 1	-5	0	0
Stage 1	-5.2	0	0
Stage 1	-5.4	0	0
Stage 1	-5.6	0	0
Stage 1	-5.8	0	0
Stage 1	-6	0	0
Stage 1	-6.2	0	0
Stage 1	-6.4	0	0
Stage 1	-6.6	0	0
Stage 1	-6.8	0	0
Stage 1	-7	0	0
Stage 1	-7.2	0	0
Stage 1	-7.4	0	0
Stage 1	-7.6	0	0
Stage 1	-7.8	0	0
Stage 1	-8	0	0
Stage 1	-8.2	0	0
Stage 1	-8.4	0	0
Stage 1	-8.6	0	0
Stage 1	-8.8	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 Paratia Muro: 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

Design Assumption: NTC2018: A2+M2+R1 Risultati Paratia Muro: LEFT

Stage	Z (m)	Momento (kN*m/m)	Taglio (kN/m)
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
Stage 2	-6.6	102.74	-29.19
Stage 2	-6.8	95.87	-34.35
Stage 2	-7	88.02	-39.25
Stage 2	-7.2	80.23	-38.93
Stage 2	-7.4	72.54	-38.45
Stage 2	-7.6	64.98	-37.81
Stage 2	-7.8	57.58	-37.02
Stage 2	-8	50.36	-36.1
Stage 2	-8.2	43.35	-35.07
Stage 2	-8.4	36.56	-33.93
Stage 2	-8.6	29.7	-34.29
Stage 2	-8.8	23.02	-33.41
Stage 2	-9	16.77	-31.26
Stage 2	-9.2	11.2	-27.87
Stage 2	-9.4	6.55	-23.25
Stage 2	-9.6	3.03	-17.59
Stage 2	-9.8	0.8	-11.17
Stage 2	-10	0	-3.98

7. Allegati
7.1. Design Assumption : Nominal - File di Paratie - File di output (.out)

```
+-----------------------------------------------------------------------------------------------------------------------+
|                  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                                                  |
+-----------------------------------------------------------------------------------------------------------------------+

                    ***********************************************************
                    *                                                         *
                    *  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.Nominal_64
 STARTING
ACCEPTED   &lt;FILE,GENW                                                                                    &gt;
ACCEPTED   &lt;FILE,PLOTTER,BINARY                                                                          &gt;
ACCEPTED   &lt;SOLVE TOTAL_STRESS                                                                           &gt;
ACCEPTED   &lt;PARAM ITEMAX 40                                                                              &gt;
ACCEPTED   &lt;CONTROL HINGES 0 0.0001 0.001                                                                &gt;


                    ***********************************************************
                    *                                                         *
                    *  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.Nominal_64                                        |
|                                Exe Time : 1 April 2019     17:23:04                                                   |
+-----------------------------------------------------------------------------------------------------------------------+


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.Nominal_64                                        |
|                                Exe Time : 1 April 2019     17:23:04                                                   |
+-----------------------------------------------------------------------------------------------------------------------+
                  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
  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*               |
|                                                                                                                       |
|                                      NewProject.BaseDesignSection_28.Nominal_64                                       |
|                                 Exe Time : 1 April 2019     17:23:04                                                  |
+-----------------------------------------------------------------------------------------------------------------------+
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     /
  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     /
  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.Nominal_64                                          |
|                                 Exe Time : 1 April 2019     17:23:04                                                    |
+-------------------------------------------------------------------------------------------------------------------------+
 ELEMENT GROUP NO.  1

0_L                                                          :
   5  51   0   1   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
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.Nominal_64                                              |
|                                   Exe Time : 1 April 2019     17:23:04                                                        |
+-------------------------------------------------------------------------------------------------------------------------------+
 ELEMENT GROUP NO.  2

0_R                                                                  :
   5  51   0   1   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
   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.Nominal_64                                        |
|                                 Exe Time : 1 April 2019     17:23:04                                                    |
+-------------------------------------------------------------------------------------------------------------------------+
 ELEMENT GROUP NO.  3

WallElement_New_28707                                          :
   2  50   0   1   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 multipier
--------------------------
    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
   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.Nominal_64                                  |
|                                  Exe Time : 1 April 2019     17:23:04                                             |
+-------------------------------------------------------------------------------------------------------------------+


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
    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                                  |
|                                 Exe Time : 1 April 2019     17:23:04                                            |
+-----------------------------------------------------------------------------------------------------------------+
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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
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ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.23500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.8730     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.35200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.6450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.7540     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
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ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.36900     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.5090     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27100     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  5.8790     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
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ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.30700     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  4.8450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)


DEFAULT WATER UNIT WEIGHT =  10.000
AVERAGED ON     8 VALUES



+-------------------------------------------------------------------------------------------------------------------------+
|                   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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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
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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
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.Nominal_64                              |
|                                 Exe Time : 1 April 2019     17:23:04                                        |
+-------------------------------------------------------------------------------------------------------------+
 I N I T I A L    S T R E S S    T A B L E S

            S E C T I O N

 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)           1.45000000000000
 FOUNDATION WIDTH    (B)            16.550000000000
 ZETA-F..........                  0.000000000000000E+000
 Q-F ............                   20.000000000000
 BETA ...........                   45.000000000000
 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
            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 RATIOR= 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 RATIOR= 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

P R I N T   O U T   F O R   T I M E   S T E P   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


S T R E S S   R E S U L T S   F O R   G R O U P   N O.   1

0_L                                                          :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     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.	-1.000	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.	-1.200	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
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.Nominal_64                                        |
 |                                 Exe Time : 1 April 2019     17:23:04                                                    |
 +-------------------------------------------------------------------------------------------------------------------------+
 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

 0_R                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     1.0000

  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
 ---------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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
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```
  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.Nominal_64                                         |
 |                                 Exe Time : 1 April 2019     17:23:04                                                    |
 +-------------------------------------------------------------------------------------------------------------------------+
 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.   3

 WallElement_New_28707                                          :
 ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
 C U R R E N T   T I M E   I S     1.0000

  WALL2D ELEMENT

    EL      TA          TB          MA          MB
 ---------------------------------------------------

 ***** 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     RATIOR= 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= 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 RATIOR= 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


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
            RATIOT=0.1159     RATIOR= 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
            RATIOT=0.4866E-01 RATIOR= 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
            RATIOT=0.6897E-02 RATIOR= 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
            RATIOT=0.9479E-04 RATIOR= 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.Nominal_64                                        |
|                                  Exe Time : 1 April 2019     17:23:04                                                   |
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New Project
SOLUTION REACHED USING     6 ITERATIONS ON   40

P R I N T   O U T   F O R   T I M E   S T E P   2     ( AT TIME   2.000     )

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

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

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     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
    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.Nominal_64                                                |
 |                                 Exe Time : 1 April 2019     17:23:04                                                          |
 +-------------------------------------------------------------------------------------------------------------------------------+
 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.   1

 0_L                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     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
 ---------------------------------------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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  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                                                  |
+------------------------------------------------------------------------------------------------------------------------+
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

0_R                                                                      :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T    T I M E    I S      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
 ------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------
   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
  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


+-------------------------------------------------------------------------------------------------------------------------------+
|                    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


S T R E S S   R E S U L T S   F O R   G R O U P   N O.   3

WallElement_New_28707                                          :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     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
```

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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


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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                                                  |
+-----------------------------------------------------------------------------------------------------------------------+


     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)

```
+-----------------------------------------------------------------------------------------------------------------------+
|                  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                                                  |
+-----------------------------------------------------------------------------------------------------------------------+

                    ********************************************************
                    *                                                      *
                    *  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.NTC2018SLERaraFrequenteQuasiPermanente_1116
 STARTING
ACCEPTED   &lt;FILE,GENW                                                    &gt;
ACCEPTED   &lt;FILE,PLOTTER,BINARY                                          &gt;
ACCEPTED   &lt;SOLVE TOTAL_STRESS                                           &gt;
ACCEPTED   &lt;PARAM ITEMAX 40                                              &gt;
ACCEPTED   &lt;CONTROL HINGES 0 0.0001 0.001                                &gt;


                    ********************************************************
                    *                                                      *
                    *  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.NTC2018SLERaraFrequenteQuasiPermanente_1116                  |
|                                  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.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    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
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*               |
|                                                                                                                       |
|                      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 /

   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     /
  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   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
   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*                |
|                                                                                                                         |
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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   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
   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


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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                                            |
+-------------------------------------------------------------------------------------------------------------------+
 ELEMENT GROUP NO.  3

WallElement_New_28707                                          :
   2  50   0   1   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 multipier
-------------------------
    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
   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.NTC2018SLERaraFrequenteQuasiPermanente_1116                       |
|                                   Exe Time : 1 April 2019     17:23:05                                                  |
+-------------------------------------------------------------------------------------------------------------------------+


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*                |
|                                                                                                                         |
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|                    NewProject.BaseDesignSection_28.NTC2018SLERaraFrequenteQuasiPermanente_1116                    |
|                                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
       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.NTC2018SLERaraFrequenteQuasiPermanente_1116                    |
|                                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.NTC2018SLERaraFrequenteQuasiPermanente_1116                    |
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|                                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.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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.23500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.8730     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.35200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.6450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
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ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.7540     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.36900     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.5090     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27100     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  5.8790     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
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ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.30700     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  4.8450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)


DEFAULT WATER UNIT WEIGHT =  10.000
AVERAGED ON     8 VALUES



+-----------------------------------------------------------------------------------------------------------------------+
|                   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                                                 |
+-----------------------------------------------------------------------------------------------------------------------+

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
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                                           |
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 I N I T I A L   S T R E S S   T A B L E S

            S E C T I O N

 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)           1.45000000000000
 FOUNDATION WIDTH    (B)            16.5500000000000
 ZETA-F..........                  0.000000000000000E+000
 Q-F ............                   20.0000000000000
 BETA ...........                   45.0000000000000
 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
           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 RATIOR= 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 RATIOR= 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.NTC2018SLERaraFrequenteQuasiPermanente_1116                       |
|                                  Exe Time : 1 April 2019     17:23:05                                                 |
+-----------------------------------------------------------------------------------------------------------------------+
New Project
SOLUTION REACHED USING     2 ITERATIONS ON   40

P R I N T   O U T   F O R   T I M E   S T E P   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.NTC2018SLERaraFrequenteQuasiPermanente_1116                             |
|                                  Exe Time : 1 April 2019     17:23:05                                                         |
+-------------------------------------------------------------------------------------------------------------------------------+
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.   1

0_L                                                          :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     1.0000

 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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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.      -1.000       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.      -1.200       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
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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


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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                                                          |
+-------------------------------------------------------------------------------------------------------------------------------+
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

0_R                                                          :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     1.0000

 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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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
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.NTC2018SLERaraFrequenteQuasiPermanente_1116                             |
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|                                Exe Time : 1 April 2019     17:23:05                                                |
+-------------------------------------------------------------------------------------------------------------------+
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.   3

WallElement_New_28707                                          :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     1.0000

 WALL2D ELEMENT

   EL      TA          TB          MA          MB
-----------------------------------------------------

***** 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     RATIOR= 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= 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 RATIOR= 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


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
           RATIOT=0.1159     RATIOR= 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
           RATIOT=0.4866E-01 RATIOR= 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
           RATIOT=0.6897E-02 RATIOR= 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
           RATIOT=0.9479E-04 RATIOR= 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

P R I N T   O U T   F O R   T I M E   S T E P   2     ( AT TIME   2.000     )

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

          Y-DISPL.F        X-ROT. F
           (02)             (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
   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                                                     |
+-----------------------------------------------------------------------------------------------------------------------------+
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.   1

0_L                                                          :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     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	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						

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  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.NTC2018SLERaraFrequenteQuasiPermanente_1116                             |
 |                                 Exe Time : 1 April 2019     17:23:05                                                        |
 +-----------------------------------------------------------------------------------------------------------------------------+
 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

 0_R                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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
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  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
  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


S T R E S S   R E S U L T S   F O R   G R O U P   N O.   3

WallElement_New_28707                                        :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     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
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  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


+-------------------------------------------------------------------------------------------------------------------------+
|                  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                                                   |
+-------------------------------------------------------------------------------------------------------------------------+


     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)

```
+-------------------------------------------------------------------------------------------------------------------------+
|                  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                                                   |
+-------------------------------------------------------------------------------------------------------------------------+

                   ********************************************************
                   *                                                      *
                   *  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.NTC2018A1M1R1R3pertiranti_1147
 STARTING
ACCEPTED   &lt;FILE,GENW                                                                    &gt;
ACCEPTED   &lt;FILE,PLOTTER,BINARY                                                          &gt;
ACCEPTED   &lt;SOLVE TOTAL_STRESS                                                           &gt;
ACCEPTED   &lt;PARAM ITEMAX 40                                                              &gt;
ACCEPTED   &lt;CONTROL HINGES 0 0.0001 0.001                                                &gt;


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

PRELIMINARY OPERATIONS CPU TIME     0.01 [sec]


+-------------------------------------------------------------------------------------------------------------------+
|                  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                                              |
+-------------------------------------------------------------------------------------------------------------------+


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.NTC2018A1M1R1R3pertiranti_1147                                       |
|                                 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
   33 : PERMEABILITY 1E-07
   34 : RESISTANCE 30 25 0 0 0
   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*              |
|                                                                                                                       |
|                           NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147                              |
|                                 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 /

   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     /
  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.NTC2018A1M1R1R3pertiranti_1147                              |
|                                 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   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
   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.NTC2018A1M1R1R3pertiranti_1147                               |
|                                  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   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
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.NTC2018A1M1R1R3pertiranti_1147                                   |
|                                    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   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 multipier
--------------------------
    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
   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
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   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.NTC2018A1M1R1R3pertiranti_1147                       |
|                                  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


+-----------------------------------------------------------------------------------------------------------------+
|                  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                                           |
+-----------------------------------------------------------------------------------------------------------------+
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
    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*          |
|                                                                                                                 |
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|                          NewProject.BaseDesignSection_28.NTC2018A1M1R1R3pertiranti_1147                          |
|                                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.NTC2018A1M1R1R3pertiranti_1147                          |
|                                Exe Time : 1 April 2019     17:23:05                                              |
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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.NTC2018A1M1R1R3pertiranti_1147                          |
|                                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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.23500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.8730     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
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ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.35200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.6450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.7540     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.36900     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.5090     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  8.0370     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.27100     WALL NO.        1
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ITEM NO.  61&lt;D-KP    &gt;=  5.8790     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.47800     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.6750     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.35000     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.4460     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.30700     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  4.8450     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  10&lt;U-KA    &gt;= 0.45400     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.5420     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     (BOTH WALLS)
ITEM NO.  60&lt;D-KA    &gt;= 0.40600     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.2220     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 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                                                    |
+-----------------------------------------------------------------------------------------------------------------------------+

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
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
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 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                                                  |
+-----------------------------------------------------------------------------------------------------------------------+
 I N I T I A L    S T R E S S    T A B L E S

            S E C T I O N

 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)           1.45000000000000
 FOUNDATION WIDTH    (B)            16.5500000000000
 ZETA-F..........                  0.000000000000000E+000
 Q-F ............                   20.0000000000000
 BETA ...........                   45.0000000000000
 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
            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 RATIOR= 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 RATIOR= 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                                                           |
+-----------------------------------------------------------------------------------------------------------------------------------+
New Project
SOLUTION REACHED USING     2 ITERATIONS ON   40

P R I N T   O U T   F O R   T I M E   S T E P   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.NTC2018A1M1R1R3pertiranti_1147                                       |
|                                    Exe Time : 1 April 2019     17:23:05                                                           |
+-----------------------------------------------------------------------------------------------------------------------------------+
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.   1

0_L                                                                :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     1.0000

 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
 ---------------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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.      -1.000       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.      -1.200       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
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  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


 +-------------------------------------------------------------------------------------------------------------------------+
 |                  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


 S T R E S S   R E S U L T S   F O R   G R O U P   N O.   2

 0_R                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     1.0000

  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
```

```
 ----------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------
   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
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
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  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


 S T R E S S   R E S U L T S   F O R   G R O U P   N O.   3

 WallElement_New_28707                                          :
 ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
 C U R R E N T   T I M E   I S     1.0000

  WALL2D ELEMENT

    EL      TA          TB          MA          MB
 -----------------------------------------------------

 ***** 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     RATIOR= 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= 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 RATIOR= 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


 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
           RATIOT=0.1159     RATIOR= 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
           RATIOT=0.4866E-01 RATIOR= 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
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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
            RATIOT=0.6897E-02 RATIOR= 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
            RATIOT=0.9479E-04 RATIOR= 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

P R I N T   O U T   F O R   T I M E   S T E P   2     ( AT TIME   2.000     )

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

          Y-DISPL.F        X-ROT. F
           (02)             (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
   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
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    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.NTC2018A1M1R1R3pertiranti_1147                               |
 |                                   Exe Time : 1 April 2019     17:23:05                                                   |
 +--------------------------------------------------------------------------------------------------------------------------+
 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.    1

 0_L                                                               :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T    T I M E    I S      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
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---------------------------------------------------------------------------------------
   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   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
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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.NTC2018A1M1R1R3pertiranti_1147                                   |
|                                   Exe Time : 1 April 2019     17:23:05                                                        |
+-------------------------------------------------------------------------------------------------------------------------------+
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

0_R                                                          :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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
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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						
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						

```
+-----------------------------------------------------------------------------------------------------------------------------+
|                  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


S T R E S S   R E S U L T S   F O R   G R O U P   N O.   3

WallElement_New_28707                                          :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     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


+-----------------------------------------------------------------------------------------------------------------------------+
|                  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   &lt;FILE,GENW                                                                                    &gt;
ACCEPTED   &lt;FILE,PLOTTER,BINARY                                                                          &gt;
ACCEPTED   &lt;SOLVE TOTAL_STRESS                                                                           &gt;
ACCEPTED   &lt;PARAM ITEMAX 40                                                                              &gt;
ACCEPTED   &lt;CONTROL HINGES 0 0.0001 0.001                                                                &gt;


                    ********************************************************
                    *                                                      *
                    *  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.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
   33 : PERMEABILITY 1E-07
   34 : RESISTANCE 30 25 0 0 0
   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=29.256 LeftWall_32
   42 : CHANGE UG0_2_10_L_0 D-FRICT=29.256 LeftWall_32
   43 : CHANGE UG0_2_10_L_0 U-KA=0.483 LeftWall_32
   44 : CHANGE UG0_2_10_L_0 U-KP=5.364 LeftWall_32
   45 : CHANGE UG0_2_10_L_0 D-KA=0.294 LeftWall_32
   46 : CHANGE UG0_2_10_L_0 D-KP=2.085 LeftWall_32
   47 : CHANGE UG2_4_11_L_0 U-FRICT=20.458 LeftWall_32
   48 : CHANGE UG2_4_11_L_0 D-FRICT=20.458 LeftWall_32
   49 : CHANGE UG2_4_11_L_0 U-KA=0.581 LeftWall_32
```

```
  50 : CHANGE UG2_4_11_L_0 U-KP=2.853 LeftWall_32
  51 : CHANGE UG2_4_11_L_0 D-KA=0.415 LeftWall_32
  52 : CHANGE UG2_4_11_L_0 D-KP=2.104 LeftWall_32
  53 : CHANGE UG3_4271_12_L_0 U-FRICT=26.56 LeftWall_32
  54 : CHANGE UG3_4271_12_L_0 D-FRICT=26.56 LeftWall_32
  55 : CHANGE UG3_4271_12_L_0 U-KA=0.445 LeftWall_32
  56 : CHANGE UG3_4271_12_L_0 U-KP=3.895 LeftWall_32
  57 : CHANGE UG3_4271_12_L_0 D-KA=0.335 LeftWall_32
  58 : CHANGE UG3_4271_12_L_0 D-KP=2.777 LeftWall_32
  59 : CHANGE UG2_4_26346_L_0 U-FRICT=20.458 LeftWall_32
  60 : CHANGE UG2_4_26346_L_0 D-FRICT=20.458 LeftWall_32
  61 : CHANGE UG2_4_26346_L_0 U-KA=0.547 LeftWall_32
  62 : CHANGE UG2_4_26346_L_0 U-KP=2.762 LeftWall_32
  63 : CHANGE UG2_4_26346_L_0 D-KA=0.435 LeftWall_32
  64 : CHANGE UG2_4_26346_L_0 D-KP=1.997 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=24 LeftWall_32
  70 : CHANGE UG2_4_11_L_0 U-ADHES=0 LeftWall_32
  71 : CHANGE UG2_4_11_L_0 D-COHE=24 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=24 LeftWall_32
  78 : CHANGE UG2_4_26346_L_0 U-ADHES=0 LeftWall_32
  79 : CHANGE UG2_4_26346_L_0 D-COHE=24 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=0.343 LeftWall_32
  88 : CHANGE UG0_2_10_L_0 D-KP=4.102 LeftWall_32
  89 : CHANGE UG2_4_11_L_0 D-KA=0.482 LeftWall_32
  90 : CHANGE UG2_4_11_L_0 D-KP=2.535 LeftWall_32
  91 : CHANGE UG3_4271_12_L_0 D-KA=0.382 LeftWall_32
  92 : CHANGE UG3_4271_12_L_0 D-KP=3.512 LeftWall_32
  93 : CHANGE UG2_4_26346_L_0 D-KA=0.482 LeftWall_32
  94 : CHANGE UG2_4_26346_L_0 D-KP=2.535 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.NTC2018A2M2R1_1178                                   |
|                                  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 /

   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     /
  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.NTC2018A2M2R1_1178                                   |
|                                  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   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
   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   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
   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.NTC2018A2M2R1_1178                                               |
|                                  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   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 multipier
-------------------------
    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
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 (NPTM)....................    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
       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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  29.256     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.48300     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.3640     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
```

```
ITEM NO.  59&lt;D-FRICT &gt;=  29.256     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.29400     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.0850     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.   9&lt;U-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.58100     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  2.8530     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.  59&lt;D-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.41500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.1040     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  26.560     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.44500     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.8950     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  26.560     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.33500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.7770     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.   9&lt;U-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.54700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  2.7620     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
```

```
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.  59&lt;D-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.43500     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  1.9970     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 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&lt;NAME    &gt;=  8.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;=  0.0000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  18.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  8.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  29.256     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  35.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.48300     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  5.3640     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-03 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  29.256     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  35.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.34300     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  4.1020     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-03 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  9.0000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -2.4000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.   9&lt;U-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.58100     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  2.8530     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.  59&lt;D-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.48200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.5350     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  10.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -6.9000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  20.000     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   9&lt;U-FRICT &gt;=  26.560     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  32.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.44500     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  3.8950     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
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ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  59&lt;D-FRICT &gt;=  26.560     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  32.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.38200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  3.5120     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)

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

ITEM NO.   1&lt;NAME    &gt;=  11.000     (BOTH WALLS)
ITEM NO.   2&lt;NATURE  &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   3&lt;LEVEL   &gt;= -8.2000     (BOTH WALLS)
ITEM NO.   4&lt;WALL    &gt;=  1.0000     (BOTH WALLS)
ITEM NO.   5&lt;GAMMAD  &gt;=  19.500     (BOTH WALLS)
ITEM NO.   6&lt;GAMMAB  &gt;=  9.5000     (BOTH WALLS)
ITEM NO.   7&lt;GAMMAW  &gt;=  10.000     (BOTH WALLS)
ITEM NO.   8&lt;U-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.   8&lt;U-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.   9&lt;U-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.   9&lt;U-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  10&lt;U-KA    &gt;= 0.54700     WALL NO.        1
ITEM NO.  11&lt;U-KP    &gt;=  2.7620     WALL NO.        1
ITEM NO.  12&lt;K0-NC   &gt;= 0.53100     (BOTH WALLS)
ITEM NO.  13&lt;NEXP    &gt;= 0.50000     (BOTH WALLS)
ITEM NO.  14&lt;OCR     &gt;=  1.0000     (BOTH WALLS)
ITEM NO.  16&lt;MODEL   &gt;=  3.0000     (BOTH WALLS)
ITEM NO.  25&lt;WINKVC  &gt;=  3143.0     (BOTH WALLS)
ITEM NO.  26&lt;WINKUR  &gt;=  9429.1     (BOTH WALLS)
ITEM NO.  27&lt;U-PERM  &gt;= 0.10000E-06 (BOTH WALLS)
ITEM NO.  52&lt;D-NATURE&gt;=  1.0000     (BOTH WALLS)
ITEM NO.  53&lt;D-LEVEL &gt;=  0.0000     (BOTH WALLS)
ITEM NO.  58&lt;D-COHE  &gt;=  24.000     WALL NO.        1
ITEM NO.  58&lt;D-COHE  &gt;=  30.000     WALL NO.        2
ITEM NO.  59&lt;D-FRICT &gt;=  20.458     WALL NO.        1
ITEM NO.  59&lt;D-FRICT &gt;=  25.000     WALL NO.        2
ITEM NO.  60&lt;D-KA    &gt;= 0.48200     WALL NO.        1
ITEM NO.  61&lt;D-KP    &gt;=  2.5350     WALL NO.        1
ITEM NO.  77&lt;D-PERM  &gt;= 0.10000E-06 (BOTH WALLS)


DEFAULT WATER UNIT WEIGHT =  10.000
AVERAGED ON     8 VALUES



+-----------------------------------------------------------------------------------------------------------------------+
|                    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                                                 |
+-----------------------------------------------------------------------------------------------------------------------+

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
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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
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.NTC2018A2M2R1_1178                          |
|                                 Exe Time : 1 April 2019     17:23:05                                        |
+-------------------------------------------------------------------------------------------------------------+
 I N I T I A L   S T R E S S   T A B L E S

            S E C T I O N

 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)           1.45000000000000
 FOUNDATION WIDTH    (B)            16.5500000000000
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 ZETA-F..........                  0.000000000000000E+000
 Q-F ............                   20.0000000000000
 BETA ...........                   45.0000000000000
 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
           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 RATIOR= 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 RATIOR= 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.NTC2018A2M2R1_1178                                    |
|                                 Exe Time : 1 April 2019     17:23:05                                                  |
+-----------------------------------------------------------------------------------------------------------------------+
New Project
SOLUTION REACHED USING     2 ITERATIONS ON   40

P R I N T   O U T   F O R   T I M E   S T E P   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.NTC2018A2M2R1_1178                                    |
|                                 Exe Time : 1 April 2019     17:23:05                                                  |
+-----------------------------------------------------------------------------------------------------------------------+
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.   1

0_L                                                    :
ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
C U R R E N T   T I M E   I S     1.0000
```

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						
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.	-1.000	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.	-1.200	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	

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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


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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


 S T R E S S   R E S U L T S   F O R   G R O U P   N O.   2

 0_R                                                                    :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     1.0000

  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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------
   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
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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                                                          |
+-------------------------------------------------------------------------------------------------------------------------------+
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.   3

WallElement_New_28707                                        :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     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      RATIOR= 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      RATIOR= 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      RATIOR= 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 RATIOR= 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 RATIOR= 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 RATIOR= 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 RATIOR= 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
            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 RATIOR= 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


+-----------------------------------------------------------------------------------------------------------------------+
|                  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
SOLUTION REACHED USING     8 ITERATIONS ON   40

P R I N T   O U T   F O R   T I M E   S T E P   2     ( AT TIME   2.000     )

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

          Y-DISPL.F        X-ROT. F
           (02)             (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                                                  |
+-----------------------------------------------------------------------------------------------------------------------+
New Project
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 S T R E S S   R E S U L T S   F O R   G R O U P   N O.   1

 0_L                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S     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
 ---------------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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
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  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.      -10.00       72.89
1.000       1.000       100.3       0.000       0.000     UG2_4_26346_L_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                                                       |
 +-----------------------------------------------------------------------------------------------------------------------------+
 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

 0_R                                                          :
 ELEMENT TYPE    5 NO.OF ELEMENTS. IN THIS GROUP   51
 C U R R E N T   T I M E   I S      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
 ---------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------
   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  0.3099     -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
   5 D  0.6933     -3.3013E-02   7.177       3.466       7.177       8.667          ACTIVE   0.000     -0.8000       0.000
1.000       1.000       3.466       0.000       0.000     UG0_2_10_L_0
   6 D   1.085     -3.1925E-02   11.23       5.423       11.23       11.29          ACTIVE   0.000      -1.000       0.000
1.000       1.000       5.423       0.000       0.000     UG0_2_10_L_0
   7 D   1.688     -3.0837E-02   13.33       6.440       13.33       12.71          ACTIVE   0.000      -1.200       2.000
1.000       1.000       8.440       0.000       0.000     UG0_2_10_L_0
   8 D   2.294     -2.9750E-02   15.47       7.470       15.47       13.96          ACTIVE   0.000      -1.400       3.999
1.000       1.000       11.47       0.000       0.000     UG0_2_10_L_0
   9 D   2.900     -2.8662E-02   17.60       8.502       17.60       15.09          ACTIVE   0.000      -1.600       5.999
1.000       1.000       14.50       0.000       0.000     UG0_2_10_L_0
  10 D   3.526     -2.7576E-02   19.94       9.630       19.94       16.11          ACTIVE   0.000      -1.800       7.998
1.000       1.000       17.63       0.000       0.000     UG0_2_10_L_0
  11 D   4.153     -2.6491E-02   22.30       10.77       22.30       17.06          ACTIVE   0.000      -2.000       9.998
1.000       1.000       20.77       0.000       0.000     UG0_2_10_L_0
  12 D   4.773     -2.5408E-02   24.57       11.87       24.57       17.96          ACTIVE   0.000      -2.200       12.00
1.000       1.000       23.86       0.000       0.000     UG0_2_10_L_0
  13 D   2.799     -2.4328E-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     -2.3252E-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     -2.2182E-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     -2.1120E-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     -2.0066E-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     -1.9024E-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     -1.7996E-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     -1.6983E-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     -1.5990E-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     -1.5018E-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     -1.4072E-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     -1.3154E-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     -1.2266E-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     -1.1411E-02   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   7.273     -1.0590E-02   64.13      0.6707       64.13       35.72          ACTIVE   0.000      -5.200       35.69
1.000       1.000       36.37       0.000       0.000     UG2_4_11_L_0
  28 D   7.867     -9.8034E-03   66.57       2.092       66.57       36.86          ACTIVE   0.000      -5.400       37.24
1.000       1.000       39.34       0.000       0.000     UG2_4_11_L_0
  29 D   8.495     -9.0524E-03   69.31       3.680       69.31       37.99          ACTIVE   0.000      -5.600       38.79
1.000       1.000       42.47       0.000       0.000     UG2_4_11_L_0
  30 D   9.087     -8.3370E-03   71.73       5.089       71.73       39.13          ACTIVE   0.000      -5.800       40.34
1.000       1.000       45.43       0.000       0.000     UG2_4_11_L_0
  31 D   9.678     -7.6567E-03   74.15       6.496       74.15       40.27          ACTIVE   0.000      -6.000       41.89
1.000       1.000       48.39       0.000       0.000     UG2_4_11_L_0
  32 D   10.27     -7.0109E-03   76.57       7.901       76.57       41.41          ACTIVE   0.000      -6.200       43.44
1.000       1.000       51.35       0.000       0.000     UG2_4_11_L_0
  33 D   10.86     -6.3986E-03   78.99       9.304       78.99       42.55          ACTIVE   0.000      -6.400       44.99
1.000       1.000       54.30       0.000       0.000     UG2_4_11_L_0
  34 D   11.48     -5.8183E-03   81.65       10.85       81.65       43.69          ACTIVE   0.000      -6.600       46.54
1.000       1.000       57.39       0.000       0.000     UG2_4_11_L_0
  35 D   12.07     -5.2683E-03   84.05       12.24       84.05       44.83          ACTIVE   0.000      -6.800       48.09
1.000       1.000       60.34       0.000       0.000     UG2_4_11_L_0
  36 D   17.63     -4.7465E-03   86.50       38.49       86.50       46.00          ACTIVE   0.000      -7.000       49.64
1.000       1.000       88.13       0.000       0.000     UG3_4271_12_L_0
  37 D   18.16     -4.2508E-03   88.99       39.60       88.99       47.20           UL-RL   9429.      -7.200       51.19
1.000       1.000       90.80       0.000       0.000     UG3_4271_12_L_0
  38 D   18.69     -3.7788E-03   91.49       40.72       91.49       48.40           UL-RL   9429.      -7.400       52.74
1.000       1.000       93.46       0.000       0.000     UG3_4271_12_L_0
  39 D   19.24     -3.3282E-03   94.19       41.92       94.19       49.60           UL-RL   9429.      -7.600       54.29
1.000       1.000       96.22       0.000       0.000     UG3_4271_12_L_0
  40 D   19.78     -2.8969E-03   96.68       43.03       96.68       50.80           UL-RL   9429.      -7.800       55.84
1.000       1.000       98.88       0.000       0.000     UG3_4271_12_L_0
  41 D   20.31     -2.4825E-03   99.16       44.14       99.16       52.01           UL-RL   9429.      -8.000       57.39
1.000       1.000       101.5       0.000       0.000     UG3_4271_12_L_0
  42 D   20.84     -2.0831E-03   101.6       45.25       101.6       53.21           UL-RL   9429.      -8.200       58.94
1.000       1.000       104.2       0.000       0.000     UG3_4271_12_L_0
  43 D   19.77     -1.6965E-03   104.0       38.37       104.0       54.36           UL-RL   9429.      -8.400       60.49
1.000       1.000       98.86       0.000       0.000     UG2_4_26346_L_0
  44 D   21.02     -1.3207E-03   106.6       43.07       106.6       55.52           UL-RL   9429.      -8.600       62.04
1.000       1.000       105.1       0.000       0.000     UG2_4_26346_L_0
  45 D   22.26     -9.5362E-04   109.0       47.68       109.0       56.68           UL-RL   9429.      -8.800       63.59
1.000       1.000       111.3       0.000       0.000     UG2_4_26346_L_0
  46 D   23.48     -5.9340E-04   111.3       52.24       111.3       57.83           UL-RL   9429.      -9.000       65.14
1.000       1.000       117.4       0.000       0.000     UG2_4_26346_L_0
  47 D   24.69     -2.3817E-04   113.7       56.75       113.7       58.99           UL-RL   9429.      -9.200       66.69
1.000       1.000       123.4       0.000       0.000     UG2_4_26346_L_0
  48 D   25.72      1.1370E-04   116.3       60.34       116.3       60.59           UL-RL   9429.      -9.400       68.24
1.000       1.000       128.6       0.000       0.000     UG2_4_26346_L_0
  49 D   26.48      4.6358E-04   118.6       62.61       118.6       62.85           UL-RL   9429.      -9.600       69.79
1.000       1.000       132.4       0.000       0.000     UG2_4_26346_L_0
  50 D   27.24      8.1250E-04   121.0       64.88       121.0       65.11           UL-RL   9429.      -9.800       71.34
1.000       1.000       136.2       0.000       0.000     UG2_4_26346_L_0
  51 D   14.00      1.1611E-03   123.4       67.15       123.4       67.36           UL-RL   9429.      -10.00       72.89
1.000       1.000       140.0       0.000       0.000     UG2_4_26346_L_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                                                         |
+-------------------------------------------------------------------------------------------------------------------------------+
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.   3

WallElement_New_28707                                          :
ELEMENT TYPE    2 NO.OF ELEMENTS. IN THIS GROUP   50
C U R R E N T   T I M E   I S     2.0000

 WALL2D ELEMENT
```

EL	TA	TB	MA	MB
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

```
+-------------------------------------------------------------------------------------------------------------------------+
|                  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                                                    |
+-------------------------------------------------------------------------------------------------------------------------+


     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)

```
 ---------------------------------------------------------------------------
 STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.     1
                                                          1 April 2019     17:23:07
                          DEFAULT TITLE FOR STEEL-WORLD
 ---------------------------------------------------------------------------
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```
*************************************
*                                   *
*              *   *                *
*           *         *             *
*         *             *           *
*        *    E  C  3    *          *
*        *               *          *
*         *     VER     *           *
*           *         *             *
*              *   *                *
*                                   *
*************************************
*                                   *
*  ref.EN  1993-5: February 2007    *
*      EUROCODE 3 - part 5          *
*      Design of Steel Structures   *
*                                   *
*           A PART OF               *
*                                   *
*       S T E E L W O R L D         *
*                                   *
*  VERSION:         RELEASE: 4.4    *
*                                   *
* IN USE BY Ce.A.S. s.r.l.          *
*                                   *
*************************************
*       ATTEMPT NO.       1         *
*                                   *
*************************************
```

VERIFICATIONS WILL BE PERFORMED FOR LCASES 1 TO 4

MEMBERS IN THE RANGE '* ' WILL BE INCLUDED

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 2
1 April 2019 17:23:07
DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

ELEMENT LW0_S0 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	0.000	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


-------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.     3
                                                     1 April 2019     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.                        PAG.     4
                                                     1 April 2019     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


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
                                                   1 April 2019     17:23:07
                         DEFAULT TITLE FOR STEEL-WORLD
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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.     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


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.     6
                                                        1 April 2019     17:23:07
                         DEFAULT TITLE FOR STEEL-WORLD
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                     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]


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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.     7
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          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

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                      PAG.     8
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          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


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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.     9
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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       =    0.000
          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



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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    10
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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

          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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STEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    11
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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       =    0.000
          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
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```
          Moment resistance: no need to consider shear reduction


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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    12
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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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    13
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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.    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
          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    14
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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.    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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    15
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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.    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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    16
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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       =    0.000
          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



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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                       PAG.    17
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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       =    0.000
         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
```

```
-------------------------------------------------------------------------------
STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    18
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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.    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


-------------------------------------------------------------------------------
STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    19
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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.    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


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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                      PAG.    20
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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.    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


-------------------------------------------------------------------------------
```

```
STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    21
                                                        1 April 2019     17:23:07
                         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.    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



-------------------------------------------------------------------------------
STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    22
                                                        1 April 2019     17:23:07
                         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.    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


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                       PAG.    23
                                                      1 April 2019     17:23:07
                           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.    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]


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                       PAG.    24
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                        DEFAULT TITLE FOR STEEL-WORLD
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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.    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



--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    25
                                                   1 April 2019     17:23:07
                        DEFAULT TITLE FOR STEEL-WORLD
--------------------------------------------------------------------------------
                    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
          max. resist. ratio (max. among above)=    0.000
          web buckling ratio (5.7)             =    0.000


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    26
                                                        1 April 2019     17:23:07
                         DEFAULT TITLE FOR STEEL-WORLD
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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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    27
                                                        1 April 2019     17:23:07
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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

          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


-------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                      PAG.    28
                                                     1 April 2019     17:23:07
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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.    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


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    29
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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 salected 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


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    30
                                                        1 April 2019     17:23:07
                          DEFAULT TITLE FOR STEEL-WORLD
--------------------------------------------------------------------------------
                     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&lt;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  ********

******* 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


--------------------------------------------------------------------------------
STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    31
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                           DEFAULT TITLE FOR STEEL-WORLD
--------------------------------------------------------------------------------
                      CHECK OF DIRECTLY INPUT MEMBER LW0_S0
--------------------------------------------------------------------------------

  "     "    MQ/Mmax&lt;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  ********

******* 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	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

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 32
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DEFAULT TITLE FOR STEEL-WORLD

CHECK OF DIRECTLY INPUT MEMBER LW0_S0

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
```

STEEL-WORLD 4.4 Ce.A.S. s.r.l. PAG. 33
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DEFAULT TITLE FOR STEEL-WORLD

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
          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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          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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          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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```
          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

          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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          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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          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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          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

          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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          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    41
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          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
          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    42
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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]
          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.    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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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

          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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           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

               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.    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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           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


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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           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

               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.    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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5.2.2(2):     McRd= 0.8562E+09


           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


           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
                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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--------------------------------------------------------------------------------

                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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



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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.    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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--------------------------------------------------------------------------------

          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

          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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          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                       PAG.    58
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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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          web buckling ratio (5.7)             =    0.000

          Summary of resistance checks over all the sections
          max salected 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
  "     "    Cm          0.0000
  "     "    MQ          0.0000
  "     "    Mmax        0.0000
  "     "    MQ/Mmax&lt;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  ********

******* EUROCODE 3 PART 5 - 2007 ******


          No axial compression: skipping buckling


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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&lt;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  ********

******* 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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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
              gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


            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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--------------------------------------------------------------------------------

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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=  1000.000     [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.     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]
          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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--------------------------------------------------------------------------------

          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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          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

          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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          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


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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          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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--------------------------------------------------------------------------------

          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


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


           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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          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


           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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--------------------------------------------------------------------------------
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--------------------------------------------------------------------------------

          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


           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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    75
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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       =    0.000
          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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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

5.2.2(2):     McRd= 0.8562E+09


          Moment resistance: no need to consider shear reduction
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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    77
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                     CHECK OF DIRECTLY INPUT MEMBER LW0_S0
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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


           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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                      PAG.    79
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                     CHECK OF DIRECTLY INPUT MEMBER LW0_S0
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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
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


          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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    80
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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.    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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.    81
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                      CHECK OF DIRECTLY INPUT MEMBER LW0_S0
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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       =    0.000
          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    82
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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.    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]
          selected class for current cross section =  2

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050



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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    83
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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.    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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    84
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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       =    0.000
          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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    85
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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

5.2.2(2):     McRd= 0.8562E+09


           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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    86
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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.    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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                      PAG.    87
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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.    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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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    88
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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 salected 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
  "     "    Cm          0.0000
  "     "    MQ          0.0000


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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.    89
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```
  "     "    Mmax        0.0000
  "     "    MQ/Mmax&lt;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  ********

******* 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&lt;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


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End calculation - Moment:Y Bracing:Z


************  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          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


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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
           ************************

           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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5.2.2(2):     McRd= 0.8562E+09


           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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             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


          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
          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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```
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
            gammaM0      1.050

5.2.2(2):     McRd= 0.8562E+09


          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]
          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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          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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          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

          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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          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]
          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.    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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          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


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]
          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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          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


           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


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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.   109
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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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STEEL-WORLD  4.4              Ce.A.S. s.r.l.                        PAG.   110
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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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           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
```

```
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09



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STEEL-WORLD  4.4               Ce.A.S. s.r.l.                        PAG.   112
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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.    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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           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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           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]
          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
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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       =    0.000
          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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5.2.2(2):     McRd= 0.8562E+09


           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

          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 salected class: 2, at station no.  51
```

```
          maximum resistance   ratio              =    0.000
          maximum web buckling ratio              =    0.000


--------------------------------------------------------------------------------
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--------------------------------------------------------------------------------

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&lt;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  ********

******* 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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                     CHECK OF DIRECTLY INPUT MEMBER LW0_S0
--------------------------------------------------------------------------------

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&lt;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  ********

******* 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
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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--------------------------------------------------------------------------------

           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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--------------------------------------------------------------------------------

          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

          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 = 0.7415     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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--------------------------------------------------------------------------------


           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 =  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 Av = 7386.     mm2
          Vsd =  2.895     kN , VplRd =  1117.     kN, ratio = 0.2592E-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.     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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--------------------------------------------------------------------------------

          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
          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


           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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          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
                  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
```

```
          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
```

```
          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
          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]
          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


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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.    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
          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
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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


           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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          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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          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

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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           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

          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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          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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          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

5.2.2(2):     McRd= 0.8562E+09


           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 salected 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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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]


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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               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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 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
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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           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
                  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.     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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5.2.2(2):     McRd= 0.8562E+09


           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

5.2.2(5.4) Shear resistance check
          Z direction : Shear Area Av = 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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5.2.2(5.4) Shear resistance check
          Z direction : Shear Area Av = 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 Av = 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


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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          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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          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
          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


          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 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

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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


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          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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```
          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
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


          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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          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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           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


           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


           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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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

          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

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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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
          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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          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
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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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]
          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


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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 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


           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 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


           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

               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


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 salected 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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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]


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
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]
          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


           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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             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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
```

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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


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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5.2.2(2):     McRd= 0.8562E+09


           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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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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          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
          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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5.2.2(2):     McRd= 0.8562E+09


           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
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          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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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

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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          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

          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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           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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          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

5.2.2(2):     McRd= 0.8562E+09


           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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          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
          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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           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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          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


           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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          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
             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       =    0.164
          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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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       =    0.147
          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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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
          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 = -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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          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 = -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 Av = 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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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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                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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

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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          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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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

               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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          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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          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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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
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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           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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          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

          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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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

5.2.2(2):     McRd= 0.8562E+09


           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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          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
          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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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


           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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          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
             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       =    0.029
          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

          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


           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
          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

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

                betab     1.000
                 Wply    0.3269E+07
                   fy     275.0
              gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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-------------------------------------------------------------------------------


           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

5.2.2(2):     McRd= 0.8562E+09


           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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          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


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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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          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 = -27.87     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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           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]
          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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               betab     1.000
                Wply    0.3269E+07
                  fy     275.0
             gammaM0     1.050

5.2.2(2):     McRd= 0.8562E+09


           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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          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 = -3.978     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 salected 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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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]


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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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      0.88554
  "     "    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
```