

COMMITTENTE:



DIREZIONE LAVORI:



APPALTATORE:

CONSORZIO:

HIRPINIA - ORSARA AV

SOCI:



PROGETTAZIONE:

MANDATARIA:



MANDANTI:




## PROGETTO ESECUTIVO

### ITINERARIO NAPOLI - BARI RADDOPPIO TRATTA APICE - ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA VIADOTTI

VI01 - VIADOTTO SUL CERVARO DA 41+114.64 A 41.428.29

RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6

APPALTATORE	DIRETTORE DELLA PROGETTAZIONE	PROGETTISTA
Consorzio HIRPINIA AV Il Direttore Tecnico Ing. Vincenzo Moriello 08/02/2022	Il Responsabile integrazione fra le varie prestazioni specialistiche Ing. G. Cassani	 Ing. A. Miazzon

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

IF3A	02	E	ZZ	CL	VI0103	003	B	-
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Rev.	Descrizione	Redatto	Data	Verificato	Data	Approvato	Data	Autorizzato Data
A	C 08.00 - Emissione 180gg	L.Rampin	08/02/2022	L.Rampin	08/02/2022	L.Rampin	08/02/2022	Ing. A. Miazzon
B	C 08.01 - A valle del contraddittorio	L.Rampin	24/06/2022	L.Rampin	24/06/2022	L.Rampin	24/06/2022	
								24/06/2022

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n. Elab.:

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV                      WEBUILD ITALIA                      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> <b>IF3A</b>	<b>LOTTO</b> <b>02</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0103 003</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>2 di 294</b>

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PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 3 di 294

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<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 4 di 294

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## 1 INTRODUZIONE

Nell'ambito della redazione del Progetto Esecutivo della tratta Apice - Orsara del Lotto 2 Hirpinia – Orsara - potenziamento della linea ferroviaria Napoli – Bari, la presente relazione riporta i risultati del dimensionamento e verifiche delle fondazioni – plinto su pali – delle pile P4, P5, P6 del Viadotto VI01 denominato Viadotto Cervaro.

Le pile sostengono le campate di luce 40m. L'impalcato è della tipologia a struttura mista acciaio-calcestruzzo con soletta collaborante in c.a.

Considerate le caratteristiche geometriche, le condizioni geotecniche e l'entità dei carichi agenti, le analisi sono sviluppate in riferimento alla pila P4 (rappresentativa anche della pila P5) e la P6 in quanto la pila 6 ha il fusto pila ruotato rispetto al plinto di fondazione.

Per quanto riguarda i criteri di verifica adottati per le analisi del sistema di fondazione adottato si rimanda al documento IF3A02EZZRPVI0003001: Relazione sui criteri di calcolo delle fondazioni.

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## 2 Documenti di riferimento e normativa

### 2.1 DOCUMENTI DI RIFERIMENTO

Si indicano i documenti di progetto a cui questa relazione è riferita:

- **Geotecnica**

- IF3A.0.2.E.ZZ.RB.GE.01.0.6.001 Relazione Geotecnica Generale
- IF3A.0.2.E.ZZ.F6.GE.01.0.6.001 Profilo Geotecnico - Tratta all'aperto lato Bari
- IF3A.0.2.E.ZZ.F6.GE.01.0.6.002 Profilo Geotecnico - Tratta all'aperto lato Napoli
- IF3A.0.2.E.ZZ.F6.GE.01.0.6.003 Profilo Geotecnico - Tratta all'aperto finestre

- **Studi idraulici**

- IF3A.0.2.E.ZZ.RI.ID.00.0.2.001 Relazione idraulica viadotti - modelli idraulici bidimensionali
- IF3A.0.2.E.ZZ.RI.ID.00.0.2.004 Relazione riguardante la geomorfologia fluviale e fenomeni di flussi detritici del Torrente Cervaro

- **Elaborati generali**

- IF3A.0.2.E.ZZ.RG.VI.00.0.0.001 Relazione Tecnico-Descrittiva delle Opere Civili
- IF3A.0.2.E.ZZ.TT.VI.00.0.0.001 Tabella Materiali e Note generali
- IF3A.0.2.E.ZZ.WZ.VI.00.0.X.001 Piattaforma in corrispondenza di Fire Fighting Point (FFP)
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.001 Schema conci travate e distribuzione dei materiali
- IF3A.0.2.E.ZZ.BZ.VI.00.0.A.001 Pianta soletta in calcestruzzo e sezioni tipiche - Carpenteria
- IF3A.0.2.E.ZZ.BZ.VI.00.0.A.002 Forometria soletta, particolari costruttivi e finiture
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.006 Dettagli di saldatura
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.002 Ritegno sismico trasversale a dispositivo antisollevamento campate 40m e 33m
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.003 Ritegno sismico trasversale a dispositivo antisollevamento campate 60m
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.004 Ritegni longitudinali campate 40m, 60m, 33m
- IF3A.0.2.E.ZZ.BZ.VI.00.0.9.005 Schemi contrefreccia di montaggio
- IF3A.0.2.E.ZZ.BZ.VI.00.0.7.001 Schemi apparecchi di appoggio e giunti
- IF3A.0.2.E.ZZ.CL.VI.00.0.9.001 Relazione di calcolo ponte 40m doppio (SPB-P6)
- IF3A.0.2.E.ZZ.CL.VI.00.0.9.002 Relazione di calcolo ponte 40m doppio (P4-P3)
- IF3A.0.2.E.ZZ.CL.VI.00.0.9.003 Relazione di calcolo ponte 60m doppio (P3-P2)
- IF3A.0.2.E.ZZ.CL.VI.00.0.9.004 Relazione di calcolo ponte 60m singolo (P2-P1)
- IF3A.0.2.E.ZZ.CL.VI.00.0.9.005 Relazione di calcolo ponte 33m singolo (P1-SPA)

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- IF3A.0.2.E.ZZ.RP.VI.00.0.3.001 Relazione sui criteri di calcolo delle fondazioni
- IF3A.0.2.E.ZZ.MI.VI.00.0.0.001 Piano di Manutenzione viadotto
- IF3A.0.2.E.ZZ.RH.VI.00.0.0.001 Sistemi di ispezione visiva e accessibilità per la manutenzione e il monitoraggio degli impalcati - Relazione descrittiva
- IF3A.0.2.E.ZZ.TT.VI.00.0.0.002 Incidenza delle armature nel viadotto
- **Impalcato a struttura mista acc.-cls SPA-P1 L=33,65 Lato monte Campata 1**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.001 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.002 Dettagli di controvento superiore e inferiore
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.003 Sezioni trasversali: diaframma D.P. su pila P1 e spalla SPA
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.004 Sezioni trasversali: diaframmi D1
- **Impalcato a struttura mista acc.-cls SPA-P1 L=33,65 Lato valle Campata 1**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.005 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.006 Dettagli di controvento superiore e inferiore
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.007 Sezioni trasversali: diaframma D.P. su pila P1 e spalla SPA
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.008 Sezioni trasversali: diaframma D1
- **Impalcato a struttura mista acc.-cls P1-P2 L=60,00m Lato monte Campata 2**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.009 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.010 Dettagli di controvento superiore e inferiore
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.011 Sezioni trasversali: diaframma D.P. su pile P1 e P2
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.012 Sezioni trasversali: diaframma D1
- **Impalcato a struttura mista acc.-cls P1-P2 L=60,00m Lato valle Campata 2**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.013 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.014 Dettagli di controvento superiore e inferiore
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.015 Sezioni trasversali: diaframma D.P. su pile P1 e P2
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.016 Sezioni trasversali: diaframma D1
- **Impalcato a struttura mista acc.-cls P2-P3 L=60,00m Campata 3**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.017 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.018 Dettagli di controvento superiore e inferiore
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.019 Sezioni trasversali: diaframma D.P. su pile P2 e P3
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.020 Sezioni trasversali: diaframmi D1 e D2
- **Impalcato a struttura mista acc.-cls P3-P4 L=40,00m Campata 4**
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.021 Prospetto, piante di controvento e sezioni tipiche
- IF3A.0.2.E.ZZ.BZ.VI.01.0.9.022 Dettagli di controvento superiore e inferiore

APPALTATORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 8 di 294

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.023 Sezioni trasversali: diaframma D.P. su pile P e P4

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.024 Sezioni trasversali: diaframmi D1 e D2

- **Impalcato a struttura mista acc.-cls P3-P4 L=40,00m Campata 5**

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.025 Prospetto, piante di controvento e sezioni tipiche

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.026 Dettagli di controvento superiore e inferiore

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.027 Sezioni trasversali: diaframma D.P. su pile P4 e P5

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.028 Sezioni trasversali: diaframmi D1 e D2

- **Impalcato a struttura mista acc.-cls P5-P6 L=40,00m Campata 6**

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.029 Prospetto, piante di controvento e sezioni tipiche

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.030 Dettagli di controvento superiore e inferiore

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.031 Sezioni trasversali: diaframma D.P. su pile P5 e P6

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.032 Sezioni trasversali: diaframmi D1 e D2

- **Impalcato a struttura mista acc.-cls P6-SPB L=40,00m Campata 7**

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.033 Pianta generale e sezioni principali

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.034 Dettagli di controvento superiore e inferiore

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.035 Sezioni trasversali: diaframma D.P. su pila P6 e spalla SPB

IF3A.0.2.E.ZZ.BZ.VI.01.0.9.036 Sezioni trasversali: diaframmi D1 e D2

- **Progetto di varo**

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.001 Montaggio soluzione A: FASE 1

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.002 Montaggio soluzione A: FASE 2

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.003 Montaggio soluzione A: FASE 3

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.004 Montaggio soluzione A: FASE 4

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.005 Montaggio soluzione A: FASE 5

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.006 Montaggio soluzione A: FASE 6

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.007 Montaggio soluzione B: FASE 1

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.008 Montaggio soluzione B: FASE 2

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.009 Montaggio soluzione B: FASE 3

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.010 Montaggio soluzione B: FASE 4

IF3A.0.2.E.ZZ.DZ.VI.01.0.0.011 Montaggio soluzione B: FASE 5

- **Sottostrutture**

IF3A.0.2.E.ZZ.A8.VI.01.0.0.001 Vista di assieme - 3D

IF3A.0.2.E.ZZ.A8.VI.01.0.0.002 Planimetria e profilo longitudinale d'assieme



<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 9 di 294

IF3A.0.2.E.ZZ.L9.VI.01.0.2.001	Tracciamento, opere provvisionali e scavi: planimetria e profilo longitudinale tav. 1/2
IF3A.0.2.E.ZZ.L9.VI.01.0.2.002	Tracciamento, opere provvisionali e scavi: planimetria e profilo longitudinale tav. 2/2
IF3A.0.2.E.ZZ.BA.VI.01.0.2.001	Opere provvisionali - Spalla B - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.002	Opere provvisionali - Pila 1 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.003	Opere provvisionali - Pila 2 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.004	Opere provvisionali - Pila 3 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.005	Opere provvisionali - Pila 4 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.006	Opere provvisionali - Pila 5 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.BA.VI.01.0.2.007	Opere provvisionali - Pila 6 - Pianta, sezioni e dettagli
IF3A.0.2.E.ZZ.L9.VI.01.0.3.001	Tracciamento opere di fondazione - Planimetria e profilo longitudinale tav.1/2
IF3A.0.2.E.ZZ.L9.VI.01.0.3.002	Tracciamento opere di fondazione - Planimetria e profilo longitudinale tav.2/2
IF3A.0.2.E.ZZ.BB.VI.01.0.4.001	Carpenteria spalla A - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.4.002	Carpenteria spalla A - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.4.003	Carpenteria spalla B - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.4.004	Carpenteria spalla B - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.001	Carpenteria pila P1 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.002	Carpenteria pila P1 - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.003	Carpenteria pila P2 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.004	Carpenteria pila P2 - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.005	Carpenteria pila P3 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.006	Carpenteria pila P3 - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.007	Carpenteria pila P4 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.008	Carpenteria pila P4 - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.009	Carpenteria pila P5 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.010	Carpenteria pila P5 - Sezioni
IF3A.0.2.E.ZZ.BB.VI.01.0.5.011	Carpenteria pila P6 - Pianta
IF3A.0.2.E.ZZ.BB.VI.01.0.5.012	Carpenteria pila P6 - Sezioni
IF3A.0.2.E.ZZ.CL.VI.01.0.4.001	Spalla A: Relazione di calcolo strutture in elevazione
IF3A.0.2.E.ZZ.CL.VI.01.0.5.002	Pila P1,P2,P3: Relazione di calcolo strutture in elevazione
IF3A.0.2.E.ZZ.CL.VI.01.0.5.003	Pila P4, P5, P6 Relazione di calcolo strutture in elevazione
IF3A.0.2.E.ZZ.CL.VI.01.0.4.002	Spalla B: Relazione di calcolo strutture in elevazione

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 10 di 294

- IF3A.0.2.E.ZZ.CL.VI.01.0.3.001 Relazione di calcolo fondazioni spalla A e spalla B
- IF3A.0.2.E.ZZ.CL.VI.01.0.3.002 Relazione di calcolo fondazioni pile P1, P2, P3
- IF3A.0.2.E.ZZ.CL.VI.01.0.3.003 Relazione di calcolo fondazioni pile P4, P5, P6
- IF3A.0.2.E.ZZ.CL.VI.01.0.2.000 Relazione di calcolo opere provvisionali per pile e spalle

## 2.2 **NORMATIVA E STRANDARD DI RIFERIMENTO**

- 1) Decreto del Ministro delle Infrastrutture 17 Gennaio 2018 - "Norme tecniche per le costruzioni" (NTC18);
- 2) Circolare 21 gennaio 2019 n.7: Istruzioni per l'applicazione dello "Aggiornamento delle «Norme tecniche per le costruzioni»" di cui al decreto ministeriale 17 gennaio 2018. supplemento ordinario alla G. U. n° 42 del 20/2/2018 (nel seguito indicate come CNTC19);
- 3) Decreto del Ministro delle Infrastrutture 14 Gennaio 2008 - "Nuove Norme tecniche per le costruzioni" (NTC08);
- 4) Circolare 2 febbraio 2009 n.617: Istruzioni per l'applicazione delle "Norme tecniche per le costruzioni" di cui al DM 14 gennaio 2008, supplemento ordinario n° 27 alla G. U. n° 47 del 26/2/2009 (nel seguito indicate come CNTC09);
- 5) RFI DTC SI MA IFS 001 A - "Manuale di progettazione delle opere civili";
- 6) RFI DTC SI SP IFS 001 A - "Capitolato generale tecnico d'appalto delle opere civili";
- 7) UNI EN 1997-1: Eurocodice 7 - Progettazione Geotecnica - Parte 1: Regole generali;
- 8) UNI EN 1998-5: Eurocodice 8 - Progettazione delle strutture per la resistenza sismica - Parte 5: Fondazioni, strutture di contenimento ed aspetti geotecnici;
- 9) Caltrans. Guidelines on Foundation Loading and Deformation Due to Liquefaction Induced Lateral Spreading. California Department of Transportation, Sacramento, California, 2012;
- 10) JRA (2002) – Specifications for Highway Bridges, JapanRoad Association. Part V: Seismic Design.

## 2.3 **SOFTWARE**

- 11) Group, Ensoft Inc, versione 2016, release n.10;

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 11 di 294

### 3 Materiali

Il progetto strutturale delle fondazioni prevede l'uso dei seguenti materiali.

#### 3.1 ACCIAIO

##### 3.1.1 Acciaio per armatura strutture in c.a.

Barre ad aderenza migliorata, saldabile, tipo B450C dotato delle seguenti caratteristiche meccaniche:

- tensione caratteristica di rottura:  $f_{tk} \geq 540 \text{ MPa}$
- tensione caratteristica di snervamento:  $f_{yk} \geq 450 \text{ MPa}$
- allungamento caratteristico:  $\geq 7.5 \%$
- rapporto tensione di rottura/ tensione di snervamento:  $1.15 \leq f_{tk}/f_{yk} < 1.35$

##### 3.1.2 Profilati e piastre metalliche

- - Acciaio tipo: EN 10025-S275 JR
- - Tensione di rottura a trazione:  $f_{tk} \geq 430 \text{ MPa}$
- - Tensione di snervamento:  $f_{yk} \geq 275 \text{ MPa}$

#### 3.2 CALCESTRUZZO

##### 3.2.1 Calcestruzzo magro per getti di livellamento

- Classe di resistenza: C12/15
- classe di esposizione: X0

##### 3.2.2 Calcestruzzo pali, diaframmi di fondazione, cordoli e opere provvisionali

- Classe di resistenza: C25/30
- classe di consistenza: S4
- classe di esposizione: XC2
- dimensione massima dell'inerte:  $D_{max} = 32 \text{ mm}$
- copriferro minimo:  $C_{f,min} \geq 60 \text{ mm}$

##### 3.2.3 Calcestruzzo per fondazioni pile e spalle

- Classe di resistenza: C28/35
- classe di consistenza: S4
- classe di esposizione: XC2
- dimensione massima dell'inerte:  $D_{max} = 25 \text{ mm}$
- copriferro minimo:  $C_{f,min} \geq 40 \text{ mm}$

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 12 di 294

## 4 DESCRIZIONE DELLE FONDAZIONI E STRATIGRAFIA DI PROGETTO

### 4.1 PILA 4

#### 4.1.1 Descrizione del sistema fondazionale

La fondazione della pila P4 è costituita da: un plinto a sezione rettangolare di dimensioni 12.0 m x 21.0 m<sup>2</sup> e altezza di 2.5 m posto su n.15 pali trivellati di diametro  $\varnothing = 1500$  mm e lunghezza L = 24.0 m.

La fondazione della pila P5 risulta analoga alla presente in tutte le componenti.

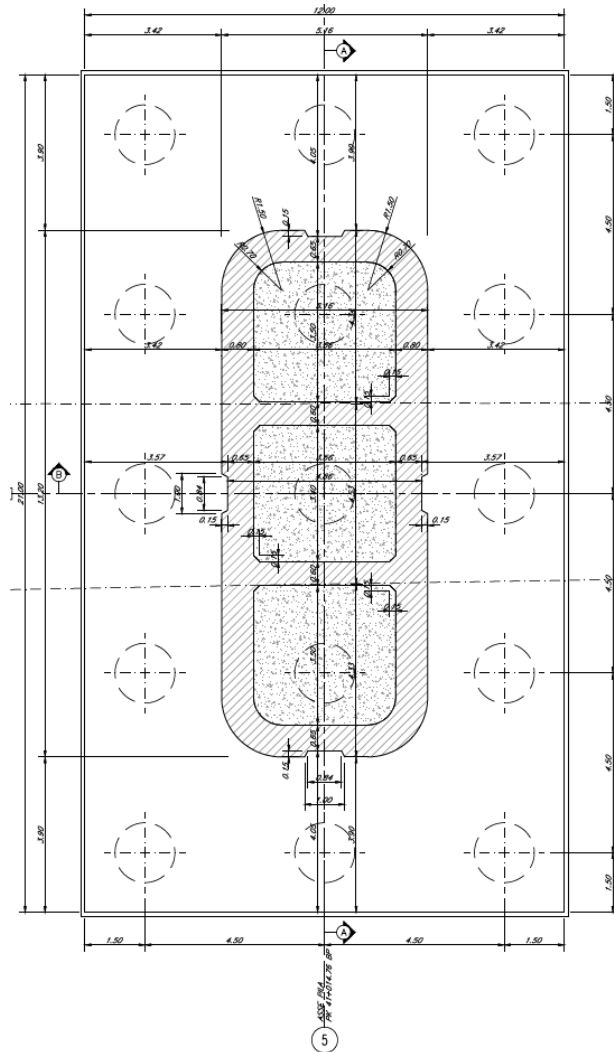


Figura 1 - Pianta Fondazioni PILA 4

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 13 di 294

#### 4.1.2 Stratigrafia di riferimento

In accordo con quanto riportato nella Relazione Geotecnica Generale, la stratigrafia e i parametri geotecnici di riferimento sono riportati nella seguente Tabella 4-1 unitamente alla portanza limite laterale e di base dei pali.

La quota piano campagna di riferimento è ca. 351.05 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 4.0÷4.10 m (q.t.p.+346.99m s.l.m.).

La stratigrafia di progetto è ricostruita sulla base dei risultati del sondaggio IF16VI01, in cui risulta massimo lo spessore di depositi di copertura, e assunta valida per le pile P4, P5 e P6.

STRATIGRAFIA da Quota testa Palo				PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA	A	$\Delta H$	UNITA' DI RIFERIMENTO	$\gamma$	$\varphi$	$\sigma_c$	qs	qb
[m]	[m]	[m]		[kN/m <sup>3</sup> ]	[°]	[MPa]	[kPa]	[kPa]
0	18.5	18.5	RPL1a	19	36		10	428
							80	3500
18.5	21.5	3	FAEam	19		5-10	120	3100
21.5	...	...	FAEc	25		50-60	300	6000

**Tabella 4-1 Stratigrafia e parametri geotecnici di riferimento**

La falda è assunta praticamente a piano campagna.

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>							
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 14 di 294

## 4.2 PILA 6

### 4.2.1 Descrizione del sistema fondazionale

La fondazione della pila P6 è costituita da: un plinto a sezione rettangolare di dimensioni 12.0 m x 21.0 m<sup>2</sup> e altezza di 2.5 m posto su n.15 pali trivellati di diametro  $\varnothing = 1500$  mm e lunghezza  $L = 24.0$  m.

Il plinto di fondazione ha una obliquità di 15° rispetto al fusto della pila.

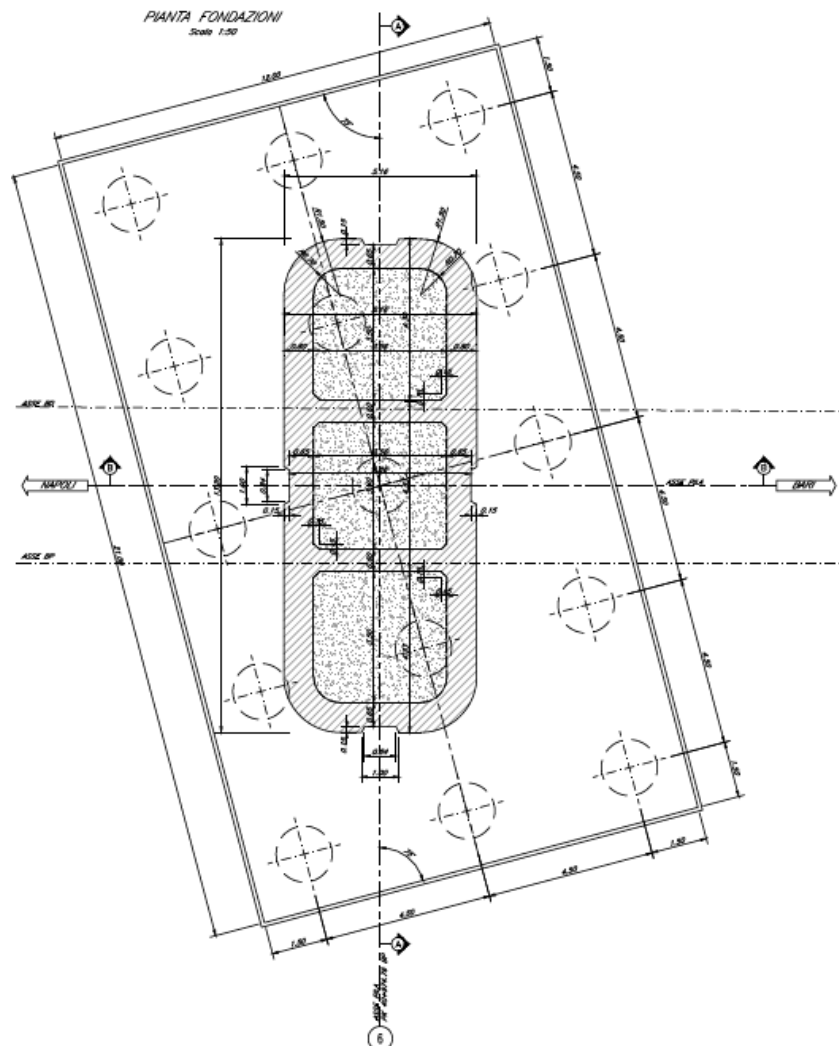


Figura 2 - Pianta Fondazioni PILA 6

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 15 di 294

#### 4.2.2 Stratigrafia di riferimento

In accordo con quanto riportato nella Relazione Geotecnica Generale, la stratigrafia e i parametri geotecnici di riferimento sono riportati nella seguente **Tabella 4-2** unitamente alla portanza limite laterale e di base dei pali.

La quota piano campagna di riferimento è ca. 350.4 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 3.50 m (q.t.p. 346.89m s.l.m.).

STRATIGRAFIA da Quota testa Palo				PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA	A	$\Delta H$	UNITA' DI RIFERIMENTO	$\gamma$	$\varphi$	$\sigma_c$	qs	qb
[m]	[m]	[m]		[kN/m <sup>3</sup> ]	[°]	[MPa]	[kPa]	[kPa]
0	18.5	18.5	RPL1a	19	36		10	428
							80	3500
18.5	21.5	3	FAEam	19		5-10	120	3100
21.5	...	...	FAEc	25		50-60	300	6000

**Tabella 4-2 Stratigrafia e parametri geotecnici di riferimento**

La falda di progetto è considerata a piano campagna.

APPALTATORE: Conorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatara Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 16 di 294

## 4.1 MODULI DI REAZIONE K

I coefficienti di reazione k impiegati nell'analisi di interazione palo-terreno sono assunti sulla base dei seguenti valori di riferimento:

Average Undrained Shear Strength*	$k_s$ (static loading)	$k_c$ (cyclic loading)
50-100 kPa (1,000-2,000 psf)	135 MN/m <sup>3</sup> (500 pci)	55 MN/m <sup>3</sup> (200 pci)
100-200 kPa (2,000-4,000 psf)	270 MN/m <sup>3</sup> (1,000 pci)	110 MN/m <sup>3</sup> (400 pci)
200-400 kPa (4,000-6,000 psf)	540 MN/m <sup>3</sup> (2,000 pci)	220 MN/m <sup>3</sup> (800 pci)

**Tabella 4-3** Coefficiente  $k_s$  per terreni argillosi

Average Undrained Shear Strength	$e_{50}$
50-100 kPa (1,000-2,000 psf)	0.007
100-200 kPa (2,000-4,000 psf)	0.005
200-400 kPa (4,000-6,000 psf)	0.004

**Tabella 4-4** Coefficiente  $e_{50}$  per terreni argillosi

Recommended $k$	Relative Density		
	Loose	Medium	Dense
MN/m <sup>3</sup> (pci)	5.4 (20.0)	16.3 (60.0)	34 (125.0)

**Tabella 4-5** Coefficiente  $k$  per terreni sabbiosi sotto falda

Recommended $k$	Relative Density		
	Loose	Medium	Dense
MN/m <sup>3</sup> (pci)	6.8 (25.0)	24.4 (90.0)	61.0 (225.0)

**Tabella 4-6** Coefficiente  $k$  per terreni sabbiosi sopra falda



<b>APPALTATORE:</b> <u>Consortio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>																	
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%;">COMMESSA</td> <td style="width: 16.6%;">LOTTO</td> <td style="width: 16.6%;">CODIFICA</td> <td style="width: 16.6%;">DOCUMENTO</td> <td style="width: 16.6%;">REV.</td> <td style="width: 16.6%;">FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 003</td> <td>A</td> <td>17 di 294</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 003	A	17 di 294
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 003	A	17 di 294													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>																		

## 5 CRITERI DI VERIFICA

Per ogni stato limite ultimo deve essere rispettata la condizione:

$$Ed \leq Rd;$$

dove Ed è il valore di progetto dell'azione o dell'effetto dell'azione e Rd è il valore di progetto della resistenza.

Le verifiche sono sviluppate secondo l'approccio 2:

combinazione: A1+M1+R3,

in cui è previsto un'unica combinazione di gruppi di coefficienti, da adottare sia nelle verifiche strutturali (STR) sia nelle verifiche geotecniche (GEO).

Per maggiori dettagli sui criteri di calcolo e verifica si rimanda alla relazione:

IF3A.0.2.E.ZZ.RP.VI.00.0.3.001. Relazione sui criteri di calcolo delle fondazioni

Per le verifiche a fessurazione si ricorda che sono svolte per condizioni ambientali ordinarie e armature poco sensibili.

<b>APPALTATORE:</b> <u>Conorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 18 di 294

## 6 SCARICHI DI FONDAZIONE PILA 4

Di seguito si esaminano gli scarichi a quota spiccato pila, derivanti dall'analisi strutturale complessiva del viadotto, e si valutano le azioni ad intradosso plinto considerando i trasporti delle azioni di taglio, e i contributi addizionali, in termini di azioni permanenti, dovuti ai pesi propri del plinto di fondazione e del terreno di ricoprimento definitivo.

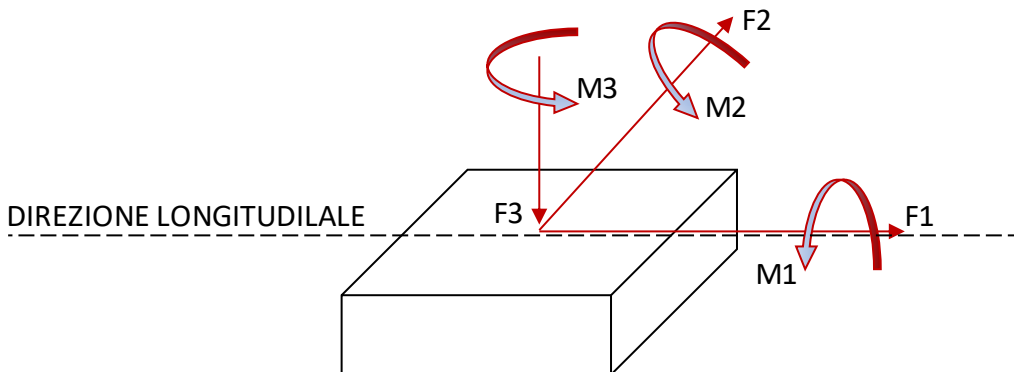
Si rimanda alla relazione di calcolo per ulteriori dettagli:

IF3A.0.2.E.ZZ.CL.VI.01.0.5.003.A Pile P4, P5, P6 Relazione di calcolo strutture in elevazione

### 6.1 SCARICHI ALLA BASE DELLA PILA

Di seguito si riportano gli scarichi alla base della pila per le combinazioni di carico sismiche (SLV), statiche (SLU) e di esercizio (SLE).

Nella **Figura 6-1** la convenzione dei segni assunta per le pile.



**Figura 6-1: Sistema di riferimento proprio delle pile**

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 19 di 294

### 6.1.1 Combinazioni delle azioni agli stati limite ultimi sismici

Nella seguente Tabella 6-1 si riportano le combinazioni di carico più gravose agli stati limite ultimi (SLV) in presenza di sisma.

Tali carichi sono stati ottenuti considerando la struttura in elevazione in classe di duttilità B (fattore di struttura  $q=1.50$ ). Per il dimensionamento e le verifiche del sistema fondazione le azioni da considerare sono quelli derivanti dall'analisi dinamica lineare nell'ipotesi di comportamento strutturale dissipativo ( $q=1.36$ , in accordo a §7.2.5 NTC18).

Sollecitazioni estradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	13268	3852	33582	41917	-109270	5197
MIN F1	-14238	3831	29054	42209	117871	-5197
MAX F2	3568	12876	34618	139115	-29175	1560
MIN F2	4336	-12834	27433	-139694	-36001	1560
MAX F3	3567	3892	42475	41316	-29176	1559
MIN F3	4287	3850	20258	41899	-35418	1559
MAX M1	3817	12834	33582	139672	-31367	1560
MIN M1	4431	-12814	28348	-142351	-36685	1560
MAX M2	-13268	3852	33582	41917	109270	5197
MIN M2	14220	3831	28492	42411	-118544	5197

Tabella 6-1: Combinazioni sismiche SLV: azioni agenti a base pila

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 20 di 294

### 6.1.2 Combinazioni delle azioni agli stati limite ultimi statici (SLU)

Nella seguente Tabella 6-2 si riportano le combinazioni agli stati limite ultimi statici (SLU); i carichi sono amplificati con i coefficienti parziali A1.

Sollecitazioni estradosso fondazione SLU						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1825	30508	22773	2038	0
MIN F1	-3955	1248	54937	15809	35851	0
MAX F2	336	1825	30508	22774	-2904	0
MIN F2	336	0	43186	0	-2904	0
MAX F3	3573	1400	55638	19895	-31491	0
MIN F3	236	1825	30508	22773	-2038	0
MAX M1	336	0	43186	0	-2904	0
MIN M1	1376	-1240	49823	-33142	-12022	0
MAX M2	236	1825	30508	22773	-2038	0
MIN M2	3826	1248	50867	17275	-40750	0

Tabella 6-2: Combinazioni statiche SLU-A1: azioni agenti a base pila

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 21 di 294

### 6.1.3 Combinazioni delle azioni agli stati limite di esercizio (SLE)

Nella seguente Tabella 6-3 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio (SLE).

Sollecitazioni estradosso fondazione SLE RARA						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1217	30508	15182	2038	0
MIN F1	-2732	835	38612	10579	24765	0
MAX F2	236	1217	30508	15182	-2038	0
MIN F2	236	0	30508	0	-2038	0
MAX F3	2468	940	39095	13406	-21757	0
MIN F3	236	1217	30508	15182	-2038	0
MAX M1	236	0	30508	0	-2038	0
MIN M1	949	-830	35085	-22541	-8293	0
MAX M2	236	1217	30508	15182	-2038	0
MIN M2	2643	835	35805	11590	-28143	0

Tabella 6-3: Combinazioni di esercizio SLE: azioni agenti a base pila

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 22 di 294

## 6.2 SCARICHI A INTRADOSSO PLINTO

### 6.2.1 Combinazioni delle azioni agli stati limite ultimi sismici (SLV)

Nella Tabella 6-5 si riportano le combinazioni di carico agli stati limite ultimi (SLV) in presenza dell'azione sismica, ottenute:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (Tabella 6-4).

plinto	B trasv	21	m
	L long	12	m
	H	2.5	m
ricoprimento	h	1	m
	peso plinto	15750.0	kN
	peso rinterro	3727.3	kN

Tabella 6-4: Plinto: caratteristiche geometriche

Sollecitazioni intradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	13268	3852	53060	51545	-142439	5197
MIN F1	-14238	3831	48531	51785	153466	-5197
MAX F2	3568	12876	54777	171305	-38094	1560
MIN F2	4336	-12834	48516	-171778	-46842	1560
MAX F3	3567	3892	61952	50994	-38092	1559
MIN F3	4287	3850	39735	51525	-46136	1559
MAX M1	3817	12834	53060	171757	-40908	1560
MIN M1	4431	-12814	47825	-174385	-47762	1560
MAX M2	-13268	3852	53060	51545	142439	5197
MIN M2	14220	3831	47969	51987	-154095	5197

Tabella 6-5: Combinazioni sismiche SLV: azioni agenti ad intradosso plinto

APPALTATORE: Consortio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 23 di 294

### 6.2.2 Combinazioni delle azioni agli stati limite ultimi statici (SLU)

Nella **Tabella 6-6** si riportano gli scarichi per gli stati limite ultimi statici (SLU), ottenuti:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (**Tabella 6-4**), fattorizzati per il fattore 1.3.

Sollecitazioni intradosso fondazione SLU						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1825	56802	27336	2628	0
MIN F1	-3955	1248	81231	18930	45738	0
MAX F2	336	1825	69480	27337	-3743	0
MIN F2	336	0	69480	0	-3743	0
MAX F3	3573	1400	81932	23393	-40423	0
MIN F3	236	1825	49985	27336	-2628	0
MAX M1	336	0	69480	0	-3743	0
MIN M1	1376	-1240	76117	-36242	-15463	0
MAX M2	236	1825	56802	27336	-2628	0
MIN M2	3826	1248	77161	20396	-50314	0

**Tabella 6-6: Combinazioni di statiche SLU-A1: azioni agenti ad intradosso plinto**

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 24 di 294

### 6.2.3 Combinazioni delle azioni agli stati limite di esercizio (SLE)

Nella **Tabella 6-7** si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio ottenute:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (Tabella 6-4).

Sollecitazioni intradosso fondazione SLE RARA						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1217	49985	18224	2628	0
MIN F1	-2732	835	58089	12666	31594	0
MAX F2	236	1217	49985	18224	-2628	0
MIN F2	236	0	49985	0	-2628	0
MAX F3	2468	940	58573	15756	-27928	0
MIN F3	236	1217	49985	18224	-2628	0
MAX M1	236	0	49985	0	-2628	0
MIN M1	949	-830	54562	-24616	-10666	0
MAX M2	236	1217	49985	18224	-2628	0
MIN M2	2643	835	55282	13677	-34750	0

**Tabella 6-7: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto**



APPALTATORE: Consortio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 25 di 294

## 7 SCARICHI DI FONDAZIONE PILA 6

Di seguito si esaminano gli scarichi a quota spiccato pila, derivanti dall'analisi strutturale complessiva del viadotto, e si valutano le azioni ad intradosso plinto considerando i trasporti delle azioni di taglio, e i contributi addizionali, in termini di azioni permanenti, dovuti ai pesi propri del plinto di fondazione e del terreno di ricoprimento definitivo.

Si rimanda alla relazione di calcolo per ulteriori dettagli:

IF3A.0.2.E.ZZ.CL.VI.01.0.5.003.A Pile P4, P5, P6 Relazione di calcolo strutture in elevazione

Si osserva che i carichi della pila P6 sono i medesimi della pila P4 e quindi della pila P5.

### 7.1 SCARICHI ALLA BASE DELLA PILA

Di seguito si riportano gli scarichi alla base della pila per le combinazioni di carico sismiche (SLV), statiche (SLU) e di esercizio (SLE).

Nella Figura 8-1 la convenzione dei segni assunta per le pile.

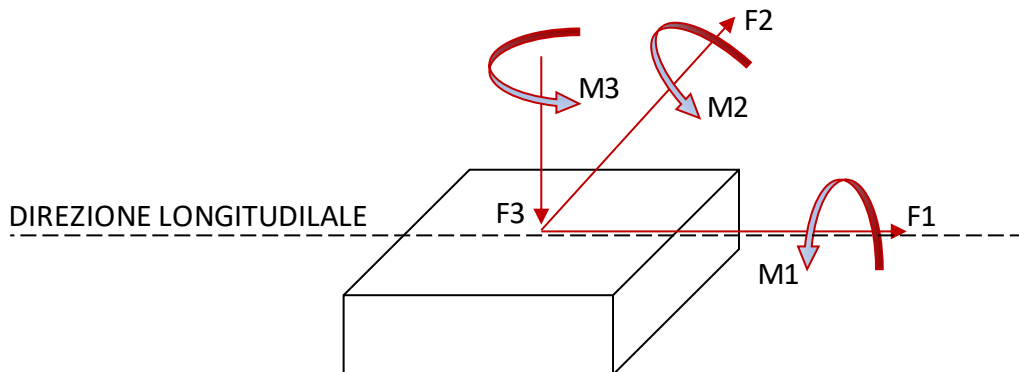


Figura 7-1: Sistema di riferimento proprio delle pile

#### 7.1.1 Combinazioni delle azioni agli stati limite ultimi sismici (SLV)

Nella seguente Tabella 7-1/Tabella 6-1 si riportano le combinazioni di carico più gravose agli stati limite ultimi (SLV) in presenza di sisma.

Tali carichi sono stati ottenuti considerando la struttura in elevazione in classe di duttilità B (fattore di struttura  $q=1.50$ ). Per il dimensionamento e le verifiche del sistema fondazione le azioni da considerare sono quelli derivanti dall'analisi dinamica lineare nell'ipotesi di comportamento strutturale dissipativo ( $q=1.36$ , in accordo a §7.2.5 NTC18).

APPALTATORE: Consortio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 26 di 294

Sollecitazioni estradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	13268	3852	33582	41917	-109270	5197
MIN F1	-14238	3831	29054	42209	117871	-5197
MAX F2	3568	12876	34618	139115	-29175	1560
MIN F2	4336	-12834	27433	-139694	-36001	1560
MAX F3	3567	3892	42475	41316	-29176	1559
MIN F3	4287	3850	20258	41899	-35418	1559
MAX M1	3817	12834	33582	139672	-31367	1560
MIN M1	4431	-12814	28348	-142351	-36685	1560
MAX M2	-13268	3852	33582	41917	109270	5197
MIN M2	14220	3831	28492	42411	-118544	5197

Tabella 7-1: Combinazioni sismiche SLV: azioni agenti a base pila

### 7.1.2 Combinazioni delle azioni agli stati limite ultimi statici (SLU)

Nella seguente Tabella 7-2 Tabella 6-2 si riportano le combinazioni agli stati limite ultimi statici (SLU); i carichi sono amplificati con i coefficienti parziali A1.

Sollecitazioni estradosso fondazione SLU						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1825	30508	22773	2038	0
MIN F1	-3955	1248	54937	15809	35851	0
MAX F2	336	1825	30508	22774	-2904	0
MIN F2	336	0	43186	0	-2904	0
MAX F3	3573	1400	55638	19895	-31491	0
MIN F3	236	1825	30508	22773	-2038	0
MAX M1	336	0	43186	0	-2904	0
MIN M1	1376	-1240	49823	-33142	-12022	0
MAX M2	236	1825	30508	22773	-2038	0
MIN M2	3826	1248	50867	17275	-40750	0

Tabella 7-2: Combinazioni statiche SLU-A1: azioni agenti a base pila

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandataria ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 27 di 294

### 7.1.3 Combinazioni delle azioni agli stati limite di esercizio (SLE)

Nella seguente Tabella 7-3 Tabella 6-3 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio (SLE).

Sollecitazioni estradosso fondazione SLE RARA						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1217	30508	15182	2038	0
MIN F1	-2732	835	38612	10579	24765	0
MAX F2	236	1217	30508	15182	-2038	0
MIN F2	236	0	30508	0	-2038	0
MAX F3	2468	940	39095	13406	-21757	0
MIN F3	236	1217	30508	15182	-2038	0
MAX M1	236	0	30508	0	-2038	0
MIN M1	949	-830	35085	-22541	-8293	0
MAX M2	236	1217	30508	15182	-2038	0
MIN M2	2643	835	35805	11590	-28143	0

Tabella 7-3: Combinazioni di esercizio SLE: azioni agenti a base pila

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 28 di 294

## 7.2 SCARICHI A INTRADOSSO PLINTO

### 7.2.1 Combinazioni delle azioni agli stati limite ultimi sismici (SLV)

Nella **Tabella 7-5** si riportano le combinazioni di carico agli stati limite ultimi (SLV) in presenza dell'azione sismica, ottenute:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (**Tabella 7-4**).

plinto	B trasv	21	m
	L long	12	m
	H	2.5	m
ricoprimento	h	1	m
	peso plinto	15750.0	kN
	peso rinterro	3727.3	kN

**Tabella 7-4: Plinto: caratteristiche geometriche**

Sollecitazioni intradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	13268	3852	53060	51545	-142439	5197
MIN F1	-14238	3831	48531	51785	153466	-5197
MAX F2	3568	12876	54777	171305	-38094	1560
MIN F2	4336	-12834	48516	-171778	-46842	1560
MAX F3	3567	3892	61952	50994	-38092	1559
MIN F3	4287	3850	39735	51525	-46136	1559
MAX M1	3817	12834	53060	171757	-40908	1560
MIN M1	4431	-12814	47825	-174385	-47762	1560
MAX M2	-13268	3852	53060	51545	142439	5197
MIN M2	14220	3831	47969	51987	-154095	5197

**Tabella 7-5: Combinazioni sismiche SLV: azioni agenti ad intradosso plinto**

APPALTATORE: Consortio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 29 di 294

### 7.2.2 Combinazioni delle azioni agli stati limite ultimi statici (SLU)

Nella **Tabella 7-6** si riportano gli scarichi per gli stati limite ultimi statici (SLU), ottenuti:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (**Tabella 7-4**), fattorizzati per il fattore 1.3.

Sollecitazioni intradosso fondazione SLU						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1825	56802	27336	2628	0
MIN F1	-3955	1248	81231	18930	45738	0
MAX F2	336	1825	69480	27337	-3743	0
MIN F2	336	0	69480	0	-3743	0
MAX F3	3573	1400	81932	23393	-40423	0
MIN F3	236	1825	49985	27336	-2628	0
MAX M1	336	0	69480	0	-3743	0
MIN M1	1376	-1240	76117	-36242	-15463	0
MAX M2	236	1825	56802	27336	-2628	0
MIN M2	3826	1248	77161	20396	-50314	0

**Tabella 7-6: Combinazioni di statiche SLU-A1: azioni agenti ad intradosso plinto**

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 30 di 294

### 7.2.3 Combinazioni delle azioni agli stati limite di esercizio (SLE)

Nella Tabella 7-7 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio ottenute:

- considerando il trasporto dei momenti da spiccato pila a intradosso plinto;
- aggiungendo il peso proprio del plinto e del terreno di ricoprimento (Tabella 7-4).

Sollecitazioni intradosso fondazione SLE						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	-236	1217	49985	18224	2628	0
MIN F1	-2732	835	58089	12666	31594	0
MAX F2	236	1217	49985	18224	-2628	0
MIN F2	236	0	49985	0	-2628	0
MAX F3	2468	940	58573	15756	-27928	0
MIN F3	236	1217	49985	18224	-2628	0
MAX M1	236	0	49985	0	-2628	0
MIN M1	949	-830	54562	-24616	-10666	0
MAX M2	236	1217	49985	18224	-2628	0
MIN M2	2643	835	55282	13677	-34750	0

Tabella 7-7: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 31 di 294

## 8 ANALISI DELL'INTERAZIONE FONDAZIONE-TERRENO PILA 4

L'analisi di interazione terreno-fondazione è stata sviluppata con il software GROUP della Ensoft.

Il programma considera che il comportamento di un palo soggetto ad azioni orizzontali all'interno di un gruppo differisce da quello di un palo singolo ed isolato. In un gruppo di pali caricato da azioni orizzontali i fenomeni di interazione reciproca palo – terreno – palo determinano, complessivamente, una diminuzione della rigidità del sistema.

La diversità di comportamento si manifesta mediante un differente valore dello sforzo di taglio agente in testa a ciascun palo, differenti valori di momento flettente, diversa ubicazione del valore massimo di momento al variare della profondità (nell'ipotesi in cui il vincolo in testa al palo non sia un incastro). La modalità di risposta di ciascun palo è funzione essenzialmente dalla posizione geometrica che questo occupa all'interno del gruppo. Precisamente, la risposta del singolo palo all'interno del gruppo è condizionata:

- dalla fila di appartenenza all'interno del gruppo (effetto ombra o shadowing);
- dalla posizione all'interno della singola fila (effetto di bordo).

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<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 32 di 294

## 8.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

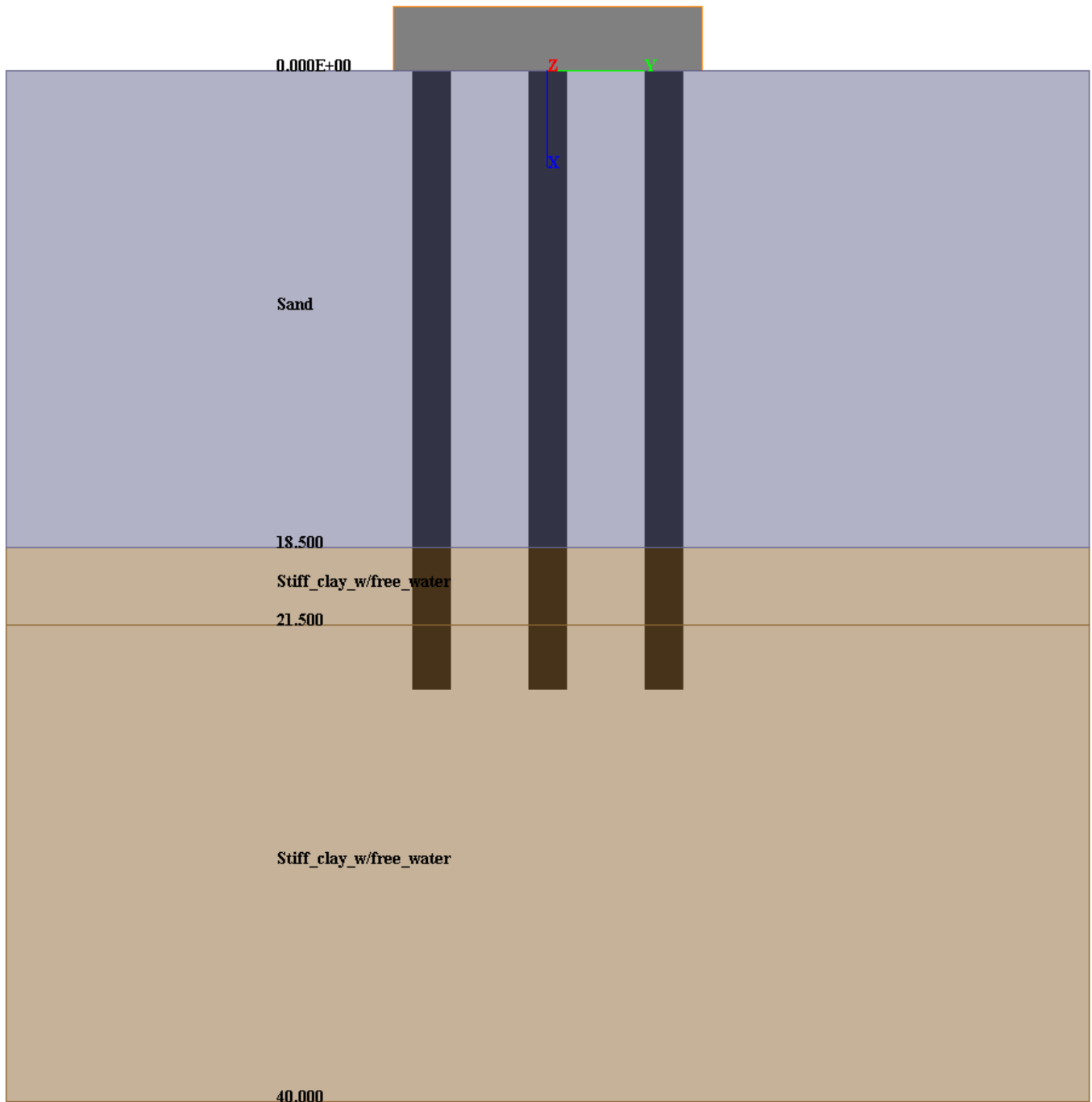
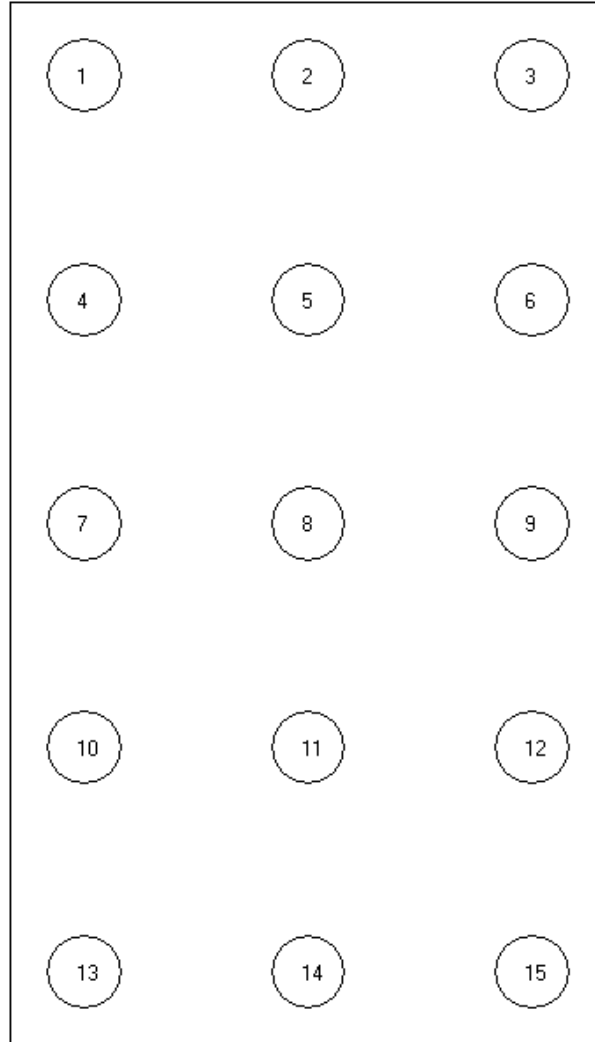


Figura 8-1: Vista frontale del modello GROUPv2016



<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 33 di 294



**Figura 8-2: Vista in pianta del modello GROUPv2016**

In accordo al § 4.1.2 nelle seguenti figure, si riporta il modello stratigrafico di calcolo e i parametri geotecnici assegnati ai singoli strati.

Layer	Soil Type	Depth for Top of Soil Layer (m)	Depth for Bottom of Soil Layer (m)	Properties of Layer
1	Sand (Reese)	0	18.5	1: Sand (Reese, et al.)
2	Stiff Clay with Free Water (Reese)	18.5	21.5	2: Stiff Clay with Free Water
3	Stiff Clay with Free Water (Reese)	21.5	40	3: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

**Figura 8-3: Modello stratigrafico GROUP V2016**

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 34 di 294

Sand (Reese, et al.) 1

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Friction Angle, (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	9	36	16200	10	428
2	9	36	16200	80.4	3500

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate value for p-y Modulus, k, if zero input value is entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

**Figura 8-4: Layer no.1 (RPL1a)**

Stiff Clay with Free Water 2

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	9	300	100000	0.004	120	3100
2	9	300	100000	0.004	120	3100

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k, and Strain Factor E50:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate values for p-y Modulus, k, and Strain Factor E50 if zero input values are entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

**Figura 8-5: Layer no.2 (FAE am)**

Stiff Clay with Free Water 3

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	15	400	543000	0.004	300	6000
2	15	400	543000	0.004	300	6000

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k, and Strain Factor E50:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate values for p-y Modulus, k, and Strain Factor E50 if zero input values are entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

**Figura 8-6: Layer no.3 (FAEc)**

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandataria ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 35 di 294

## 8.2 SINTESI DEI RISULTATI AGLI STATI LIMITE DI ESERCIZIO (SLE)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.

		SLE-RARA		
		N	M	H
	ID Combo	[kN]	[kNm]	[kN]
Nmax	SLE-RARA_22	4922	637	239
Nmin	SLE-RARA_30	2501	479	175
Mmax	SLE-RARA_22	4922	637	239
Hmax	SLE-RARA_22	4922	637	239

Tabella 8-1: Sollecitazioni allo SLE massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

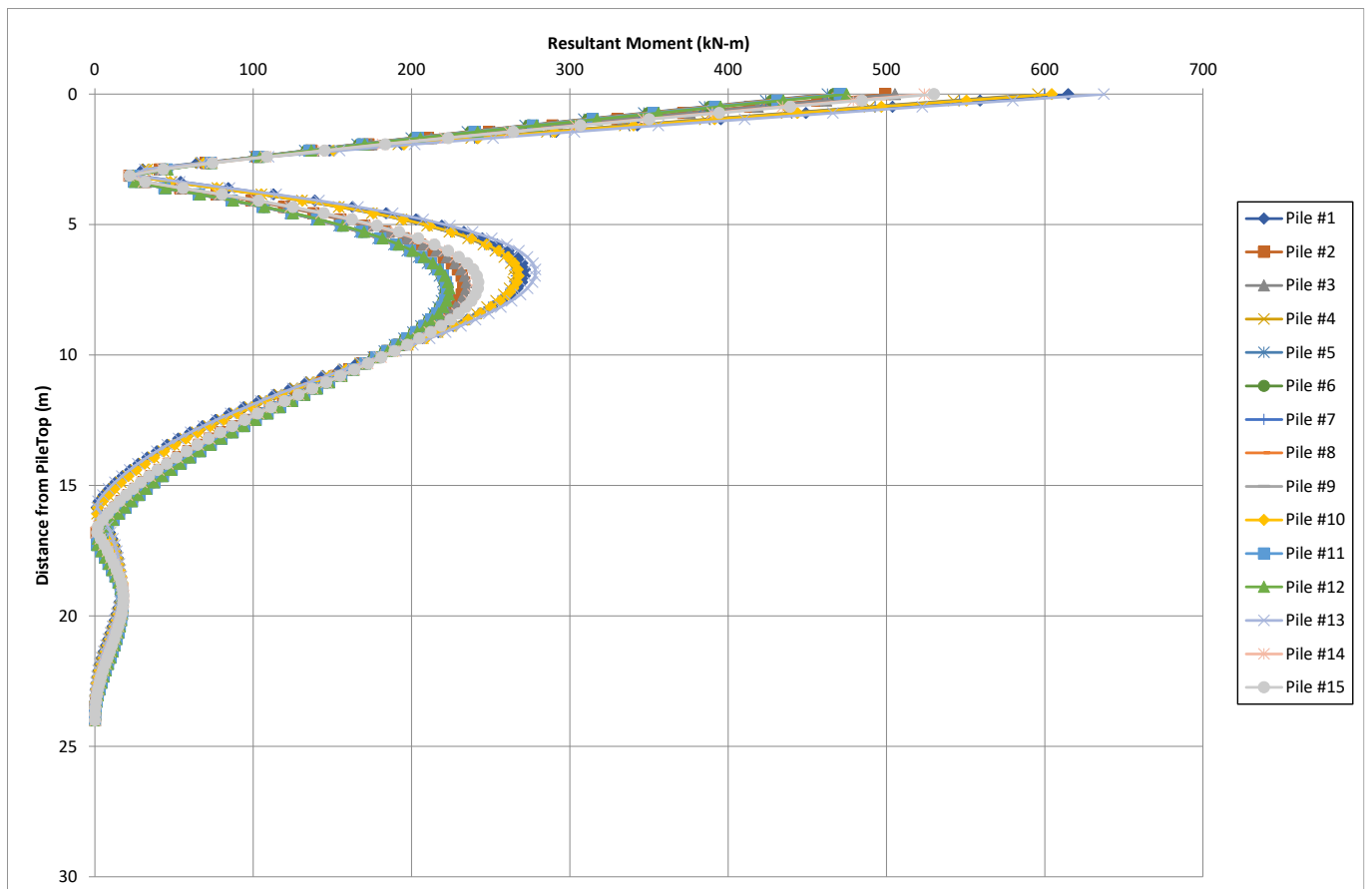


Figura 8-7: Combinazioni SLE: Andamento con la profondità del momento (combo SLE\_22).

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 36 di 294

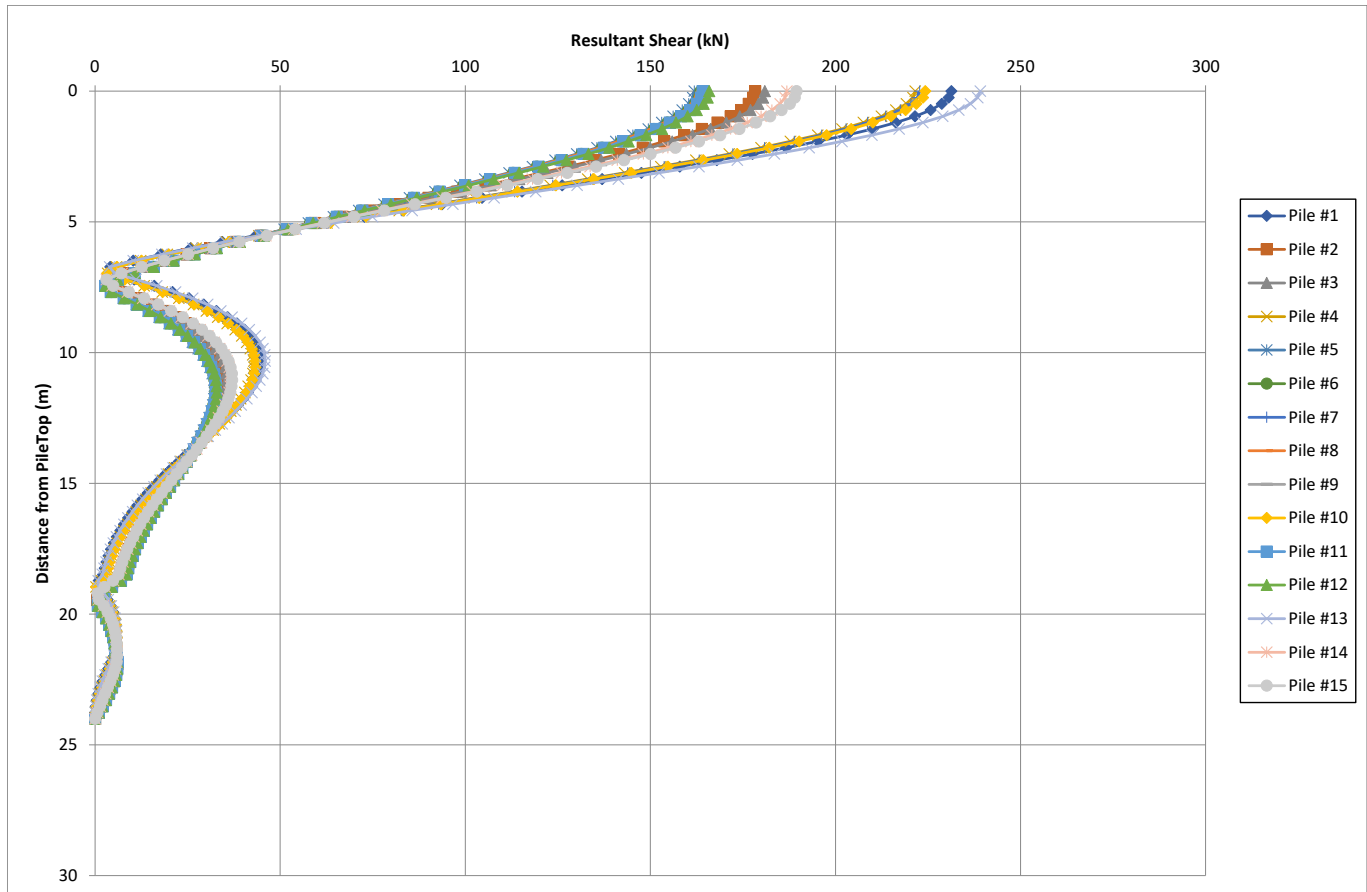


Figura 8-8: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE\_22).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 37 di 294

## 8.2.1 ANALISI DEGLI SPOSTAMENTI

Nella Tabella 8-2 si riportano gli spostamenti e le rotazioni ad intradosso plinto e sommità spalla.

Gli spostamenti orizzontali (direzione y-2) e direzione z-3) tengono già conto dell'interazione fra pali e sono quindi rappresentativi degli spostamenti orizzontali del gruppo di pali; lo spostamento verticale non tiene conto dell'effetto gruppo.

Il coefficiente amplificativo del cedimento verticale per effetto gruppo  $E_G$  viene valutato in accordo a Mandolini et al. (2005) ed è riportato in Tabella 8-3.

Nell'analisi di deformabilità verticale delle fondazioni, i cedimenti differenziali "δ" fra fondazioni adiacenti, calcolati considerando agenti tutte le azioni permanenti con il loro valore caratteristico, dovranno rispettare i seguenti limite:

$$\delta \leq L_{med}/1000 \quad \text{per travi appoggiate;}$$

$$\delta \leq L_{med}/3000 \quad \text{per travi continue;}$$

dove  $L_{med}$  = luce media delle campate afferenti sulla fondazione in esame.

La pila porta delle travi appoggiate di lunghezza  $L=40m$  e luce appoggi  $L=38.0m$ ; si ottiene  $L_{med}/1000=38.0mm > 5.140mm$ , i requisiti prestazionali sono soddisfatti.

VERTICAL , M	HORIZONTAL Y, M	HORIZONTAL Z, M	ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD	Ppostamento spalla - sle			
						H spalla (m)	asse Y (mm)	asse Z (mm)	asse X (mm)
0.0020189	-0.0001393	0.0006150	-6.727E-07	2.221E-05	9.902E-06	10.9	-0.247	0.857	4.370
0.0023566	-0.0015947	0.0004168	1.577E-06	1.650E-05	1.204E-04	10.9	-2.907	0.597	5.101
0.0020189	0.0001393	0.0006150	6.727E-07	2.221E-05	-9.902E-06	10.9	0.247	0.857	4.370
0.0020189	0.0001357	0.0000000	1.330E-16	-1.769E-14	-9.871E-06	10.9	0.243	0.000	4.370
0.0023745	0.0014342	0.0004737	-1.515E-06	1.985E-05	-1.067E-04	10.9	2.598	0.690	5.140
0.0020189	0.0001393	0.0006150	6.727E-07	2.221E-05	-9.902E-06	10.9	0.247	0.857	4.370
0.0020189	0.0001357	0.0000000	1.454E-16	-1.769E-14	-9.871E-06	10.9	0.243	0.000	4.370
0.0022048	0.0005504	-0.0004536	6.253E-08	-2.714E-05	-4.003E-05	10.9	0.987	-0.749	4.772
0.0020189	0.0001393	0.0006150	6.727E-07	2.221E-05	-9.902E-06	10.9	0.247	0.857	4.370
0.0022380	0.0015798	0.0004188	-1.575E-06	1.708E-05	-1.271E-04	10.9	2.965	0.605	4.844

$\delta_{max}(mm)$  5.140

Tabella 8-2: Combinazioni SLE: spostamenti e rotazioni ad intradosso plinto.

### DATI FONDAZIONE

Larghezza plinto	19.5	m
Profondità plinto	10.5	m
Diametro palo	1.5	m
Lunghezza palo	24	m
interasse palo	4.5	m
numero pali	15	-
Coefficiente R	1.68	-
Coefficiente RG	0.14	-
Coeff. amplificazione cedimento del gruppo EG	2.16	-

Tabella 8-3: Coefficiente amplificativo del cedimento verticale per effetto gruppo.

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 38 di 294

### 8.3 SINTESI DEI RISULTATI AGLI STATI LIMITE ULTIMI STATICI (SLU)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.

ID Combo	STR		
	N [kN]	M [kNm]	H [kN]
SLU-STR_2	6944	887	349
SLU-STR_6	2767	392	121
SLU-STR_2	6944	887	349
SLU-STR_2	6944	887	349

Tabella 8-4: Sollecitazioni allo SLU massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

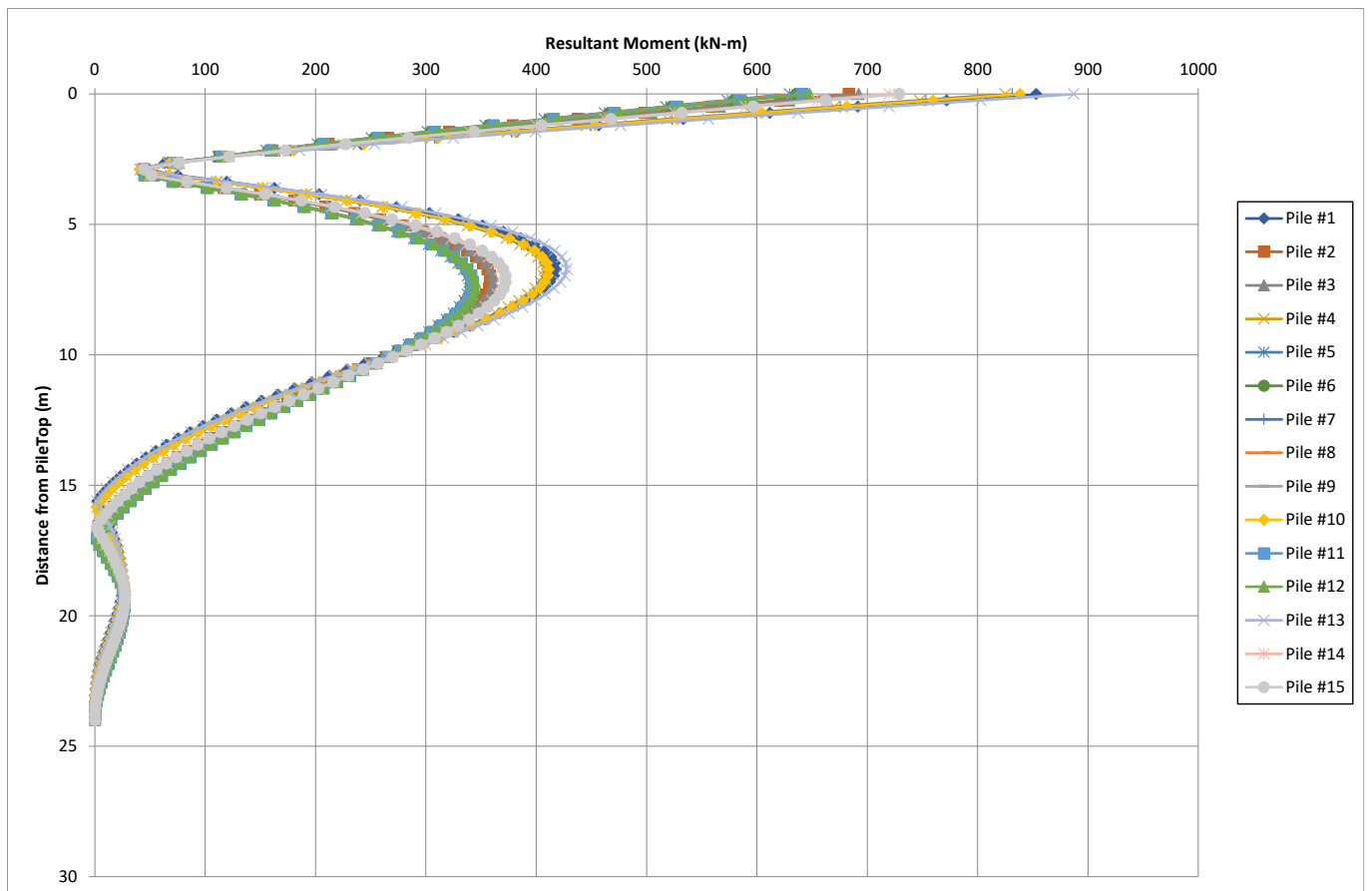


Figura 8-9: Combinazioni statica SLU: Andamento con la profondità del momento (combo SLU-STR\_2).

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 39 di 294

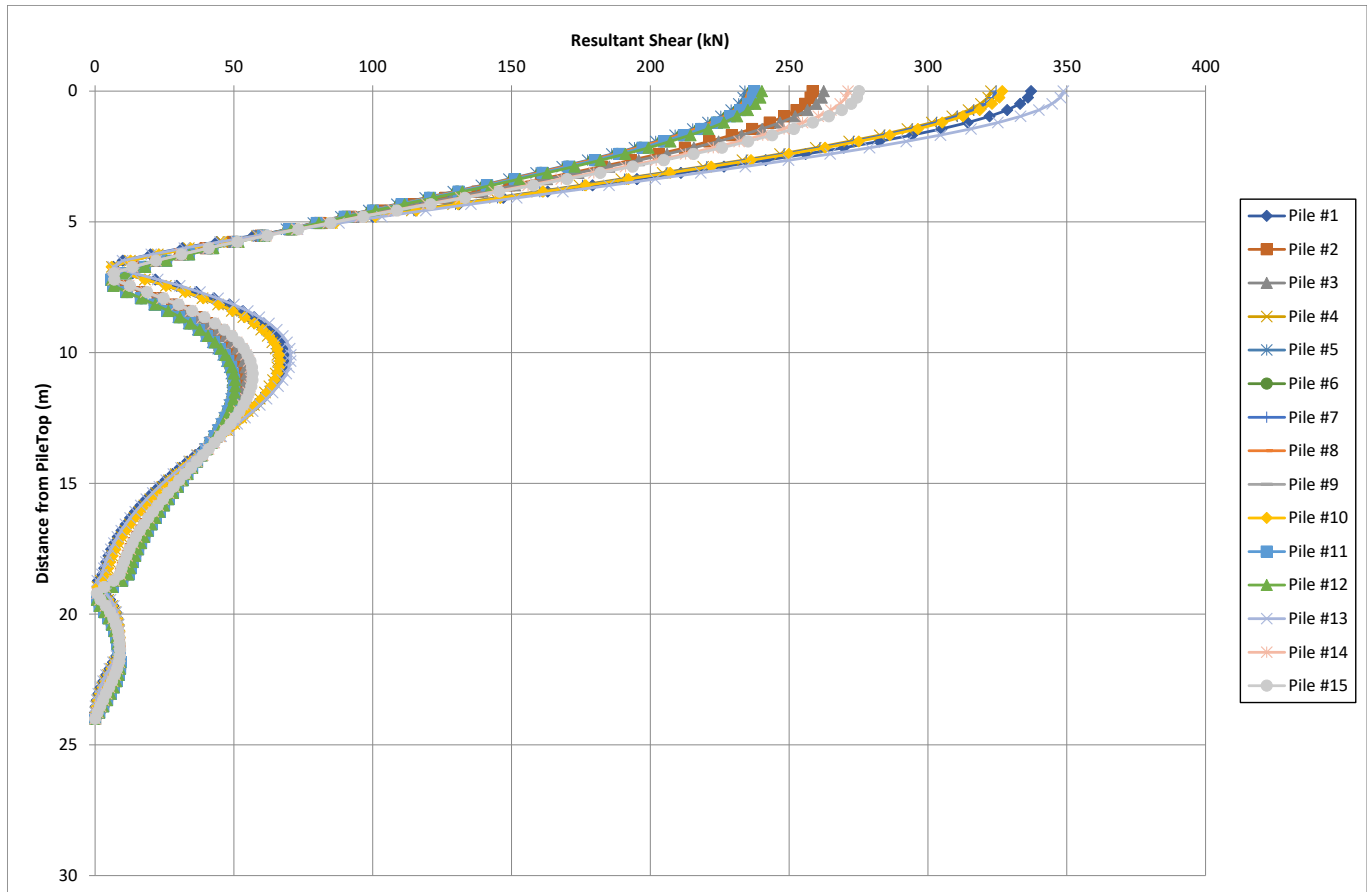


Figura 8-10: Combinazioni statica SLU: Andamento con la profondità del taglio (combo SLU-STR\_2).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 40 di 294

### 8.4 SINTESI DEI RISULTATI AGLI STATI LIMITE ULTIMI SISMICI (SLV)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.

ID Combo	SLV (q=1.36)		
	N	M	H
	[kN]	[kNm]	[kN]
SLV-SISMA_12	7846	3301	1206
SLV-SISMA_20	-2414	2817	966
SLV-SISMA_12	6690	3554	1263
SLV-SISMA_12	6690	3554	1263

Tabella 8-5: Sollecitazioni allo SLV massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

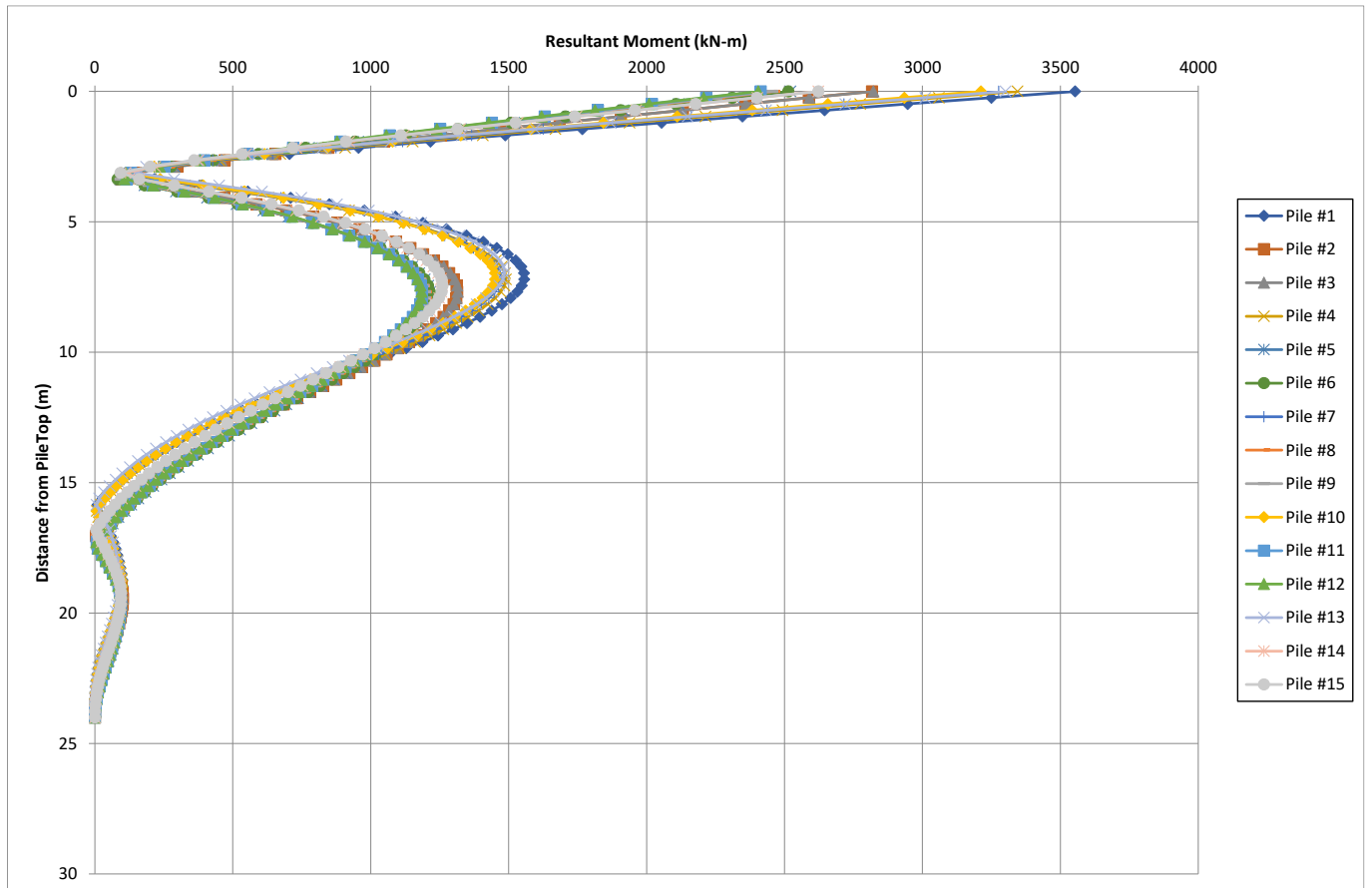


Figura 8-11: Combinazioni sismica SLV: Andamento con la profondità del momento (combo SLV-SISMA\_12).



<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 41 di 294

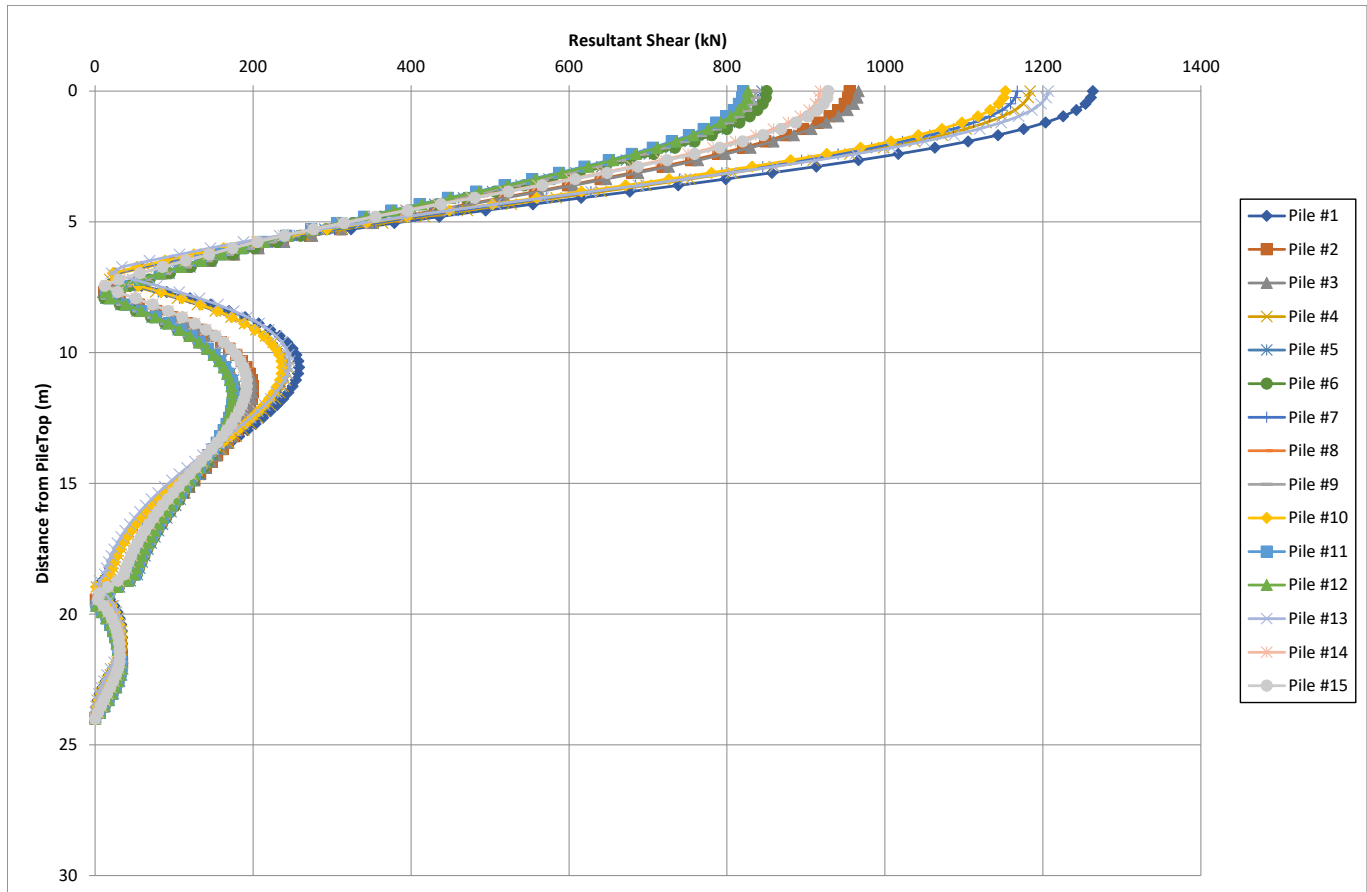


Figura 8-12: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo SLV-SISMA\_12).

APPALTATORE: Conorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatara <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 42 di 294

## 9 VERIFICA DEI PALI DI FONDAZIONE PILA 4

Nel seguito di riportano le verifiche strutturali dei pali di fondazione.

Le sollecitazioni massime agenti sul palo, selezionate nei paragrafi precedenti, sono riassunte nella **Tabella 9-1**.

ID Combo	SLV (q=1.36)		
	N	M	H
	[kN]	[kNm]	[kN]
SLV-SISMA_12	7846	3301	1206
SLV-SISMA_20	-2414	2817	966
SLV-SISMA_12	6690	3554	1263
SLV-SISMA_12	6690	3554	1263

ID Combo	SLE-RARA		
	N	M	H
	[kN]	[kNm]	[kN]
SLE-RARA_22	4922	637	239
SLE-RARA_30	2501	479	175
SLE-RARA_22	4922	637	239
SLE-RARA_22	4922	637	239

**Tabella 9-1: Sollecitazioni massime agenti nel palo**

Nel seguito si riportano le verifiche strutturali del palo trivellato di diametro  $\varnothing = 1500\text{mm}$  in cls – C25/30 e lunghezza L24m. Per le verifiche si considerano le sollecitazioni risultanti. Sono risultate più severe le verifiche in presenza di trazione.

In riferimento all'andamento dei momenti lungo il fusto del palo, sono state previste n. 3 ordini di armature principali:

1. L'armatura massima:
  - ferri correnti: corona esterna n.24  $\varnothing$  30;
  - ferri correnti: corona interna n.24  $\varnothing$  30;
  - staffatura: spirale  $\varnothing$ 14 passo 10.
  
2. L'armatura media:
  - ferri correnti: corona esterna n.24  $\varnothing$  30;
  - staffatura: spirale  $\varnothing$ 14 passo 20.
  
3. L'armatura minima:
  - ferri correnti: corona esterna n.24  $\varnothing$  22;
  - staffatura: spirale  $\varnothing$ 14 passo 20.

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PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 43 di 294

Le verifiche strutturali del palo sono soddisfatte; di seguito le schede di calcolo.

geometria					sollecitazioni e risultati				
sezione trasversale					SLE		SLU		
D	c	d	passo	interferro	M <sub>Ek</sub>	637.4 [kNm]	M <sub>Ed</sub>	2816.6 [kNm]	
[cm]	[cm]	[cm]	[cm]	[cm]	N <sub>Ek</sub>	-2501.4 [kN]	N <sub>Ed</sub>	2414.0 [kN]	
150	6.0	141.1	17.3	14.3	momento di cracking		V <sub>Ed</sub>	1262.9 [kN]	
armatura longitudinale					M <sub>cr</sub>	1511.3 [kNm]	presso-flessione		
nbarre	φ	r <sub>i</sub>	A <sub>sl</sub>	C <sub>i</sub>	quota asse neutro		M <sub>Rd</sub>	5857.0 [kNm]	
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]	y <sub>n</sub>	134.52 [cm]	FS	2.08	
24	30	66.1	169.65	8.90	tensioni e fessure		taglio		
24	30	60.60	169.65	14.40	σ <sub>c,min</sub>	-2.5 [MPa]	V <sub>Rdc</sub>	396.8 [kN]	
					σ <sub>s,min</sub>	-34.6 [MPa]	predisporre armatura a taglio		
					σ <sub>s,max</sub>	1.8 [MPa]			
armatura a taglio							V <sub>Rds</sub>	1926.5 [kN]	
Tipo	φ	ρ	A <sub>sw</sub>		k <sub>2</sub>	0.5	V <sub>Rdmax</sub>	4480.7 [kN]	
	[mm]	[cm]	[cm <sup>2</sup> ]		ε <sub>sm</sub> -ε <sub>cm</sub>	- [%o]	θ	30.0 [°]	
spirale	14	10	3.08		S <sub>r,max</sub>	- [cm]	sezione duttile		
					w <sub>k</sub>	- [mm]	a <sub>i</sub>	92.1 [cm]	
materiali					legenda				
calcestruzzo			acciaio		<p>d riferito all'asse barra c copriferro netto M &gt;0, se tese fibre inferiori N &gt;0, se di trazione V in valore assoluto</p>				
R <sub>ck</sub>	30 [MPa]	f <sub>yk</sub>	450 [MPa]						
f <sub>ck</sub>	24.9 [MPa]	γ <sub>s</sub>	1.15						
γ <sub>c</sub>	1.5	f <sub>yd</sub>	391.3 [MPa]						
α <sub>cc</sub>	0.85	E <sub>s</sub>	200000 [MPa]						
f <sub>cd</sub>	14.1 [MPa]	ε <sub>uk</sub>	75 [%o]						
v	0.5	valori limite							
ε <sub>c2</sub>	2.0 [%o]	0.55	13.7 [MPa]						
ε <sub>cu2</sub>	3.5 [%o]	0.75	337.5 [MPa]						
α <sub>e</sub>	15.0	w <sub>k,lim</sub>	0.2 [mm]						
k <sub>t</sub>	0.6								
k <sub>1</sub>	0.8								
k <sub>3</sub>	3.4								
k <sub>4</sub>	0.425								

Tabella 9-2: Verifica del palo D=1500mm; armatura massima

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 44 di 294

### 9.1 Schemi armatura e incidenza del palo

La Tabella 9-3 riporta l'incidenza di armatura valutata con una percentuale di incremento dovuta a ganci di sollevamento, armature di confezionamento, legatura, ecc.; si considera una incidenza di progetto pari a 160kg/m<sup>3</sup>.

Incidenze acciaio								
P4 - Pali $\phi$ 1500 L=24m								
Volume calcestruzzo				incidenza				
d	1.5 m			kg acciaio	6074.01 kg			
A	1.767 m			Vcls	42.41 m <sup>3</sup>			
L	24 m			<b>incidenza di calcolo</b>	<b>143.22 kg/m<sup>3</sup></b>			
V	42.4115 m <sup>3</sup>			<b>incidenza di progetto</b>	<b>160.00 kg/m<sup>3</sup></b>			
Armature longitudinali								
	parti	n	$\phi$	L	Area	peso	incidenza	
long	1	48	30	12	339.29	3196.13	75.36	
	1	24	30	12	169.65	1598.07	37.68	
	1	24	22	5.6	91.23	401.06	9.46	
					0.00	0.00	0.00	
					0.00	0.00	0.00	
					0.00	0.00	0.00	
TOTALE						5195.25	122.50	
Staffe								
	parti	n	$\phi$	L	Area	peso	incidenza	
8	1	80	14	4.29	123.15	414.73	9.78	
15.6	1	78	14	4.29	120.07	404.36	9.53	
	1	1	16	4.29	2.01	6.77	0.16	
	1	5	20	4.29	15.71	52.90	1.25	
TOTALE						878.76	20.72	
Schema riassuntivo								
		kg acc	Vcls	<b>i</b>	n	kg acc	Vcls	
P4 - Pali F1500 L=24m		6074.01	42.41	<b>143.22</b>	2	12148.02	84.82	

Tabella 9-3 Incidenza armatura

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 45 di 294

## 10 VERIFICHE ALLO SLU DI TIPO GEOTECNICO PILA 4

### 10.1 VERIFICA DI CAPACITÀ PORTANTE DEL PALO SINGOLO

La verifica di capacità portante verticale per il singolo palo è stata condotta in accordo ai criteri esposti in:

IF3A.0.2.E.ZZ.RP.VI.00.0.3.001.A Relazione sui criteri di calcolo delle fondazioni

Di seguito si riporta, per i pali di fondazione di lunghezza  $L = 20$  m, la capacità portante a compressione ( $R_{c,d}$ ) e a trazione ( $R_{t,d}$ ), secondo l'approccio 2 (A1+M1+R3).

I carichi assiali massimi agenti sui pali sono riassunti nella seguente tabella:

Massima compressione, $N_{dc}$ , max [kN]	7846 (SLV)
Massima trazione, $N_{dt}$ , max [kN]	-2414 (SLV)

Tabella 10-1: Combinazione SLU e SLV: Sollecitazioni massime di compressione e trazione

Si verifica inoltre che lo sforzo assiale massimo in esercizio sia inferiore della resistenza laterale di calcolo ( $R_{c,s,k}$ ) divisa per un fattore pari a 1.25.

Massima compressione, $N_{dcSLE}$ , max [kN]	4922 (SLE)
--	------------

Tabella 10-2: Combinazione SLE: Sollecitazione massima di compressione

#### 10.1.1 Capacità portante verticale del palo singolo

Stratigrafia e parametri geotecnici

Dati di input		
Diametro Palo	1.5	m
Sovraccarico efficace	22.5	kPa
$H_w$ da testa palo	0	m
$\gamma$ acqua	10.0	kN/m <sup>3</sup>
$\Delta z$ palo da p.c. originario	2.5	m
N° diametri per qb	3.0	(-)
L palo fuori terra	0.0	(m)
Peso calcestruzzo	25.0	kN/m <sup>3</sup>
Pressione max sul cls.	11.3	MPa

Caratteristiche del terreno													
Profondità (m)		Strato	Terreno	$\gamma_{tot}$	Nspt		$c_u$ (kPa)		$\Delta z$	$\phi^\circ$		Nq	
da	a	No.	(S,SL,G,A)	kN/m <sup>3</sup>	da	a	da	a	(m)	da	a	da	a
0.0	18.5	1	S	19.0					0.50	36	36	19	19
18.5	21.5	2	A	19.0			300	300	0.50				
21.5	40.0	3	G	25.0					0.50				

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<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 46 di 294

Verticali di indagine	$\xi_3$	$\xi_4$
<b>5</b>	1.50	1.34

Scelta di $\xi$	$\xi$
<b>3</b>	1.5

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 47 di 294

Combinazione SLE						
L palo	$\tau_s$ calcolo	Q <sub>ub</sub> calcolo	R <sub>c,s,k</sub>	R <sub>c,b,k</sub>	$\Delta W$ palo	Q <sub>c,s,k/1.25</sub>
m	kPa	kPa	kN	kN	kN	kN
0.5	9.8	124	23.1	218.2	5.3	13.2
1.0	11.8	247	50.8	436.5	10.6	30.1
1.5	13.7	371	83.2	654.7	15.9	50.7
2.0	15.7	494	120.2	873.0	21.2	74.9
2.5	17.7	618	161.8	1091.2	26.5	102.9
3.0	19.6	741	208.0	1309.5	31.8	134.6
3.5	21.6	865	258.8	1527.7	37.1	170.0
4.0	23.5	988	314.3	1745.9	42.4	209.0
4.5	25.5	1112	374.4	1964.2	47.7	251.8
5.0	27.5	1197	439.1	2115.3	53.0	298.3
5.5	29.4	1283	508.4	2266.4	58.3	348.4
6.0	31.4	1368	582.4	2417.5	63.6	402.3
6.5	33.3	1454	661.0	2568.5	68.9	459.8
7.0	35.3	1539	744.2	2719.6	74.2	521.1
7.5	37.3	1625	832.0	2870.7	79.5	586.1
8.0	39.2	1710	924.4	3021.8	84.8	654.7
8.5	41.2	1796	1021.5	3172.9	90.1	727.1
9.0	43.2	1881	1123.2	3324.0	95.4	803.1
9.5	45.1	1967	1229.5	3475.1	100.7	882.8
10.0	47.1	2052	1340.4	3626.2	106.0	966.3
10.5	49.0	2138	1456.0	3777.3	111.3	1053.4
11.0	51.0	2223	1576.1	3928.4	116.6	1144.3
11.5	53.0	2309	1700.9	4079.5	121.9	1238.8
12.0	54.9	2394	1830.3	4230.5	127.2	1337.0
12.5	56.9	2480	1964.4	4381.6	132.5	1439.0
13.0	58.8	2565	2103.0	4532.7	137.8	1544.6
13.5	60.8	2651	2246.3	4683.8	143.1	1653.9
14.0	62.8	2736	2394.2	4834.9	148.4	1766.9
14.5	64.7	2822	2546.8	4986.0	153.7	1883.7
15.0	66.7	2852	2703.9	5040.5	159.0	2004.1
15.5	68.7	2883	2865.7	5095.0	164.3	2128.2
16.0	70.6	2914	3032.1	5149.5	169.6	2256.0
16.5	72.6	2945	3203.1	5204.0	174.9	2387.5
17.0	74.5	2976	3378.7	5258.4	180.2	2522.7
17.5	76.5	3007	3559.0	5312.9	185.6	2661.6
18.0	78.5	3037	3743.9	5367.4	190.9	2804.2
18.5	80.4	3068	3933.4	5421.9	196.2	2950.5
18.5	82.4	3068	3933.4	5421.9	196.2	2950.5
19.0	120.0	3099	4216.1	5476.4	201.5	3171.4
19.5	120.0	3109	4498.9	5493.2	206.8	3392.3
20.0	120.0	3118	4781.6	5510.0	212.1	3613.2
20.5	120.0	3128	5064.3	5526.7	217.4	3834.1
21.0	120.0	3137	5347.1	5543.5	222.7	4055.0
21.5	120.0	3147	5629.8	5560.3	228.0	4275.9
21.5	120.0	3156	5629.8	5577.1	228.0	4275.9
22.0	300.0	3472	6336.7	6135.5	228.0	4841.4
22.5	300.0	3788	7043.6	6693.9	228.0	5406.9
23.0	300.0	4104	7750.4	7252.4	228.0	5972.4
23.5	300.0	4420	8457.3	7810.8	228.0	6537.9
24.0	300.0	4736	9164.1	8369.2	228.0	7103.3
24.5	300.0	5052	9871.0	8927.6	228.0	7668.8
25.0	300.0	5368	10577.8	9486.0	228.0	8234.3
25.5	300.0	5684	11284.7	10044.5	228.0	8799.8
26.0	300.0	6000	11991.6	10602.9	228.0	9365.3
26.5	300.0	6000	12698.4	10602.9	228.0	9930.8
27.0	300.0	6000	13405.3	10602.9	228.0	10496.3
27.5	300.0	6000	14112.1	10602.9	228.0	11061.7
28.0	300.0	6000	14819.0	10602.9	228.0	11627.2
28.5	300.0	6000	15525.9	10602.9	228.0	12192.7
29.0	300.0	6000	16232.7	10602.9	228.0	12758.2
29.5	300.0	6000	16939.6	10602.9	228.0	13323.7
30.0	300.0	6000	17646.4	10602.9	228.0	13889.2

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 48 di 294

Combinazione SLU A1+M1+R1 (metodo AGI)						
L_palo	Q <sub>I-lim</sub>	Q <sub>b-lim</sub>	Q <sub>I-calc</sub>	Q <sub>b-calc</sub>	ΔW_palo	Q <sub>tot</sub>
m	kN	kN	kN	kN	kN	kN
0.5	23.1	218.2	13.4	107.8	5.3	115.9
1.0	50.8	436.5	29.5	215.5	10.6	234.4
1.5	83.2	654.7	48.2	323.3	15.9	355.6
2.0	120.2	873.0	69.7	431.1	21.2	479.6
2.5	161.8	1091.2	93.8	538.9	26.5	606.1
3.0	208.0	1309.5	120.6	646.6	31.8	735.4
3.5	258.8	1527.7	150.0	754.4	37.1	867.4
4.0	314.3	1745.9	182.2	862.2	42.4	1002.0
4.5	374.4	1964.2	217.0	970.0	47.7	1139.3
5.0	439.1	2115.3	254.5	1044.6	53.0	1246.1
5.5	508.4	2266.4	294.7	1119.2	58.3	1355.6
6.0	582.4	2417.5	337.6	1193.8	63.6	1467.8
6.5	661.0	2568.5	383.2	1268.4	68.9	1582.7
7.0	744.2	2719.6	431.4	1343.0	74.2	1700.2
7.5	832.0	2870.7	482.3	1417.6	79.5	1820.4
8.0	924.4	3021.8	535.9	1492.3	84.8	1943.3
8.5	1021.5	3172.9	592.2	1566.9	90.1	2068.9
9.0	1123.2	3324.0	651.1	1641.5	95.4	2197.2
9.5	1229.5	3475.1	712.7	1716.1	100.7	2328.1
10.0	1340.4	3626.2	777.0	1790.7	106.0	2461.7
10.5	1456.0	3777.3	844.0	1865.3	111.3	2598.0
11.0	1576.1	3928.4	913.7	1939.9	116.6	2737.0
11.5	1700.9	4079.5	986.0	2014.5	121.9	2878.7
12.0	1830.3	4230.5	1061.1	2089.2	127.2	3023.0
12.5	1964.4	4381.6	1138.8	2163.8	132.5	3170.0
13.0	2103.0	4532.7	1219.2	2238.4	137.8	3319.7
13.5	2246.3	4683.8	1302.2	2313.0	143.1	3472.1
14.0	2394.2	4834.9	1388.0	2387.6	148.4	3627.1
14.5	2546.8	4986.0	1476.4	2462.2	153.7	3784.9
15.0	2703.9	5040.5	1567.5	2489.1	159.0	3897.6
15.5	2865.7	5095.0	1661.3	2516.0	164.3	4013.0
16.0	3032.1	5149.5	1757.7	2542.9	169.6	4131.0
16.5	3203.1	5204.0	1856.9	2569.9	174.9	4251.8
17.0	3378.7	5258.4	1958.7	2596.8	180.2	4375.2
17.5	3559.0	5312.9	2063.2	2623.7	185.6	4501.3
18.0	3743.9	5367.4	2170.4	2650.6	190.9	4630.1
18.5	3933.4	5421.9	2280.2	2677.5	196.2	4761.5
18.5	3933.4	5421.9	2280.2	2677.5	196.2	4761.5
19.0	4216.1	5476.4	2444.1	2704.4	201.5	4947.1
19.5	4498.9	5493.2	2608.0	2712.7	206.8	5114.0
20.0	4781.6	5510.0	2771.9	2721.0	212.1	5280.9
20.5	5064.3	5526.7	2935.9	2729.3	217.4	5447.8
21.0	5347.1	5543.5	3099.8	2737.5	222.7	5614.7
21.5	5629.8	5560.3	3263.7	2745.8	228.0	5781.6
21.5	5629.8	5577.1	3263.7	2754.1	228.0	5789.8
22.0	6336.7	6135.5	3673.4	3029.9	228.0	6475.4
22.5	7043.6	6693.9	4083.2	3305.7	228.0	7160.9
23.0	7750.4	7252.4	4493.0	3581.4	228.0	7846.4
23.5	8457.3	7810.8	4902.8	3857.2	228.0	8532.0
24.0	9164.1	8369.2	5312.5	4132.9	228.0	9217.5
24.5	9871.0	8927.6	5722.3	4408.7	228.0	9903.1
25.0	10577.8	9486.0	6132.1	4684.5	228.0	10588.6
25.5	11284.7	10044.5	6541.9	4960.2	228.0	11274.1
26.0	11991.6	10602.9	6951.6	5236.0	228.0	11959.7
26.5	12698.4	10602.9	7361.4	5236.0	228.0	12369.4
27.0	13405.3	10602.9	7771.2	5236.0	228.0	12779.2
27.5	14112.1	10602.9	8180.9	5236.0	228.0	13189.0
28.0	14819.0	10602.9	8590.7	5236.0	228.0	13598.7
28.5	15525.9	10602.9	9000.5	5236.0	228.0	14008.5
29.0	16232.7	10602.9	9410.3	5236.0	228.0	14418.3
29.5	16939.6	10602.9	9820.0	5236.0	228.0	14828.1
30.0	17646.4	10602.9	10229.8	5236.0	228.0	15237.8

Comb. SLU SLV A2+M1+R3 (metodo AGI)				
L_palo	Q <sub>I-lim</sub>	Q <sub>I-calc</sub>	W'_palo	Q <sub>tot</sub>
m	kN	kN	kN	kN
0.5	19.3	10.27	13	23.5
1.0	42.4	22.60	27	49.1
1.5	69.3	36.98	40	76.7
2.0	100.1	53.41	53	106.4
2.5	134.8	71.90	66	138.2
3.0	173.3	92.44	80	172.0
3.5	215.7	115.04	93	207.8
4.0	261.9	139.69	106	245.7
4.5	312.0	166.39	119	285.7
5.0	365.9	195.15	133	327.7
5.5	423.7	225.97	146	371.8
6.0	485.3	258.84	159	417.9
6.5	550.8	293.76	172	466.1
7.0	620.1	330.73	186	516.3
7.5	693.3	369.77	199	568.6
8.0	770.3	410.85	212	622.9
8.5	851.2	453.99	225	679.3
9.0	936.0	499.18	239	737.7
9.5	1024.6	546.43	252	798.2
10.0	1117.0	595.73	265	860.8
10.5	1213.3	647.09	278	925.4
11.0	1313.4	700.50	292	992.1
11.5	1417.4	755.96	305	1060.8
12.0	1525.3	813.48	318	1131.6
12.5	1637.0	873.06	331	1204.4
13.0	1752.5	934.68	345	1279.3
13.5	1871.9	998.37	358	1356.2
14.0	1995.2	1064.10	371	1435.2
14.5	2122.3	1131.89	384	1516.2
15.0	2253.3	1201.74	398	1599.3
15.5	2388.1	1273.64	411	1684.5
16.0	2526.7	1347.59	424	1771.7
16.5	2669.2	1423.60	437	1861.0
17.0	2815.6	1501.66	451	1952.3
17.5	2965.8	1581.77	464	2045.6
18.0	3119.9	1663.94	477	2141.1
18.5	3277.8	1748.17	490	2238.6
18.5	3277.8	1748.17	490	2238.6
19.0	4216.1	2248.60	504	2752.2
19.5	4498.9	2399.39	517	2916.3
20.0	4781.6	2550.19	530	3080.3
20.5	5064.3	2700.99	543	3244.4
21.0	5347.1	2851.78	557	3408.4
21.5	5629.8	3002.58	570	3572.5
21.5	5629.8	3002.58	570	3572.5
22.0	6336.7	3379.57	583	3962.7
22.5	7043.6	3756.56	596	4353.0
23.0	7750.4	4133.55	610	4743.2
23.5	8457.3	4510.54	623	5133.5
24.0	9164.1	4887.53	636	5523.7
24.5	9871.0	5264.53	649	5914.0
25.0	10577.8	5641.52	663	6304.2
25.5	11284.7	6018.51	676	6694.4
26.0	11991.6	6395.50	689	7084.7
26.5	12698.4	6772.49	702	7474.9
27.0	13405.3	7149.48	716	7865.2
27.5	14112.1	7526.47	729	8255.4
28.0	14819.0	7903.46	742	8645.7
28.5	15525.9	8280.46	755	9035.9
29.0	16232.7	8657.45	769	9426.2
29.5	16939.6	9034.44	782	9816.4
30.0	17646.4	9411.43	795	10206.6



<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>		COMMESSA      LOTTO      CODIFICA IF3A                      02                      E ZZ CL		DOCUMENTO VI0103 003		REV. A	FOGLIO 49 di 294
<b>PROGETTO ESECUTIVO</b> RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6							

AV/AC Napoli Bari - Viadotto V101 - Pila 4  
 Capacità portante A1+M1+R3 - Palo D = 1500 mm  
 Resistenza (kN)

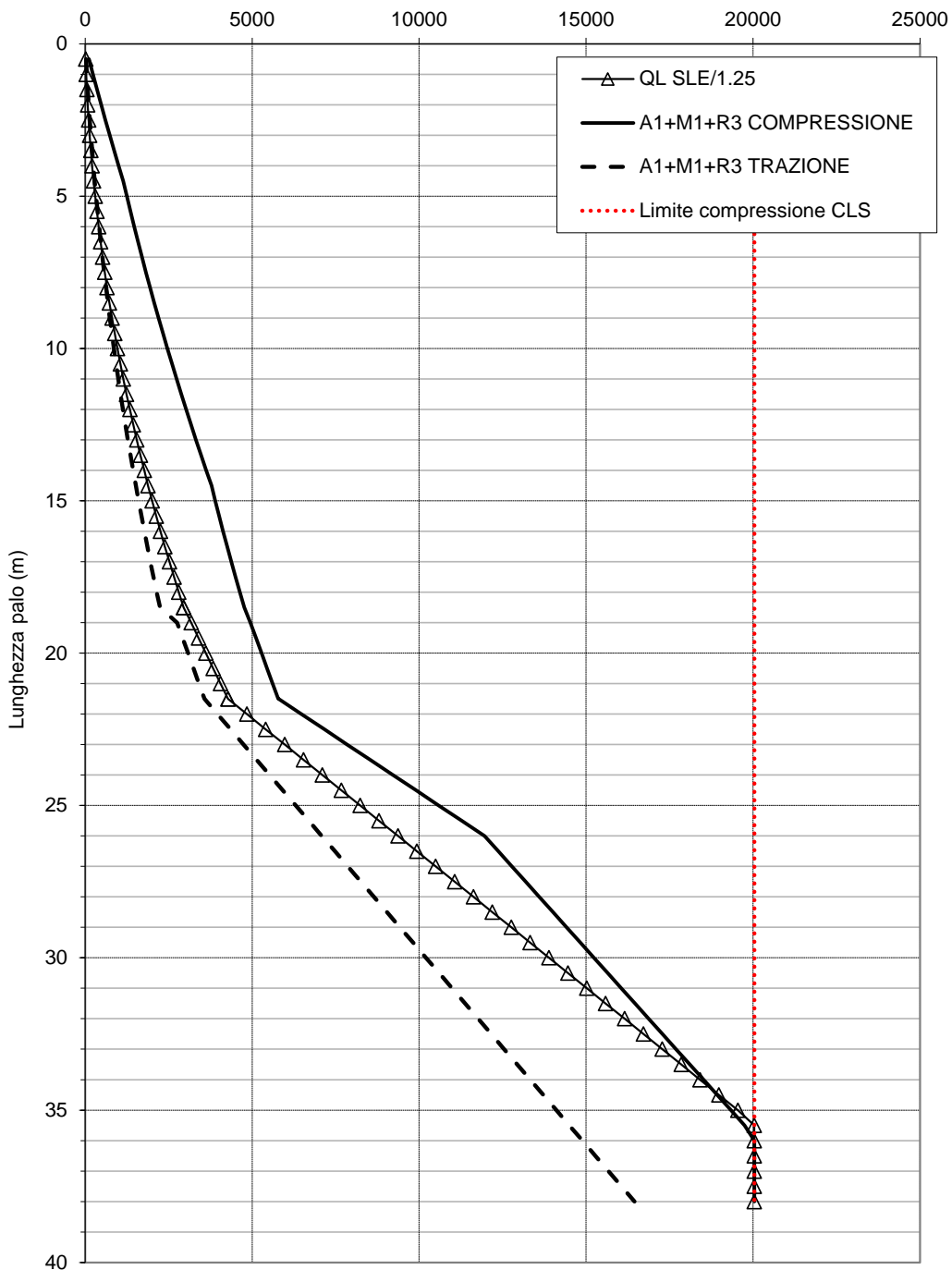


Figura 10-1: Capacità portante del palo singolo

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 50 di 294

### 10.1.2 Verifica di capacità portante orizzontale del gruppo di pali

La verifica di capacità portante orizzontale del gruppo di pali è stata condotta con i criteri basati sulla teoria di Broms, descritti in:

IF3A.0.2.E.ZZ.RP.VI.00.0.3.001.A Relazione sui criteri di calcolo delle fondazioni

Il momento di plasticizzazione viene calcolato considerando un'armatura di progetto e ponendo pari ad 1 i coefficienti di sicurezza sui materiali acciaio e calcestruzzo, come ammesso dalla normativa nell'ambito delle verifiche geotecniche dei pali caricati orizzontalmente.

Nella seguente **Figura 10-2** è illustrata la verifica svolta per il palo in oggetto.

Il taglio massimo agente è pari a  $T_{longSLV} = 1262.9$  kN.

La verifica a capacità portante orizzontale risulta soddisfatta, poiché il carico limite  $H_{lim} = 1678.1$  kN risulta superiore al valore di progetto.

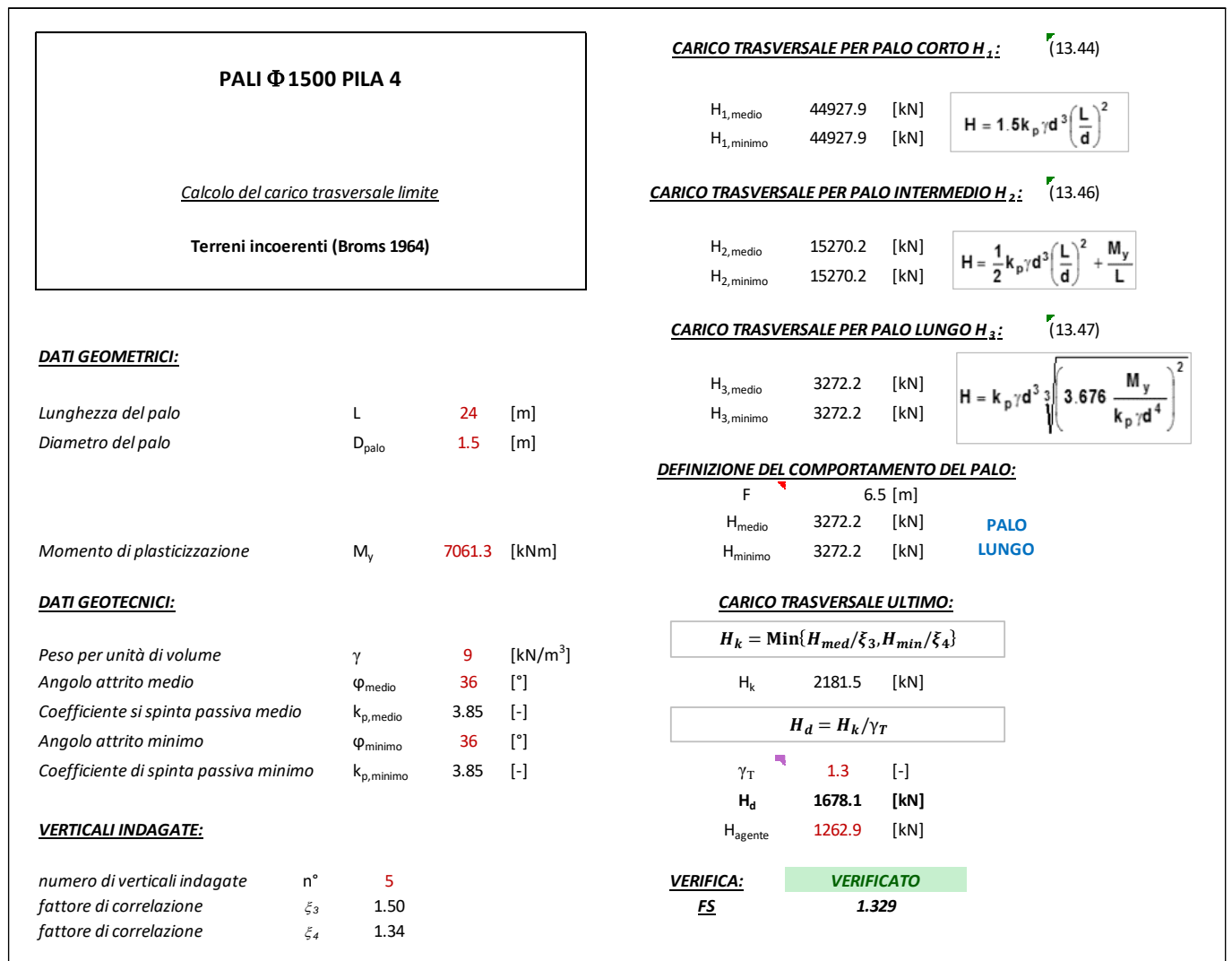


Figura 10-2: Verifica Carico Limite trasversale (Broms)

<b>APPALTATORE:</b> <u>Consortio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>																	
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%;">COMMESSA</td> <td style="width: 16.6%;">LOTTO</td> <td style="width: 16.6%;">CODIFICA</td> <td style="width: 16.6%;">DOCUMENTO</td> <td style="width: 16.6%;">REV.</td> <td style="width: 16.6%;">FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 003</td> <td>A</td> <td>51 di 294</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 003	A	51 di 294
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 003	A	51 di 294													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>																		

## 11 ANALISI DELL'INTERAZIONE FONDAZIONE-TERRENO PILA 6

L'analisi di interazione terreno-fondazione è stata sviluppata con il software GROUP della Ensoft.

Il programma considera che il comportamento di un palo soggetto ad azioni orizzontali all'interno di un gruppo differisce da quello di un palo singolo ed isolato. In un gruppo di pali caricato da azioni orizzontali i fenomeni di interazione reciproca palo – terreno – palo determinano, complessivamente, una diminuzione della rigidità del sistema.

La diversità di comportamento si manifesta mediante un differente valore dello sforzo di taglio agente in testa a ciascun palo, differenti valori di momento flettente, diversa ubicazione del valore massimo di momento al variare della profondità (nell'ipotesi in cui il vincolo in testa al palo non sia un incastro). La modalità di risposta di ciascun palo è funzione essenzialmente dalla posizione geometrica che questo occupa all'interno del gruppo. Precisamente, la risposta del singolo palo all'interno del gruppo è condizionata:

- dalla fila di appartenenza all'interno del gruppo (effetto ombra o shadowing);
- dalla posizione all'interno della singola fila (effetto di bordo).

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 52 di 294

## 11.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

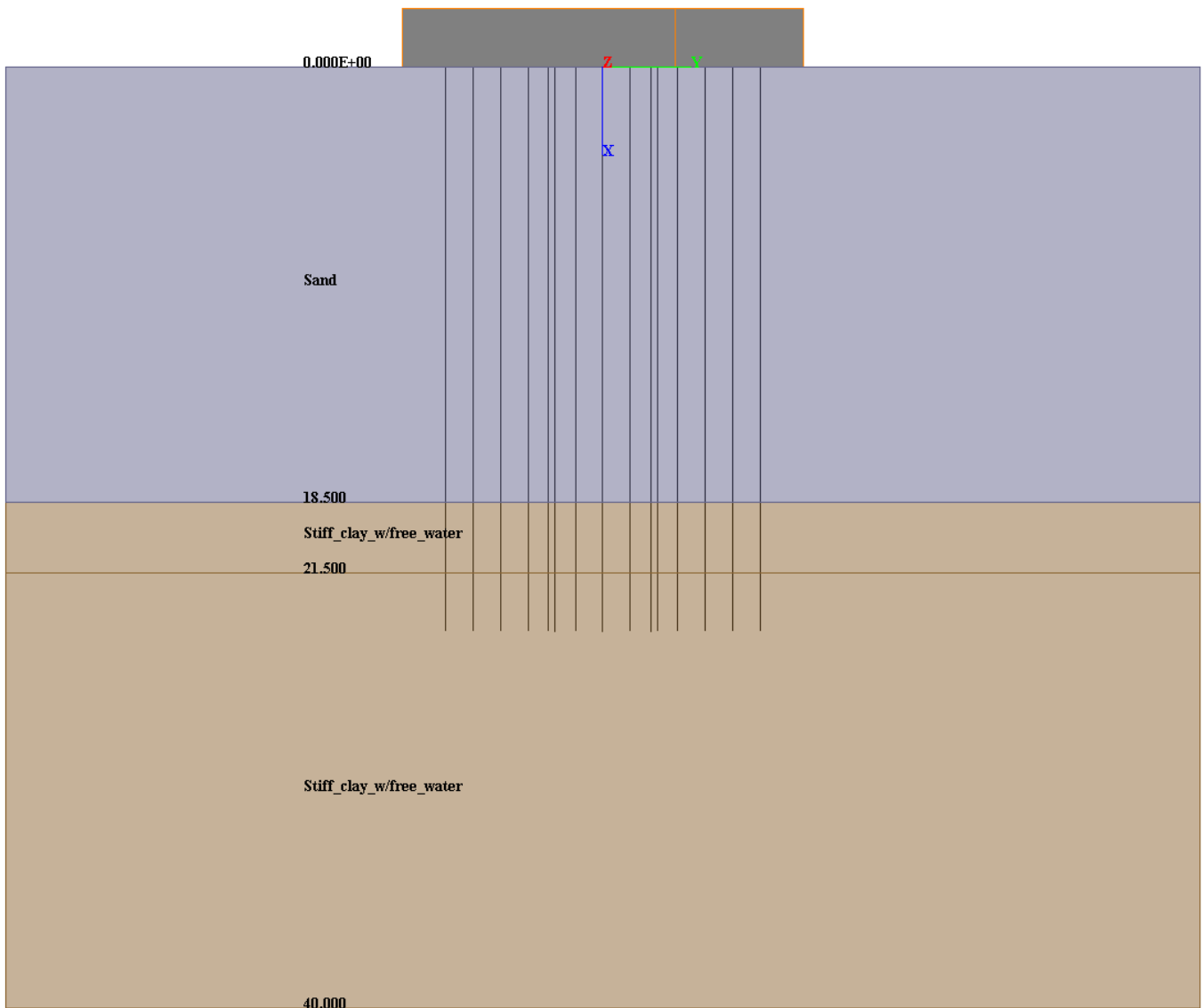


Figura 11-1: Vista frontale del modello GROUPv2016

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 53 di 294

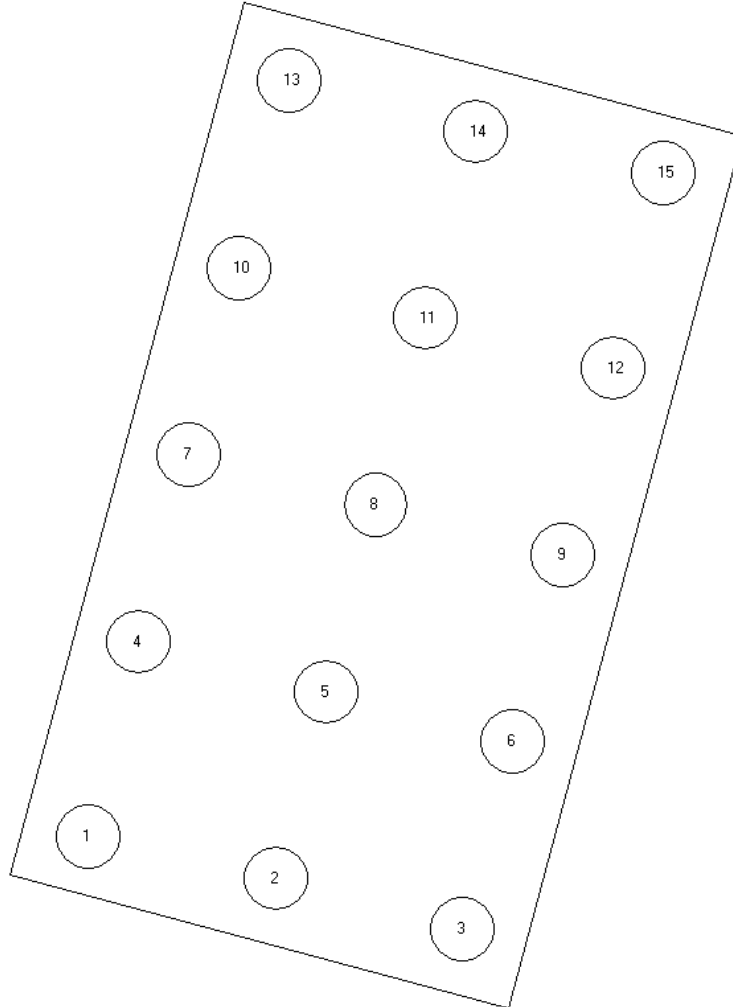


Figura 11-2: Vista in pianta del modello GROUPv2016

In accordo al § 4.2.24.1.2 nelle seguenti figure, si riporta il modello stratigrafico di calcolo e i parametri geotecnici assegnati ai singoli strati. I parametri di rigidezza del terreno sono stati assunti in accordo ai criteri illustrati nella relazione al ref. 2.1, § 8.1.1 per le “stiff clays with free water”.

Layer	Soil Type	Depth for Top of Soil Layer (m)	Depth for Bottom of Soil Layer (m)	Properties of Layer
1	Sand (Reese)	0	18.5	1: Sand (Reese, et al.)
2	Stiff Clay with Free Water (Reese)	18.5	21.5	2: Stiff Clay with Free Water
3	Stiff Clay with Free Water (Reese)	21.5	40	3: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

Figura 11-3: Modello stratigrafico GROUP V2016

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 54 di 294

**Sand (Reese, et al.) 1**

1=Top, 2=Bottom	Effective Unit Weight	Friction Angle, $\phi$	p-y Modulus, k	Ultimate Unit Side Friction	Ultimate Unit Tip Resistance
	(kN/m <sup>3</sup> )	(DEG.)	(kN/m <sup>3</sup> )	(kN/m <sup>2</sup> )	(kN/m <sup>2</sup> )
1	8	36	16200	10	428
2	9	36	16200	80.4	3500

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate value for p-y Modulus, k, if zero input value is entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

Figura 11-4: Layer no.1 (RPL1a)

**Stiff Clay with Free Water 2**

1=Top, 2=Bottom	Effective Unit Weight	Undrained Cohesion, c	p-y Modulus, k	Strain Factor E50	Ultimate Unit Side Friction	Ultimate Unit Tip Resistance
	(kN/m <sup>3</sup> )	(kN/m <sup>2</sup> )	(kN/m <sup>3</sup> )		(kN/m <sup>2</sup> )	(kN/m <sup>2</sup> )
1	8	300	100000	0.004	120	3100
2	9	300	100000	0.004	120	3100

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k, and Strain Factor E50:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate values for p-y Modulus, k, and Strain Factor E50 if zero input values are entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

Figura 11-5: Layer no.2 (FAE am)

**Stiff Clay with Free Water 3**

1=Top, 2=Bottom	Effective Unit Weight	Undrained Cohesion, c	p-y Modulus, k	Strain Factor E50	Ultimate Unit Side Friction	Ultimate Unit Tip Resistance
	(kN/m <sup>3</sup> )	(kN/m <sup>2</sup> )	(kN/m <sup>3</sup> )		(kN/m <sup>2</sup> )	(kN/m <sup>2</sup> )
1	15	400	543000	0.004	300	6000
2	15	400	543000	0.004	300	6000

A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

p-y Modulus, k, and Strain Factor E50:

- Always check recommended value in Geotechnical Investigation Reports.
- Program will help to estimate values for p-y Modulus, k, and Strain Factor E50 if zero input values are entered.

Ultimate Unit Side Friction and Ultimate Unit Tip Resistance:

- The program uses Ultimate Unit Side Friction to generate t-z curves.
- The program uses Ultimate Unit Tip Resistance to generate q-w curves.
- Always check recommended values in Geotechnical Investigation Reports.
- Program will help to estimate values for Ultimate Unit Side Friction and Ultimate Unit Tip Resistance if zero input values are entered.

Figura 11-6: Layer no.3 (FAEc)

APPALTATORE: Conorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatara Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 55 di 294

## 11.2 SINTESI DEI RISULTATI AGLI STATI LIMITE DI ESERCIZIO (SLE)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.  
Si ricorda che per le analisi allo SLE (vedasi Ref. 4.1) sono stati utilizzati per le curve p-y i coefficienti di rigidezza del terreno suggeriti dal programma per carichi ciclici.

ID Combo	SLE-RARA		
	N [kN]	M [kNm]	H [kN]
SLE-RARA_22	4939	658	239
SLE-RARA_30	2615	483	183
SLE-RARA_22	4939	658	239
SLE-RARA_22	4939	658	239

Tabella 11-1: Sollecitazioni allo SLE massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

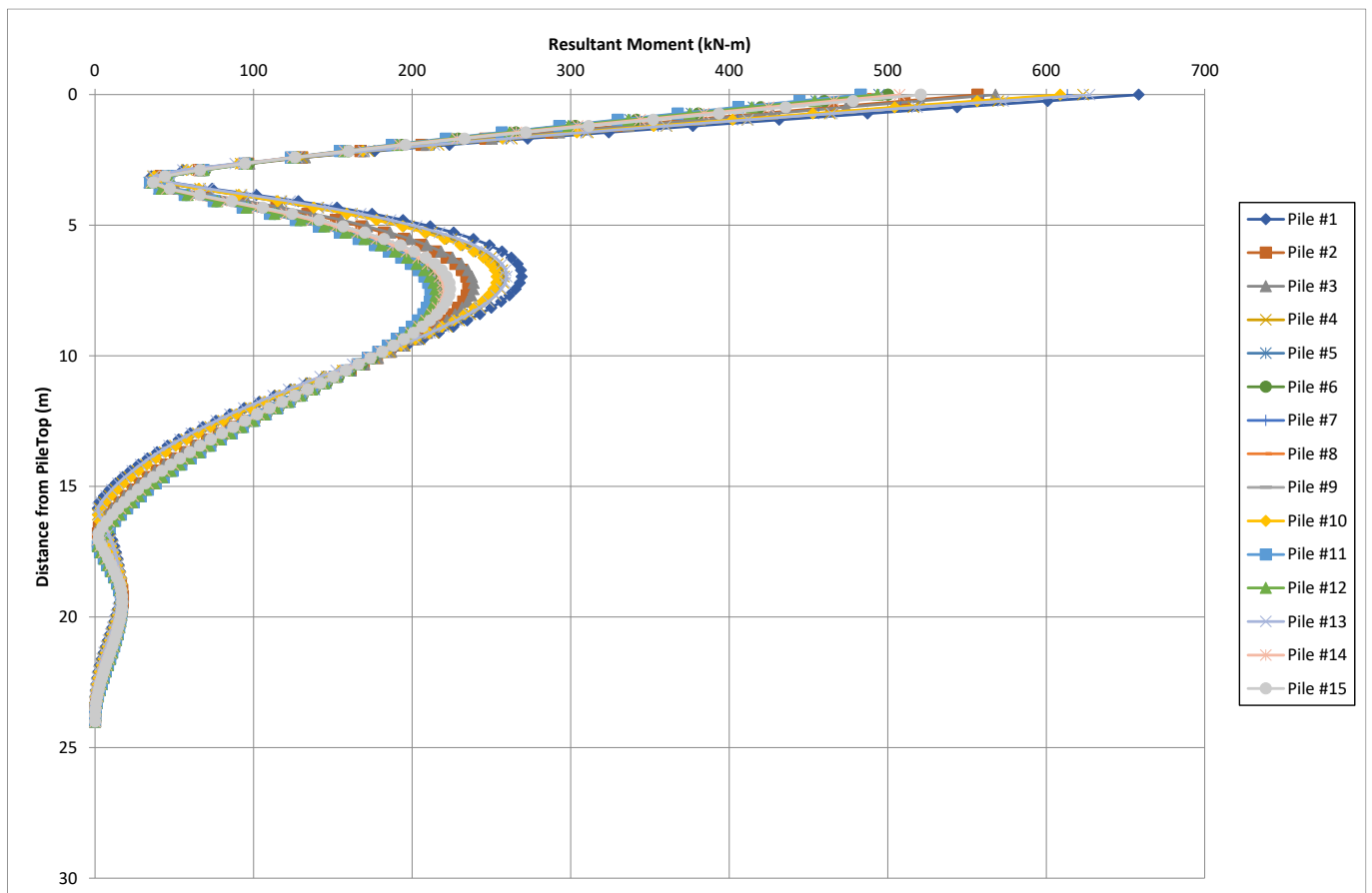


Figura 11-7: Combinazioni SLE: Andamento con la profondità del momento (combo SLE-RARA\_22 max M).

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 56 di 294

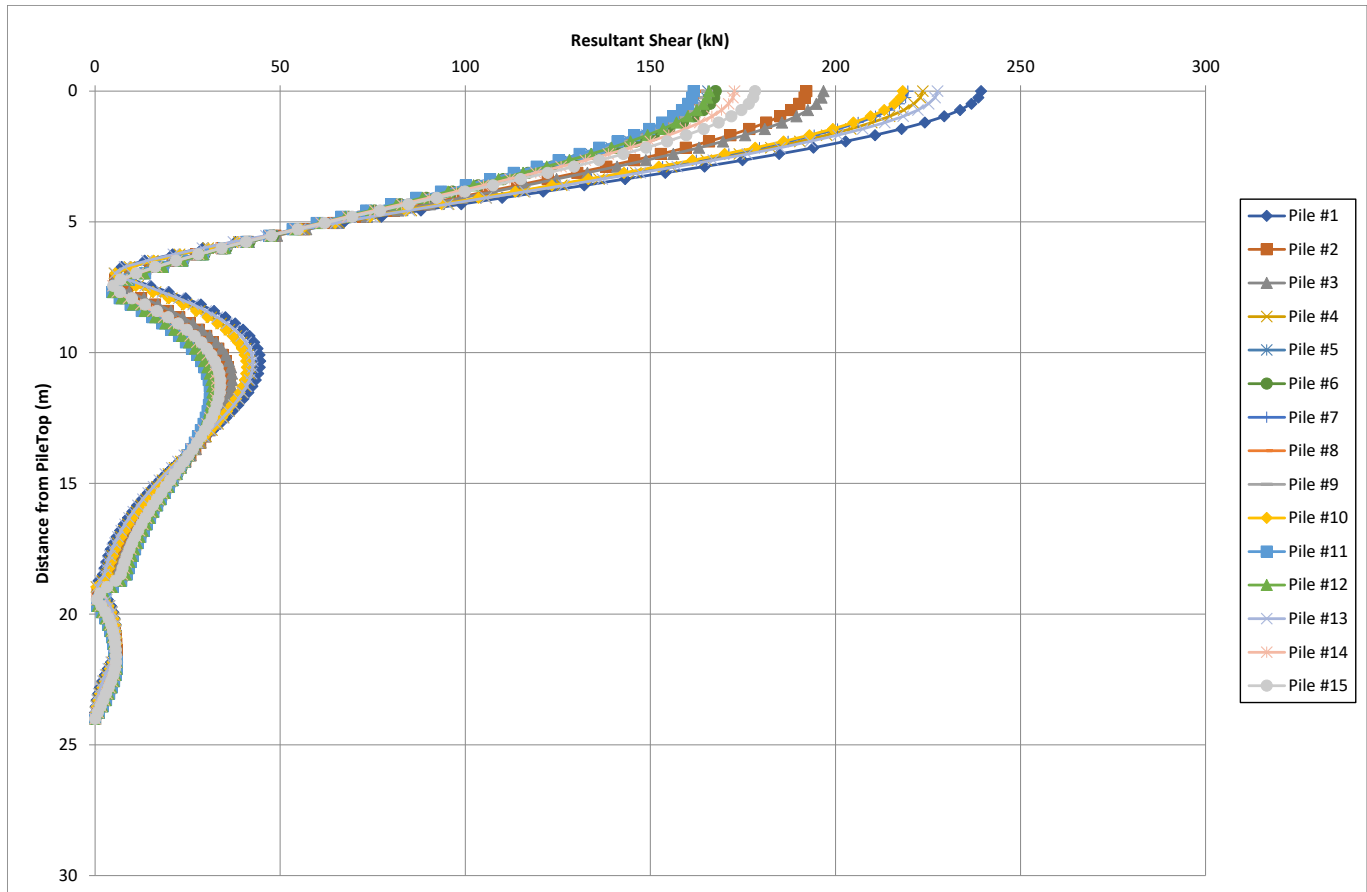


Figura 11-8: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE-RARA\_22 max M)



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 57 di 294

## 11.2.1 ANALISI DEGLI SPOSTAMENTI

Nella Tabella 11-2 si riportano gli spostamenti e le rotazioni ad intradosso plinto e sommità pila.

Gli spostamenti orizzontali (direzione y-2) e direzione z-3) tengono già conto dell'interazione fra pali e sono quindi rappresentativi degli spostamenti orizzontali del gruppo di pali; lo spostamento verticale non tiene conto dell'effetto gruppo.

Il coefficiente amplificativo del cedimento verticale per effetto gruppo  $E_G$  viene valutato in accordo a Mandolini et al. (2005) ed è riportato in Tabella 11-3.

Nell'analisi di deformabilità verticale delle fondazioni, i cedimenti differenziali "δ" fra fondazioni adiacenti, calcolati considerando agenti tutte le azioni permanenti con il loro valore caratteristico, dovranno rispettare i seguenti limite:

$$\delta \leq L_{med}/1000 \quad \text{per travi appoggiate;}$$

$$\delta \leq L_{med}/3000 \quad \text{per travi continue;}$$

dove  $L_{med}$  = luce media delle campate afferenti sulla fondazione in esame.

La spalla porta delle travi appoggiate di lunghezza  $L=40m$  e di luce  $L=38m$ ; si ottiene  $L_{med}/1000=38.0mm > 5.143mm$ , i requisiti prestazionali sono soddisfatti.

VERTICAL , M	HORIZONTAL Y, M	HORIZONTAL Z, M	ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD	Ppostamento spalla - sle			
						H spalla (m)	asse Y (mm)	asse Z (mm)	asse X (mm)
0.0020189	-0.0000991	0.0006158	-2.484E-07	2.322E-05	-1.249E-06	10.9	-0.085	0.869	4.370
0.0023548	-0.0015475	0.0003518	1.920E-06	-1.830E-06	1.077E-04	10.9	-2.722	0.332	5.097
0.0020189	0.0001752	0.0006264	9.995E-07	2.652E-05	-2.022E-05	10.9	0.396	0.915	4.370
0.0020189	0.0001341	0.0000058	1.391E-08	1.645E-06	-9.462E-06	10.9	0.237	0.024	4.370
0.0023760	0.0014495	0.0005432	-9.815E-07	3.991E-05	-1.116E-04	10.9	2.666	0.978	5.143
0.0020189	0.0001752	0.0006264	9.995E-07	2.652E-05	-2.022E-05	10.9	0.396	0.915	4.370
0.0020189	0.0001341	0.0000058	1.391E-08	1.645E-06	-9.462E-06	10.9	0.237	0.024	4.370
0.0022048	0.0004971	-0.0004404	1.814E-07	-2.372E-05	-2.525E-05	10.9	0.772	-0.699	4.772
0.0020189	0.0001752	0.0006264	9.995E-07	2.652E-05	-2.022E-05	10.9	0.396	0.915	4.370
0.0022375	0.0015860	0.0004983	-1.054E-06	3.996E-05	-1.295E-04	10.9	2.997	0.934	4.843

$\delta_{max}(mm)$  5.143

Tabella 11-2: Combinazioni SLE: spostamenti e rotazioni ad intradosso plinto.

### DATI FONDAZIONE

Larghezza plinto	19.5	m
Profondità plinto	10.5	m
Diametro palo	1.5	m
Lunghezza palo	24	m
interasse palo	4.5	m
numero pali	15	-
Coefficiente R	1.68	-
Coefficiente RG	0.14	-
Coeff. amplificazione cedimento del gruppo EG	2.16	-

Tabella 11-3: Coefficiente amplificativo del cedimento verticale per effetto gruppo.

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 58 di 294

### 11.3 SINTESI DEI RISULTATI AGLI STATI LIMITE ULTIMI STATICI (SLU)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.

ID Combo	STR		
	N	M	H
	[kN]	[kNm]	[kN]
SLU-STR_2	6978	924	349
SLU-STR_6	2617	374	118
SLU-STR_2	6978	924	349
SLU-STR_2	6978	924	349

Tabella 11-4: Sollecitazioni allo SLU massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

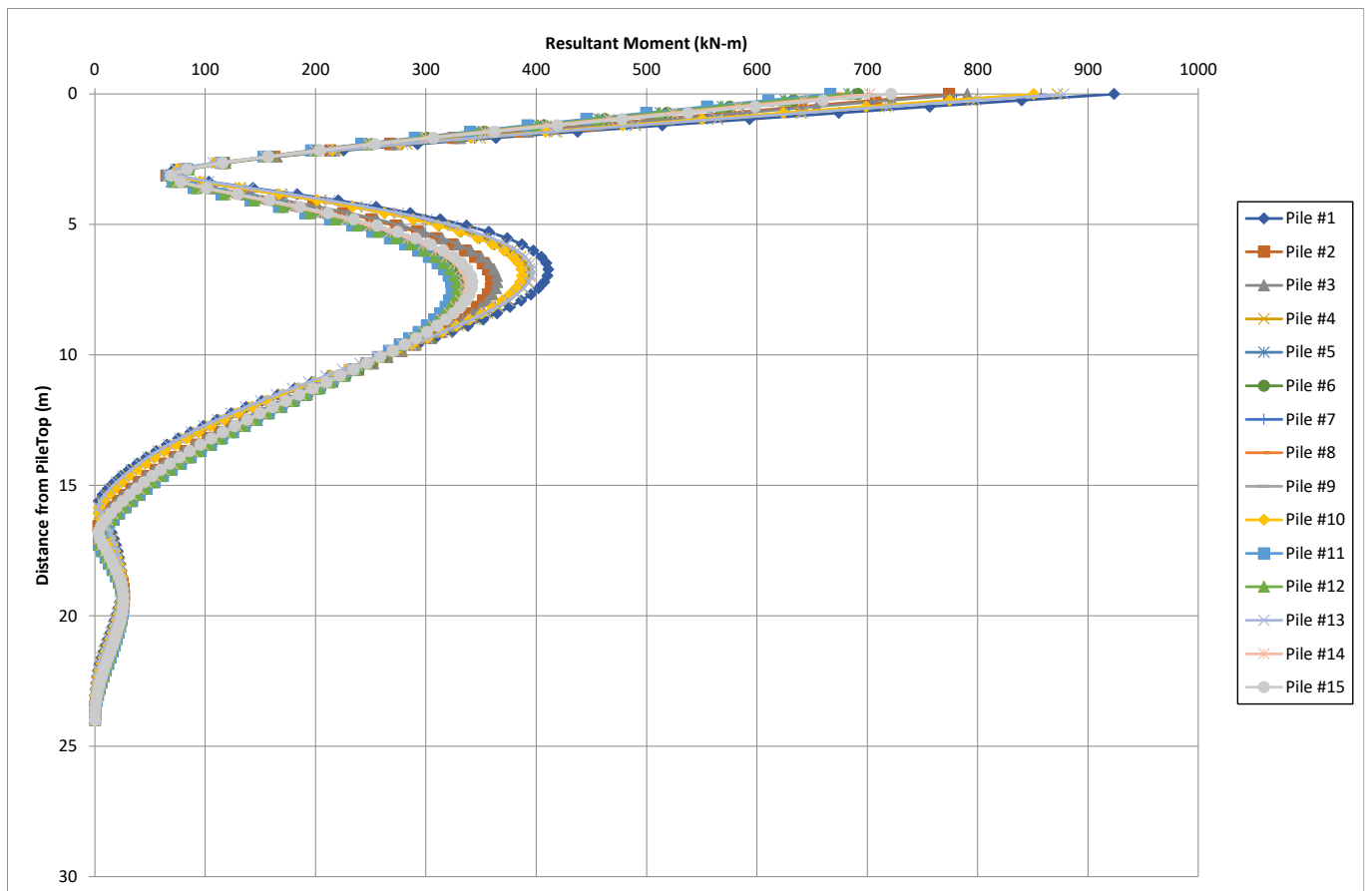


Figura 11-9: Combinazioni statica SLU: Andamento con la profondità del momento (combo SLU-STR\_2 max M).

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 59 di 294

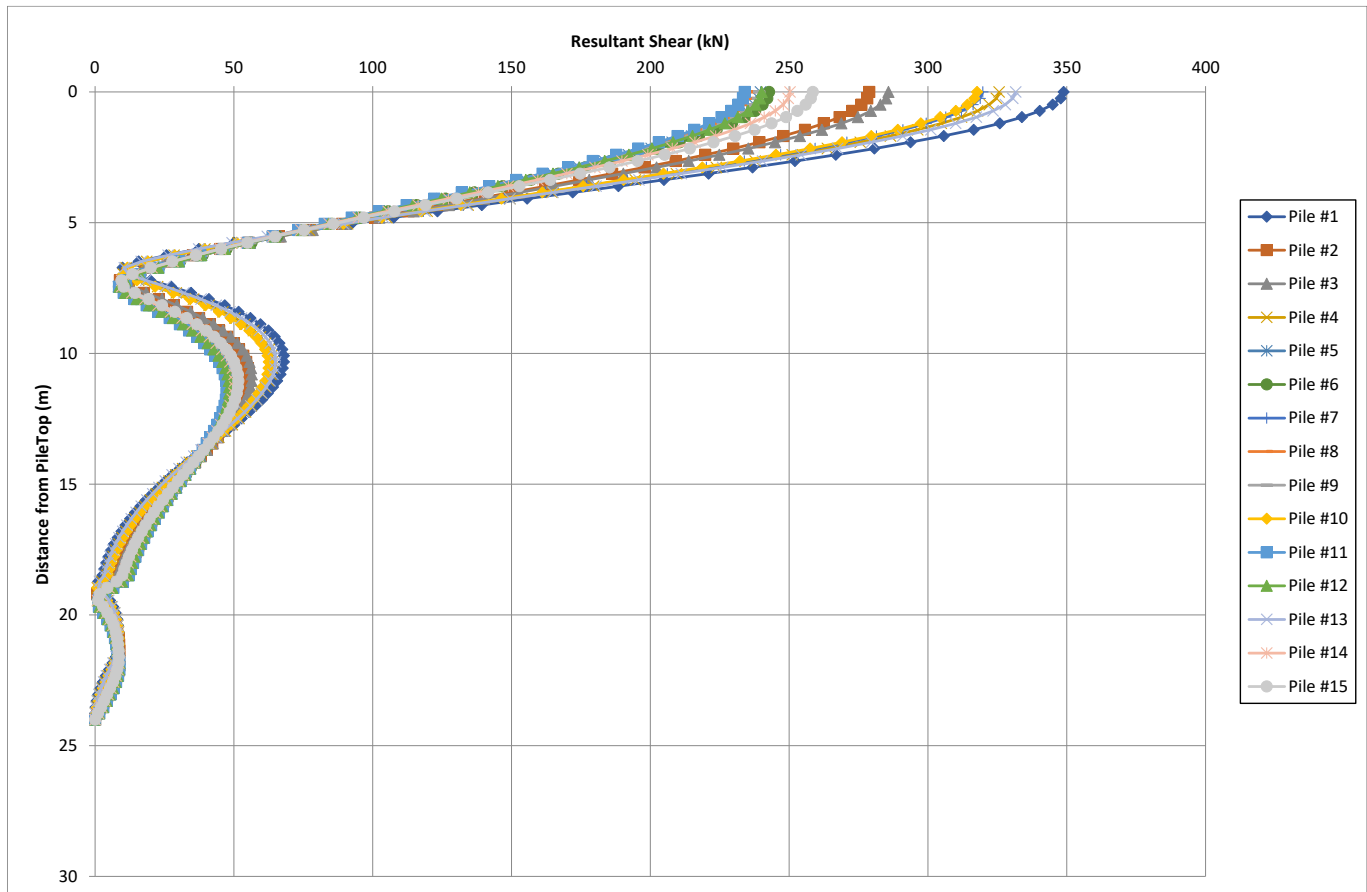


Figura 11-10: Combinazioni statica SLU: Andamento con la profondità del taglio (combo SLU-STR\_2 max M).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 60 di 294

## 11.4 SINTESI DEI RISULTATI AGLI STATI LIMITE ULTIMI SISMICI (SLV)

Si riassumono nel seguito le sollecitazioni massime di sforzo assiale, taglio e momento, agenti in testa ai pali.

ID Combo	SLV (q=1.36)		
	N [kN]	M [kNm]	H [kN]
SLV-SISMA_12	7896	3437	1220
SLV-SISMA_12	-2603	2827	941
SLV-SISMA_12	5593	3581	1244
SLV-SISMA_20	7457	3523	1268

Tabella 11-5: Sollecitazioni allo SLV massime e minime per i pali di fondazione

Nelle seguenti figure sono diagrammati l'andamento con la profondità del momento flettente e del taglio relativi alle combinazioni in cui tali sollecitazioni risultano massime.

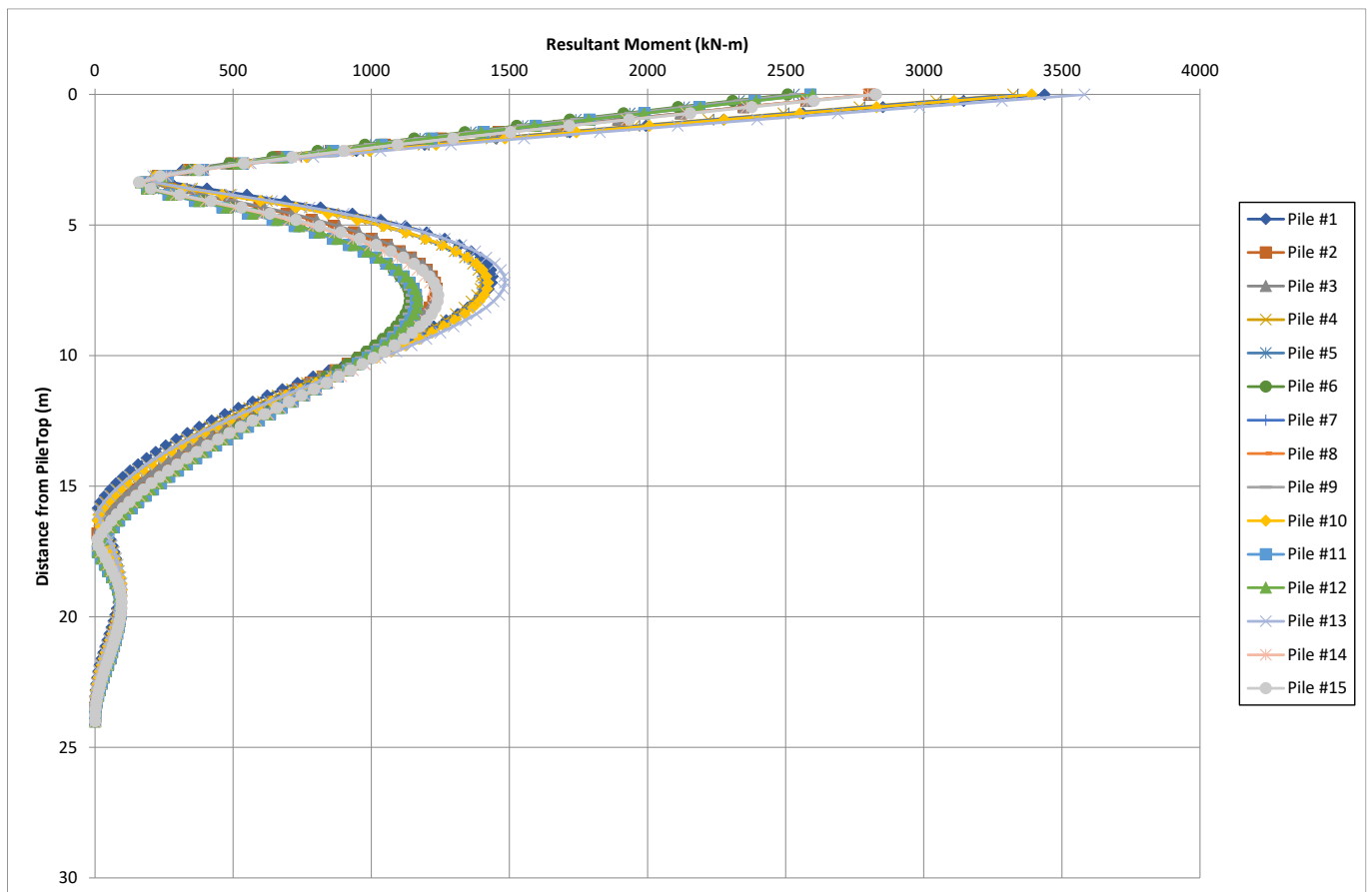


Figura 11-11: Combinazioni sismica SLV: Andamento con la profondità del momento (combo SLV-SISMA\_12 max M).

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 61 di 294

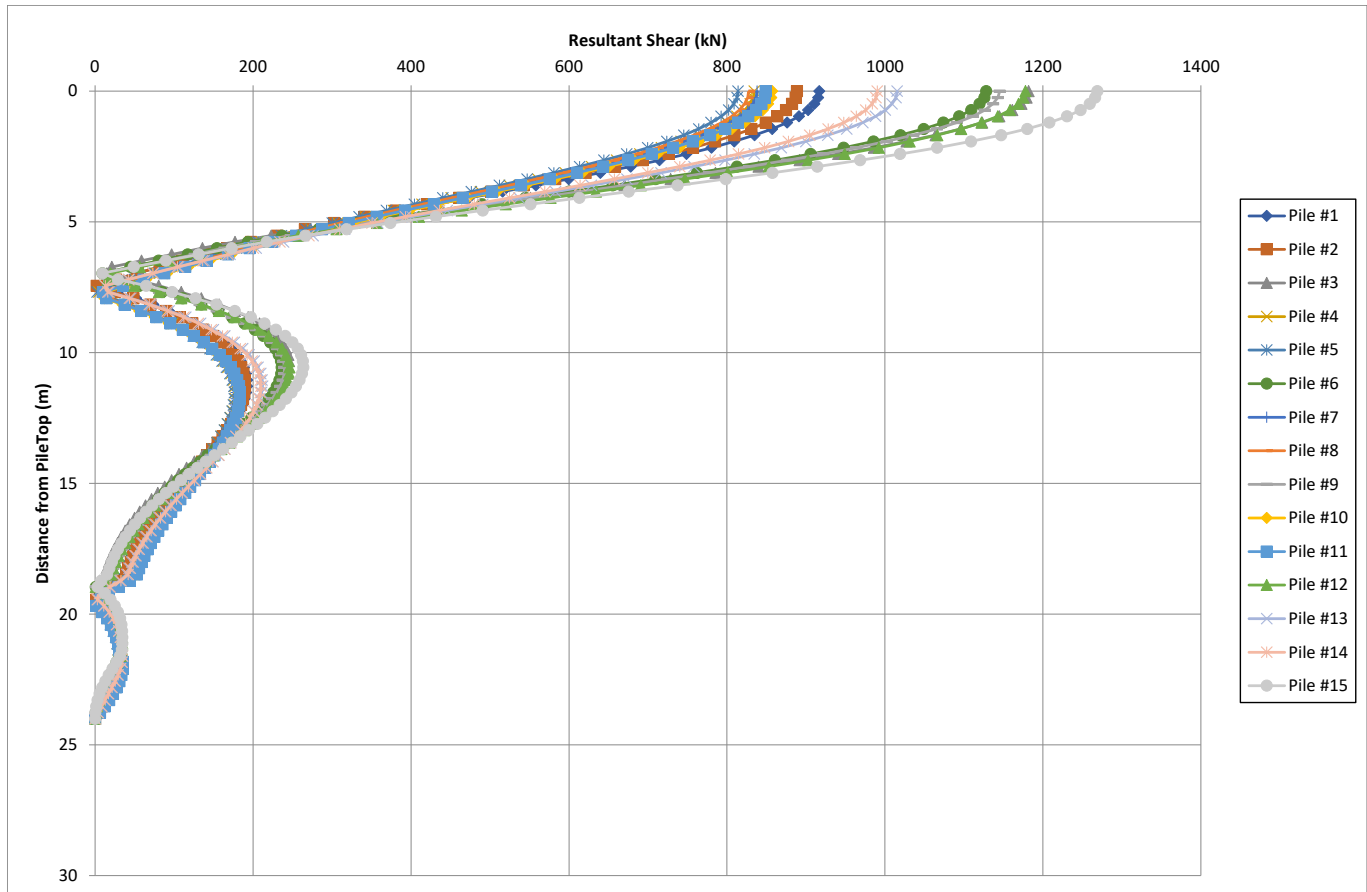


Figura 11-12: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo SLV-SISMA\_20 max H).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 62 di 294

## 12 VERIFICA DEI PALI DI FONDAZIONE PILA 6

Nel seguito di riportano le verifiche strutturali dei pali di fondazione.

Le sollecitazioni massime agenti sul palo, selezionate nei paragrafi precedenti, sono riassunte nella **Tabella 12-1**.

	SLV (q=1.36)		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLV-SISMA_12	7896	3437	1220
SLV-SISMA_12	-2603	2827	941
SLV-SISMA_12	5593	3581	1244
SLV-SISMA_20	7457	3523	1268
	SLE-RARA		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLE-RARA_22	4939	658	239
SLE-RARA_30	2615	483	183
SLE-RARA_22	4939	658	239
SLE-RARA_22	4939	658	239

**Tabella 12-1: Sollecitazioni massime agenti nel palo**

Nel seguito si riportano le verifiche strutturali del palo trivellato di diametro  $\varnothing = 1500\text{mm}$  in cls – C25/30 e lunghezza L24m. Per le verifiche si considerano le sollecitazioni risultanti. Sono risultate più severe le verifiche in presenza di trazione.

In riferimento all'andamento dei momenti lungo il fusto del palo, sono state previste n. 3 ordini di armature principali:

4. L'armatura massima:

- ferri correnti: corona esterna n.24  $\varnothing 30$ ;
- ferri correnti: corona interna n.24  $\varnothing 30$ ;
- staffatura: spirale  $\varnothing 14$  passo 10.

5. L'armatura media:

- ferri correnti: corona esterna n.24  $\varnothing 30$ ;
- staffatura: spirale  $\varnothing 14$  passo 20.

6. L'armatura minima:

- ferri correnti: corona esterna n.24  $\varnothing 22$ ;
- staffatura: spirale  $\varnothing 14$  passo 20.

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 63 di 294

Le verifiche strutturali del palo sono soddisfatte; di seguito le schede di calcolo.

geometria					sollecitazioni e risultati				
sezione trasversale					SLE		SLU		
D	c	d	passo	interferro	M <sub>Ek</sub>	658.3 [kNm]	M <sub>Ed</sub>	2826.8 [kNm]	
[cm]	[cm]	[cm]	[cm]	[cm]	N <sub>Ek</sub>	-2615.4 [kN]	N <sub>Ed</sub>	2602.5 [kN]	
150	6.0	141.1	17.3	14.3	<b>momento di cracking</b>		V <sub>Ed</sub>	1268.3 [kN]	
armatura longitudinale					M <sub>cr</sub>	1534.8 [kNm]	presso-flessione		
nbarre	φ	r <sub>i</sub>	A <sub>sl</sub>	C <sub>i</sub>	<b>quota asse neutro</b>		M <sub>Rd</sub>	5779.2 [kNm]	
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]	y <sub>n</sub>	135.38 [cm]	FS	2.04	
24	30	66.1	169.65	8.90	<b>tensioni e fessure</b>		<b>taglio</b>		
24	30	60.60	169.65	14.40	σ <sub>c,min</sub>	-2.6 [MPa]	V <sub>Rdc</sub>	370.1 [kN]	
					σ <sub>s,min</sub>	-36.0 [MPa]	predisporre armatura a taglio		
					σ <sub>s,max</sub>	1.6 [MPa]			
armatura a taglio							V <sub>Rds</sub>	1926.5 [kN]	
Tipo	φ	ρ	A <sub>sw</sub>		k <sub>2</sub>	0.5	V <sub>Rdmax</sub>	4480.7 [kN]	
	[mm]	[cm]	[cm <sup>2</sup> ]		ε <sub>sm</sub> -ε <sub>cm</sub>	- [%o]	θ	30.0 [°]	
spirale	14	10	3.08		S <sub>r,max</sub>	- [cm]	sezione duttile		
					w <sub>k</sub>	- [mm]	ai	92.1 [cm]	
materiali					legenda				
calcestruzzo			acciaio						
R <sub>ck</sub>	30 [MPa]	f <sub>yk</sub>	450 [MPa]						
f <sub>ck</sub>	24.9 [MPa]	γ <sub>s</sub>	1.15						
γ <sub>c</sub>	1.5	f <sub>yd</sub>	391.3 [MPa]						
α <sub>cc</sub>	0.85	E <sub>s</sub>	200000 [MPa]						
f <sub>cd</sub>	14.1 [MPa]	ε <sub>uk</sub>	75 [%o]						
v	0.5	<b>valori limite</b>							
ε <sub>c2</sub>	2.0 [%o]	0.55	13.7 [MPa]						
ε <sub>cu2</sub>	3.5 [%o]	0.75	337.5 [MPa]						
α <sub>e</sub>	15.0	w <sub>k,lim</sub>	0.2 [mm]						
k <sub>t</sub>	0.6								
k <sub>1</sub>	0.8								
k <sub>3</sub>	3.4								
k <sub>4</sub>	0.425								

Tabella 12-2: Verifica del palo D=1500mm; armatura massima

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 64 di 294

## 12.1 Schemi armatura e incidenza del palo

La Tabella 12-3 riporta l'incidenza di armatura valutata con una percentuale di incremento dovuta a ganci di sollevamento, armature di confezionamento, legatura, ecc.; si considera una incidenza di progetto pari a 150kg/m<sup>3</sup>.

Incidenze acciaio								
P6 - Pali $\Phi$ 1500 L=24m								
Volume calcestruzzo				incidenza				
d	1.5 m			kg acciaio	6269.08 kg			
A	1.77 m			Vcls	42.41 m <sup>3</sup>			
L	24 m			incidenza di calcolo		147.82 kg/m <sup>3</sup>		
V	42.41 m <sup>3</sup>			incidenza di progetto		150.00 kg/m <sup>3</sup>		
Armature longitudinali								
	parti	n	$\phi$	L	Area	peso	incidenza	
long	1	48	30	12	339.29	3196.13	75.36	
	1	24	30	12	169.65	1598.07	37.68	
	1	24	22	7.6	91.23	544.29	12.83	
					0.00	0.00	0.00	
					0.00	0.00	0.00	
					0.00	0.00	0.00	
TOTALE						5338.49	125.87	
Staffe								
	parti	n	$\phi$	L	Area	peso	incidenza	
8	1	80	14	4.29	123.15	414.73	9.78	
17.6	1	88	14	4.29	135.47	456.20	10.76	
	1	1	16	4.29	2.01	6.77	0.16	
	1	5	20	4.29	15.71	52.90	1.25	
TOTALE						930.60	21.94	
Schema riassuntivo								
	kg acc	Vcls	i	n	kg acc	Vcls		
P6 - Pali F1500 L=24m	6269.08	42.41	147.82	2	12538.17	84.82		

Tabella 12-3 Incidenza armatura



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 65 di 294

## 13 VERIFICHE ALLO SLU DI TIPO GEOTECNICO PILA 6

### 13.1 VERIFICA DI CAPACITÀ PORTANTE DEL PALO SINGOLO

La verifica di capacità portante verticale per il singolo palo è stata condotta in accordo ai criteri esposti in:

IF3A.0.2.E.ZZ.RP.VI.00.0.3.001.A Relazione sui criteri di calcolo delle fondazioni

Di seguito si riporta, per i pali di fondazione di lunghezza  $L = 23$  m, la capacità portante a compressione ( $R_{c,d}$ ) e a trazione ( $R_{t,d}$ ), secondo l'approccio 2 ( $A1+M1+R3$ ).

I carichi assiali massimi agenti sui pali sono riassunti nella seguente tabella:

Massima compressione, $N_{dc}$ , max [kN]	7895.6 (SLV)
Massima trazione, $N_{dt}$ , max [kN]	-2602.5 (SLV)

Tabella 13-1: Combinazione SLU e SLV: Sollecitazioni massime di compressione e trazione

Si verifica inoltre che lo sforzo assiale massimo in esercizio sia inferiore della resistenza laterale di calcolo ( $R_{c,s,k}$ ) divisa per un fattore pari a 1.25.

Massima compressione, $N_{dcSLE}$ , max [kN]	4938.9 (SLE)
--	--------------

Tabella 13-2: Combinazione SLE: Sollecitazione massima di compressione

#### 13.1.1 Capacità portante verticale del palo singolo

Stratigrafia e parametri geotecnici

Dati di input		
Diametro Palo	1.5	m
Sovraccarico efficace	22.5	kPa
HW da testa palo	0	m
$\gamma$ acqua	10.0	kN/m <sup>3</sup>
$\Delta z$ palo da p.c. originario	2.5	m
N° diametri per qb	3.0	(-)
L palo fuori terra	0.0	(m)
Peso calcestruzzo	25.0	kN/m <sup>3</sup>
Pressione max sul cls.	11.3	MPa

Caratteristiche del terreno													
Profondità (m)		Strato	Terreno	$\gamma_{tot}$	Nspt		$c_u$ (kPa)		$\Delta z$	$\phi^\circ$		Nq	
da	a	No.	(S,SL,G,A)	kN/m <sup>3</sup>	da	a	da	a	(m)	da	a	da	a
0.0	18.5	1	S	19.0					0.50	36	36	19	19
18.5	21.5	2	A	19.0			300	300	0.50				
21.5	40.0	3	G	25.0					0.50				

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV    WEBUILD ITALIA    PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 66 di 294

Verticali di indagine	$\xi_3$	$\xi_4$
<b>5</b>	1.50	1.34

Scelta di $\xi$	$\xi$
<b>3</b>	1.5

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 67 di 294

Combinazione SLE						
L palo	$\tau_s$ calcolo	Q <sub>ub</sub> calcolo	R <sub>c,s,k</sub>	R <sub>c,b,k</sub>	$\Delta W$ palo	Q <sub>c,s,k/1.25</sub>
m	kPa	kPa	kN	kN	kN	kN
0.5	9.8	124	23.1	218.2	5.3	13.2
1.0	11.8	247	50.8	436.5	10.6	30.1
1.5	13.7	371	83.2	654.7	15.9	50.7
2.0	15.7	494	120.2	873.0	21.2	74.9
2.5	17.7	618	161.8	1091.2	26.5	102.9
3.0	19.6	741	208.0	1309.5	31.8	134.6
3.5	21.6	865	258.8	1527.7	37.1	170.0
4.0	23.5	988	314.3	1745.9	42.4	209.0
4.5	25.5	1112	374.4	1964.2	47.7	251.8
5.0	27.5	1197	439.1	2115.3	53.0	298.3
5.5	29.4	1283	508.4	2266.4	58.3	348.4
6.0	31.4	1368	582.4	2417.5	63.6	402.3
6.5	33.3	1454	661.0	2568.5	68.9	459.8
7.0	35.3	1539	744.2	2719.6	74.2	521.1
7.5	37.3	1625	832.0	2870.7	79.5	586.1
8.0	39.2	1710	924.4	3021.8	84.8	654.7
8.5	41.2	1796	1021.5	3172.9	90.1	727.1
9.0	43.2	1881	1123.2	3324.0	95.4	803.1
9.5	45.1	1967	1229.5	3475.1	100.7	882.8
10.0	47.1	2052	1340.4	3626.2	106.0	966.3
10.5	49.0	2138	1456.0	3777.3	111.3	1053.4
11.0	51.0	2223	1576.1	3928.4	116.6	1144.3
11.5	53.0	2309	1700.9	4079.5	121.9	1238.8
12.0	54.9	2394	1830.3	4230.5	127.2	1337.0
12.5	56.9	2480	1964.4	4381.6	132.5	1439.0
13.0	58.8	2565	2103.0	4532.7	137.8	1544.6
13.5	60.8	2651	2246.3	4683.8	143.1	1653.9
14.0	62.8	2736	2394.2	4834.9	148.4	1766.9
14.5	64.7	2822	2546.8	4986.0	153.7	1883.7
15.0	66.7	2852	2703.9	5040.5	159.0	2004.1
15.5	68.7	2883	2865.7	5095.0	164.3	2128.2
16.0	70.6	2914	3032.1	5149.5	169.6	2256.0
16.5	72.6	2945	3203.1	5204.0	174.9	2387.5
17.0	74.5	2976	3378.7	5258.4	180.2	2522.7
17.5	76.5	3007	3559.0	5312.9	185.6	2661.6
18.0	78.5	3037	3743.9	5367.4	190.9	2804.2
18.5	80.4	3068	3933.4	5421.9	196.2	2950.5
18.5	82.4	3068	3933.4	5421.9	196.2	2950.5
19.0	120.0	3099	4216.1	5476.4	201.5	3171.4
19.5	120.0	3109	4498.9	5493.2	206.8	3392.3
20.0	120.0	3118	4781.6	5510.0	212.1	3613.2
20.5	120.0	3128	5064.3	5526.7	217.4	3834.1
21.0	120.0	3137	5347.1	5543.5	222.7	4055.0
21.5	120.0	3147	5629.8	5560.3	228.0	4275.9
21.5	120.0	3156	5629.8	5577.1	228.0	4275.9
22.0	300.0	3472	6336.7	6135.5	228.0	4841.4
22.5	300.0	3788	7043.6	6693.9	228.0	5406.9
23.0	300.0	4104	7750.4	7252.4	228.0	5972.4
23.5	300.0	4420	8457.3	7810.8	228.0	6537.9
24.0	300.0	4736	9164.1	8369.2	228.0	7103.3
24.5	300.0	5052	9871.0	8927.6	228.0	7668.8
25.0	300.0	5368	10577.8	9486.0	228.0	8234.3
25.5	300.0	5684	11284.7	10044.5	228.0	8799.8
26.0	300.0	6000	11991.6	10602.9	228.0	9365.3
26.5	300.0	6000	12698.4	10602.9	228.0	9930.8
27.0	300.0	6000	13405.3	10602.9	228.0	10496.3
27.5	300.0	6000	14112.1	10602.9	228.0	11061.7
28.0	300.0	6000	14819.0	10602.9	228.0	11627.2
28.5	300.0	6000	15525.9	10602.9	228.0	12192.7
29.0	300.0	6000	16232.7	10602.9	228.0	12758.2
29.5	300.0	6000	16939.6	10602.9	228.0	13323.7
30.0	300.0	6000	17646.4	10602.9	228.0	13889.2

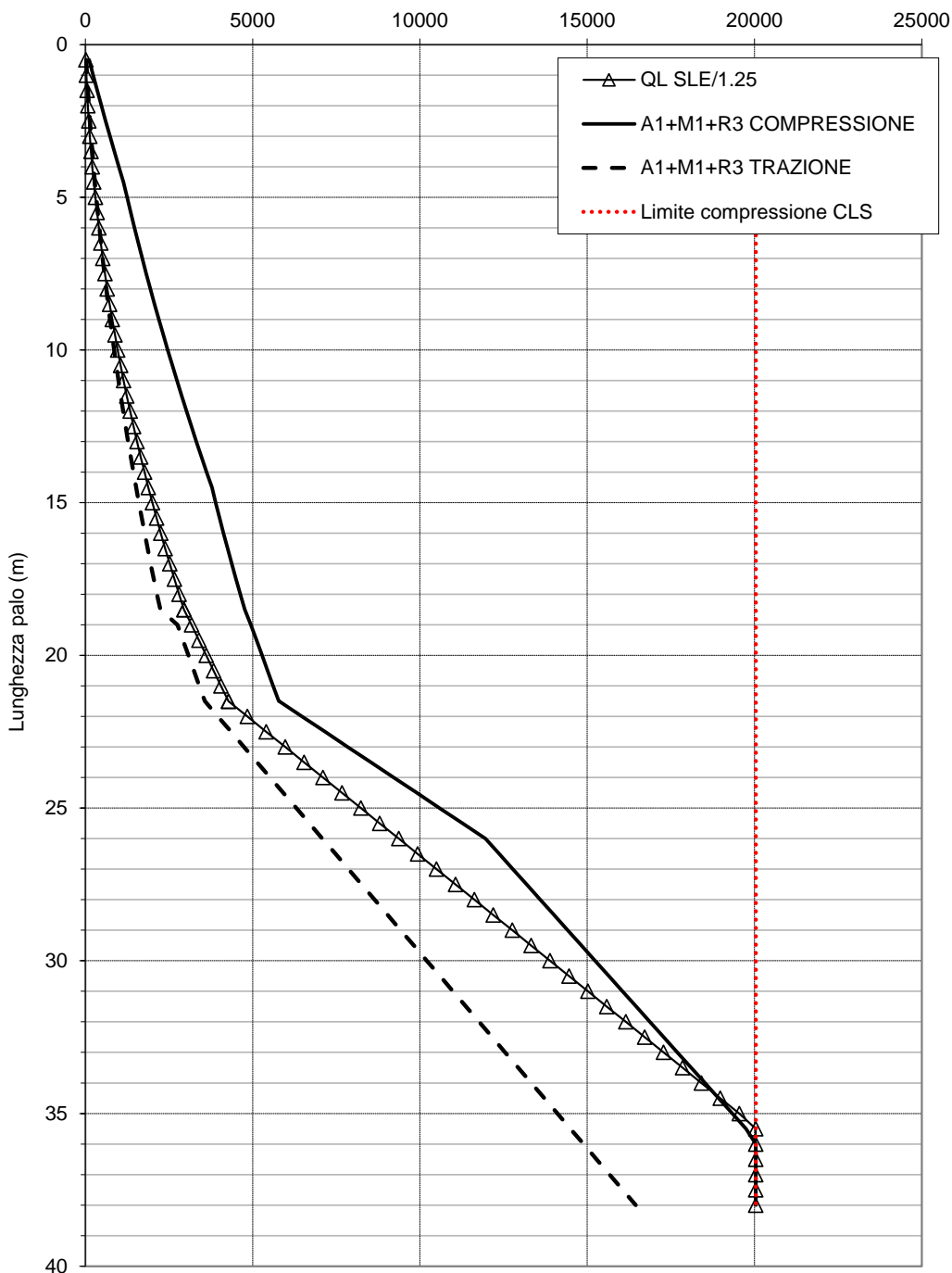
APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 68 di 294

Combinazione SLU A1+M1+R1 (metodo AGI)						
L palo	Q I-him	Q b-him	Q I-calc	Q b-calc	ΔW palo	Q <sub>tot</sub>
m	kN	kN	kN	kN	kN	kN
0.5	23.1	218.2	13.4	107.8	5.3	115.9
1.0	50.8	436.5	29.5	215.5	10.6	234.4
1.5	83.2	654.7	48.2	323.3	15.9	355.6
2.0	120.2	873.0	69.7	431.1	21.2	479.6
2.5	161.8	1091.2	93.8	538.9	26.5	606.1
3.0	208.0	1309.5	120.6	646.6	31.8	735.4
3.5	258.8	1527.7	150.0	754.4	37.1	867.4
4.0	314.3	1745.9	182.2	862.2	42.4	1002.0
4.5	374.4	1964.2	217.0	970.0	47.7	1139.3
5.0	439.1	2115.3	254.5	1044.6	53.0	1246.1
5.5	508.4	2266.4	294.7	1119.2	58.3	1355.6
6.0	582.4	2417.5	337.6	1193.8	63.6	1467.8
6.5	661.0	2568.5	383.2	1268.4	68.9	1582.7
7.0	744.2	2719.6	431.4	1343.0	74.2	1700.2
7.5	832.0	2870.7	482.3	1417.6	79.5	1820.4
8.0	924.4	3021.8	535.9	1492.3	84.8	1943.3
8.5	1021.5	3172.9	592.2	1566.9	90.1	2068.9
9.0	1123.2	3324.0	651.1	1641.5	95.4	2197.2
9.5	1229.5	3475.1	712.7	1716.1	100.7	2328.1
10.0	1340.4	3626.2	777.0	1790.7	106.0	2461.7
10.5	1456.0	3777.3	844.0	1865.3	111.3	2598.0
11.0	1576.1	3928.4	913.7	1939.9	116.6	2737.0
11.5	1700.9	4079.5	986.0	2014.5	121.9	2878.7
12.0	1830.3	4230.5	1061.1	2089.2	127.2	3023.0
12.5	1964.4	4381.6	1138.8	2163.8	132.5	3170.0
13.0	2103.0	4532.7	1219.2	2238.4	137.8	3319.7
13.5	2246.3	4683.8	1302.2	2313.0	143.1	3472.1
14.0	2394.2	4834.9	1388.0	2387.6	148.4	3627.1
14.5	2546.8	4986.0	1476.4	2462.2	153.7	3784.9
15.0	2703.9	5040.5	1567.5	2489.1	159.0	3897.6
15.5	2865.7	5095.0	1661.3	2516.0	164.3	4013.0
16.0	3032.1	5149.5	1757.7	2542.9	169.6	4131.0
16.5	3203.1	5204.0	1856.9	2569.9	174.9	4251.8
17.0	3378.7	5258.4	1958.7	2596.8	180.2	4375.2
17.5	3559.0	5312.9	2063.2	2623.7	185.6	4501.3
18.0	3743.9	5367.4	2170.4	2650.6	190.9	4630.1
18.5	3933.4	5421.9	2280.2	2677.5	196.2	4761.5
18.5	3933.4	5421.9	2280.2	2677.5	196.2	4761.5
19.0	4216.1	5476.4	2444.1	2704.4	201.5	4947.1
19.5	4498.9	5493.2	2608.0	2712.7	206.8	5114.0
20.0	4781.6	5510.0	2771.9	2721.0	212.1	5280.9
20.5	5064.3	5526.7	2935.9	2729.3	217.4	5447.8
21.0	5347.1	5543.5	3099.8	2737.5	222.7	5614.7
21.5	5629.8	5560.3	3263.7	2745.8	228.0	5781.6
21.5	5629.8	5577.1	3263.7	2754.1	228.0	5789.8
22.0	6336.7	6135.5	3673.4	3029.9	228.0	6475.4
22.5	7043.6	6693.9	4083.2	3305.7	228.0	7160.9
23.0	7750.4	7252.4	4493.0	3581.4	228.0	7846.4
23.5	8457.3	7810.8	4902.8	3857.2	228.0	8532.0
24.0	9164.1	8369.2	5312.5	4132.9	228.0	9217.5
24.5	9871.0	8927.6	5722.3	4408.7	228.0	9903.1
25.0	10577.8	9486.0	6132.1	4684.5	228.0	10588.6
25.5	11284.7	10044.5	6541.9	4960.2	228.0	11274.1
26.0	11991.6	10602.9	6951.6	5236.0	228.0	11959.7
26.5	12698.4	10602.9	7361.4	5236.0	228.0	12369.4
27.0	13405.3	10602.9	7771.2	5236.0	228.0	12779.2
27.5	14112.1	10602.9	8180.9	5236.0	228.0	13189.0
28.0	14819.0	10602.9	8590.7	5236.0	228.0	13598.7
28.5	15525.9	10602.9	9000.5	5236.0	228.0	14008.5
29.0	16232.7	10602.9	9410.3	5236.0	228.0	14418.3
29.5	16939.6	10602.9	9820.0	5236.0	228.0	14828.1
30.0	17646.4	10602.9	10229.8	5236.0	228.0	15237.8

Comb. SLU SLV A2+M1+R3 (metodo AGI)				
L palo	Q I-him	Q I-calc	W' palo	Q <sub>tot</sub>
m	kN	kN	kN	kN
0.5	19.3	10.3	13	23.5
1.0	42.4	22.6	27	49.1
1.5	69.3	37.0	40	76.7
2.0	100.1	53.4	53	106.4
2.5	134.8	71.9	66	138.2
3.0	173.3	92.4	80	172.0
3.5	215.7	115.0	93	207.8
4.0	261.9	139.7	106	245.7
4.5	312.0	166.4	119	285.7
5.0	365.9	195.2	133	327.7
5.5	423.7	226.0	146	371.8
6.0	485.3	258.8	159	417.9
6.5	550.8	293.8	172	466.1
7.0	620.1	330.7	186	516.3
7.5	693.3	369.8	199	568.6
8.0	770.3	410.9	212	622.9
8.5	851.2	454.0	225	679.3
9.0	936.0	499.2	239	737.7
9.5	1024.6	546.4	252	798.2
10.0	1117.0	595.7	265	860.8
10.5	1213.3	647.1	278	925.4
11.0	1313.4	700.5	292	992.1
11.5	1417.4	756.0	305	1060.8
12.0	1525.3	813.5	318	1131.6
12.5	1637.0	873.1	331	1204.4
13.0	1752.5	934.7	345	1279.3
13.5	1871.9	998.4	358	1356.2
14.0	1995.2	1064.1	371	1435.2
14.5	2122.3	1131.9	384	1516.2
15.0	2253.3	1201.7	398	1599.3
15.5	2388.1	1273.6	411	1684.5
16.0	2526.7	1347.6	424	1771.7
16.5	2669.2	1423.6	437	1861.0
17.0	2815.6	1501.7	451	1952.3
17.5	2965.8	1581.8	464	2045.6
18.0	3119.9	1663.9	477	2141.1
18.5	3277.8	1748.2	490	2238.6
18.5	3277.8	1748.2	490	2238.6
19.0	4216.1	2248.6	504	2752.2
19.5	4498.9	2399.4	517	2916.3
20.0	4781.6	2550.2	530	3080.3
20.5	5064.3	2701.0	543	3244.4
21.0	5347.1	2851.8	557	3408.4
21.5	5629.8	3002.6	570	3572.5
21.5	5629.8	3002.6	570	3572.5
22.0	6336.7	3379.6	583	3962.7
22.5	7043.6	3756.6	596	4353.0
23.0	7750.4	4133.6	610	4743.2
23.5	8457.3	4510.5	623	5133.5
24.0	9164.1	4887.5	636	5523.7
24.5	9871.0	5264.5	649	5914.0
25.0	10577.8	5641.5	663	6304.2
25.5	11284.7	6018.5	676	6694.4
26.0	11991.6	6395.5	689	7084.7
26.5	12698.4	6772.5	702	7474.9
27.0	13405.3	7149.5	716	7865.2
27.5	14112.1	7526.5	729	8255.4
28.0	14819.0	7903.5	742	8645.7
28.5	15525.9	8280.5	755	9035.9
29.0	16232.7	8657.4	769	9426.2
29.5	16939.6	9034.4	782	9816.4
30.0	17646.4	9411.4	795	10206.6

<b>APPALTATORE:</b> Consorzio                      Soci <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria                      Mandanti <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>		COMMESSA      LOTTO      CODIFICA IF3A                      02                      E ZZ CL		DOCUMENTO VI0103 003		REV. A	FOGLIO 69 di 294
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>							

AV/AC Napoli Bari - Viadotto V101 - Pila 6  
 Capacità portante A1+M1+R3 - Palo D = 1500 mm  
 Resistenza (kN)



**Figura 13-1: Capacità portante del palo singolo**

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 70 di 294

### 13.1.2 Verifica di capacità portante orizzontale del gruppo di pali

La verifica di capacità portante orizzontale del gruppo di pali è stata condotta con i criteri basati sulla teoria di Broms, descritti in:

IF3A.0.2.E.ZZ.RP.VI.00.0.3.001.A Relazione sui criteri di calcolo delle fondazioni

Il momento di plasticizzazione viene calcolato considerando un'armatura di progetto e ponendo pari ad 1 i coefficienti di sicurezza sui materiali acciaio e calcestruzzo, come ammesso dalla normativa nell'ambito delle verifiche geotecniche dei pali caricati orizzontalmente.

Nella seguente Figura 13-2 è illustrata la verifica svolta per il palo in oggetto.

Il taglio massimo agente è pari a  $T_{longSLV} = 1268.3$  kN.

La verifica a capacità portante orizzontale risulta soddisfatta, poiché il carico limite  $H_{lim} = 1665.1$  kN risulta superiore al valore di progetto.

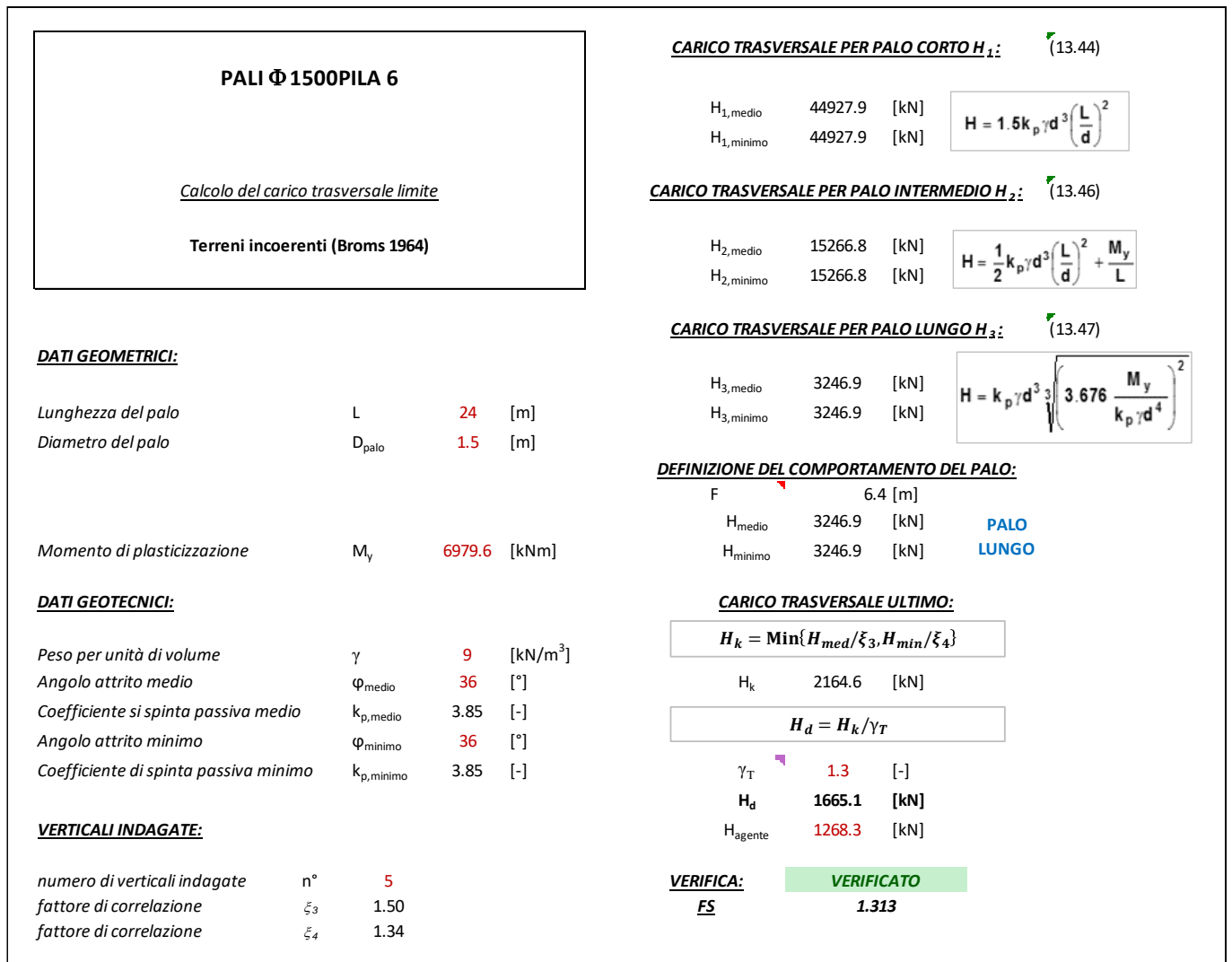


Figura 13-2: Verifica Carico Limite trasversale (Broms)

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 71 di 294

## 14 VERIFICA CAPACITÀ PORTANTE GRUPPO DI PALI

Nei successivi paragrafi si riportano le verifiche di capacità portante del gruppo di pali di fondazione delle pile P4÷P6.

Come indicato al § 6.4.3.1.1 delle NTC 2018, la resistenza a carico assiale di una palificata deve essere fatta in base alla resistenza caratteristica che risulta dalla somma delle resistenze caratteristiche dei pali che la costituiscono.

E' comunque necessario valutare possibili riduzioni della resistenza disponibile per effetto di gruppo, tenendo conto della tipologia dei pali, della natura dei terreni interessati e della configurazione geometrica della palificata.

Per tale motivo, in sede di dimensionamento della lunghezza delle palificate in gruppo, si è fatto riferimento non alla capacità portante del palo singolo, determinata nei paragrafi precedenti - come da prassi usuale fino alla introduzione delle NTC 2018 - ma a quella del gruppo di pali valutata secondo la teoria dei Domini di Resistenza delle fondazioni su pali, ossia del luogo dei punti rappresentativi delle condizioni di collasso dell'intera palificata.

Per ulteriori dettagli sul metodo di calcolo applicato si rimanda al lavoro di Di Laora, de Sanctis, Aversa (2018).

### 14.1 DETERMINAZIONE DOMINI DI RESISTENZA

Nelle successive figure sono determinate le lunghezze minime dei pali attraverso il calcolo dei domini di resistenza a partire dalle sollecitazioni a intradosso plinto e dalle curve di capacità portante; i punti all'interno dei domini rappresentano le combinazioni di carico più gravose agenti sulla palificata ad intradosso fondazione.

#### 14.1.1 Pila P4

Per la pila P4 il dominio limite si ottiene per una lunghezza pali pari a 18.5 m

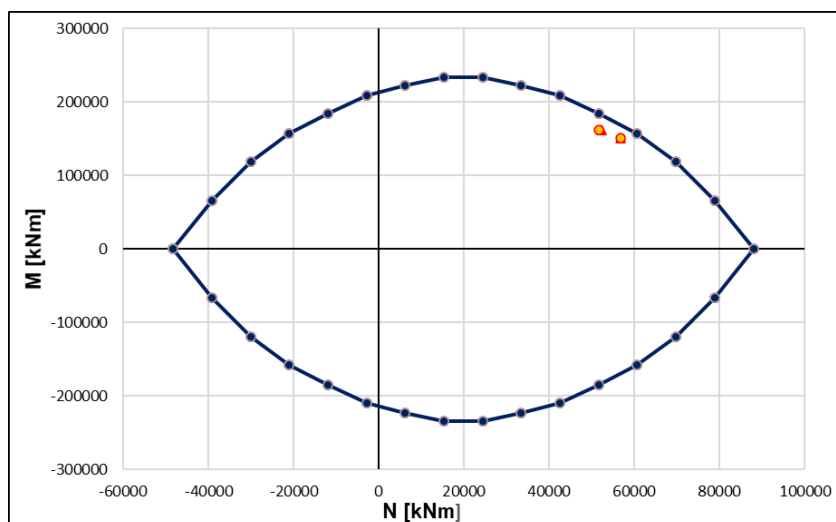


Figura 14-1. Dominio di resistenza gruppo di pali Pila P4 – Lmin = 18.5 m

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>		<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 72 di 294

### 14.1.2 Pila P5

Per la pila P5 il dominio limite si ottiene per una lunghezza pali pari a 21.0 m

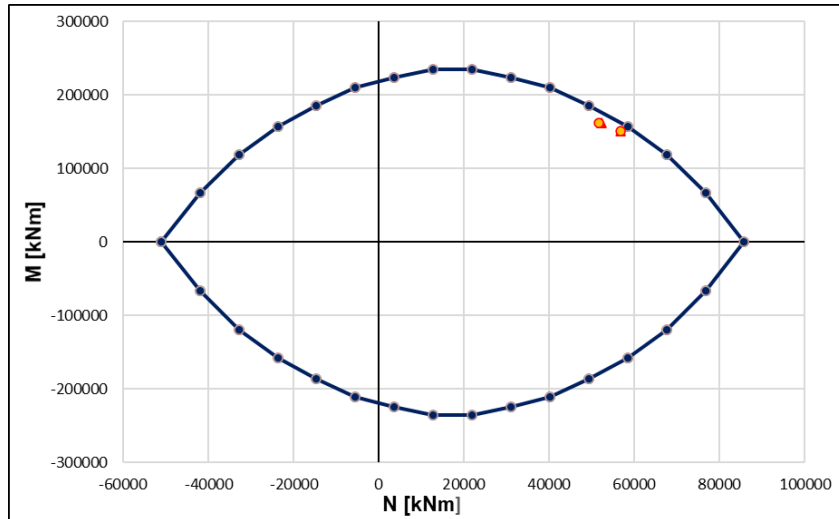


Figura 14-2. Dominio di resistenza gruppo di pali Pila P5 – Lmin = 21 m

### 14.1.3 Pila P6

Per la pila P6 il dominio limite si ottiene per una lunghezza pali pari a 22 m

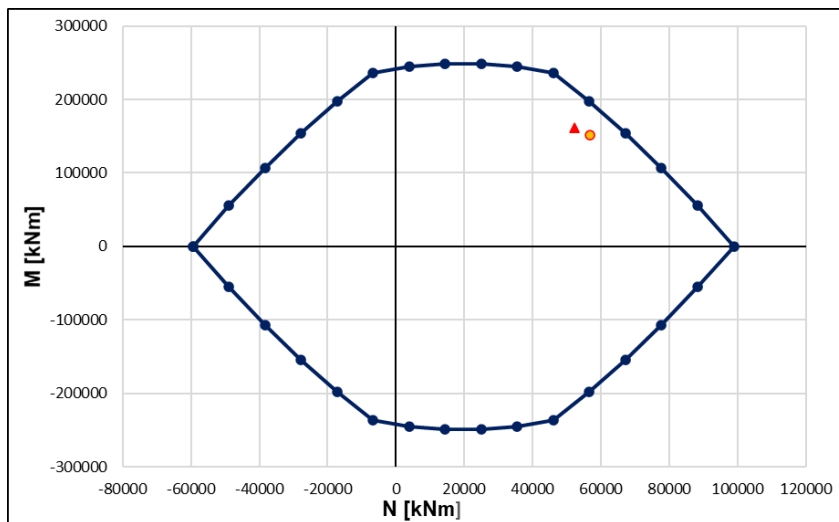


Figura 14-3. Dominio di resistenza gruppo di pali Pila P6 – Lmin = 22 m



<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 73 di 294

## 14.2 LUNGHEZZA DI PROGETTO DEL GRUPPO DI PALI PER LE PILE P4-P5-P6

Come è possibile osservare dai domini di resistenza calcolati nei precedenti paragrafi, la lunghezza dei pali minima sufficiente per garantire che il carico limite ultimo della palificata sia superiore ai carichi reali ad essa applicato, è tale da attestare la punta dei pali in prossimità del contatto con la formazione del Flysch di Faeto.

Al fine di garantire una riserva di resistenza alle palificate, in modo analogo a quanto fatto nel progetto definitivo, esse sono attestate all'interno della formazione del Faeto per almeno 1 diametro.

Fondazioni	Profondità substrato da testa palo (m)	Lunghezza palo singolo da curve di capacità portante (m)	Lunghezza minima palo, da domini di interazione (m)	Lunghezza di progetto esecutivo per garantire ammorsamento in strato portante (m)
Pila P4	21.5	24	18.5	24
Pila P5	21.5	24	21	24
Pila P6	21.5	24	22	24

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>																	
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 16.6%;">COMMESSA</td> <td style="width: 16.6%;">LOTTO</td> <td style="width: 16.6%;">CODIFICA</td> <td style="width: 16.6%;">DOCUMENTO</td> <td style="width: 16.6%;">REV.</td> <td style="width: 16.6%;">FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 003</td> <td>A</td> <td>74 di 294</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 003	A	74 di 294
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 003	A	74 di 294													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>																		

## 15 DIMENSIONAMENTO E VERIFICA DEL PLINTO DI FONDAZIONE P4-P5-P6

Si rimanda alla relazione di calcolo IF3A02EZZCLVI0105003: Pile P4, P5, P6 Relazione di calcolo strutture in elevazione.

APPALTATORE: Conorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 75 di 294

## 16 ALLEGATO: TABULATI GROUP

### 16.1 PILA 4 SLU/SLV/SLE

=====

GROUP for Windows, Version 2016.10.13

Serial Number : 228330872

Analysis of A Group of Piles  
Subjected to Axial and Lateral Loading

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All Rights Reserved

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Time and Date of Analysis

-----

Date: May 31, 2022 Time: 17:42:28

\*\*\*\*\* COMPUTATION RESULTS \*\*\*\*\*

21-22\_VI01\_Pila 4

\*\*\*\*\* LOAD CASES RESULTS \*\*\*\*\*

LOAD CASE : 1  
CASE NAME : 1-1 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5923	1.0000
2	0.4986	1.0000
3	0.5845	1.0000
4	0.5516	1.0000
5	0.4633	1.0000
6	0.5434	1.0000
7	0.5516	1.0000
8	0.4633	1.0000
9	0.5434	1.0000
10	0.5851	1.0000
11	0.4961	1.0000
12	0.5773	1.0000
13	0.8661	1.0000
14	0.8009	1.0000
15	0.8608	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 56801.9	HOR. LOAD Y, KN -235.727	HOR. LOAD Z, KN 1825.00
MOMENT X, KN- M 1.53200E-11	MOMENT Y, KN- M 27335.6	MOMENT Z, KN- M 2627.62

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>			<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 76 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.29580E-03	HORIZONTAL Y, M -1.39617E-04	HORIZONTAL Z, M 9.24058E-04
ANGLE ROT. X,RAD -7.63360E-07	ANGLE ROT. Y,RAD 3.33281E-05	ANGLE ROT. Z,RAD 9.90491E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0404E-03	-1.4649E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
2	1.9958E-03	-1.4649E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
3	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
4	2.1904E-03	-1.4305E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
5	2.1458E-03	-1.4305E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
6	2.1012E-03	-1.4305E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
7	2.3404E-03	-1.3962E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
8	2.2958E-03	-1.3962E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
9	2.2512E-03	-1.3962E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
10	2.4904E-03	-1.3618E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
11	2.4458E-03	-1.3618E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
12	2.4012E-03	-1.3618E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
13	2.6403E-03	-1.3275E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
14	2.5958E-03	-1.3275E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
15	2.5512E-03	-1.3275E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
MINIMUM	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.6403E-03	-1.3275E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3367.7	-16.786	122.04	-1.1092	-394.81	-48.101
2	3294.6	-14.973	109.04	-1.1092	-363.56	-43.918
3	3221.4	-16.643	120.02	-1.1092	-388.81	-47.769
4	3613.8	-15.513	116.68	-1.1092	-382.36	-44.548
5	3540.7	-13.809	104.10	-1.1092	-351.67	-40.565
6	3467.5	-15.361	114.61	-1.1092	-376.22	-44.192
7	3859.9	-15.013	116.65	-1.1092	-382.36	-42.760
8	3786.8	-13.358	104.07	-1.1092	-351.66	-38.897
9	3713.7	-14.865	114.59	-1.1092	-376.22	-42.414
10	4106.1	-15.098	121.03	-1.1092	-392.65	-42.303
11	4032.9	-13.517	108.64	-1.1092	-362.77	-38.664
12	3959.8	-14.966	119.02	-1.1092	-386.66	-41.998
13	4352.2	-18.953	154.80	-1.1092	-468.12	-49.991
14	4279.0	-17.993	146.78	-1.1092	-449.99	-47.956
15	4205.9	-18.879	152.93	-1.1092	-462.57	-49.828
MINIMUM	3221.4	-18.953	104.07	-1.1092	-468.12	-49.991
Pile N.	3	13	8	1	13	13
MAXIMUM	4352.2	-13.358	154.80	-1.1092	-351.66	-38.664
Pile N.	13	8	13	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0404E-03	-1.4649E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
2	1.9958E-03	-1.4649E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
3	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
4	2.1904E-03	-1.4305E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
5	2.1458E-03	-1.4305E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
6	2.1012E-03	-1.4305E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
7	2.3404E-03	-1.3962E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
8	2.2958E-03	-1.3962E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
9	2.2512E-03	-1.3962E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
10	2.4904E-03	-1.3618E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
11	2.4458E-03	-1.3618E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
12	2.4012E-03	-1.3618E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
13	2.6403E-03	-1.3275E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
14	2.5958E-03	-1.3275E-04	9.2406E-04	-7.6336E-07	3.3328E-05	9.9049E-06
15	2.5512E-03	-1.3275E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 77 di 294

MINIMUM	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.6403E-03	-1.3275E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3367.7	-16.786	122.04	-1.1092	-394.81	-48.101
2	3294.6	-14.973	109.04	-1.1092	-363.56	-43.918
3	3221.4	-16.643	120.02	-1.1092	-388.81	-47.769
4	3613.8	-15.513	116.68	-1.1092	-382.36	-44.548
5	3540.7	-13.809	104.10	-1.1092	-351.67	-40.565
6	3467.5	-15.361	114.61	-1.1092	-376.22	-44.192
7	3859.9	-15.013	116.65	-1.1092	-382.36	-42.760
8	3786.8	-13.358	104.07	-1.1092	-351.66	-38.897
9	3713.7	-14.865	114.59	-1.1092	-376.22	-42.414
10	4106.1	-15.098	121.03	-1.1092	-392.65	-42.303
11	4032.9	-13.517	108.64	-1.1092	-362.77	-38.664
12	3959.8	-14.966	119.02	-1.1092	-386.66	-41.998
13	4352.2	-18.953	154.80	-1.1092	-468.12	-49.991
14	4279.0	-17.993	146.78	-1.1092	-449.99	-47.956
15	4205.9	-18.879	152.93	-1.1092	-462.57	-49.828
MINIMUM	3221.4	-18.953	104.07	-1.1092	-468.12	-49.991
Pile N.	3	13	8	1	13	13
MAXIMUM	4352.2	-13.358	154.80	-1.1092	-351.66	-38.664
Pile N.	13	8	13	1	8	11

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	3098.9
2	2962.9
3	2998.1
4	3199.8
5	3065.6
6	3098.6
7	3338.5
8	3204.3
9	3237.3
10	3508.3
11	3376.6
12	3407.6
13	3875.2
14	3779.0
15	3775.8
MINIMUM	2962.9
Pile N.	2
MAXIMUM	3875.2
Pile N.	13

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-1.4649E-04	-2.2725E-05	-21.119	-394.81	-16.789	-20.691	-3.0466	-6.5453	1905.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
2	-1.4649E-04	-2.1726E-05	-19.739	-363.56	-14.976	-18.582	-2.6349	-6.6099	1864.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
3	-1.4649E-04	-2.2479E-05	-21.011	-388.81	-16.645	-20.369	-3.0130	-6.5064	1822.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
4	-1.4305E-04	-2.2401E-05	-20.066	-382.36	-15.516	-19.823	-2.7878	-6.6143	2045.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
5	-1.4305E-04	-2.1267E-05	-18.744	-351.67	-13.811	-17.806	-2.4068	-6.5785	2003.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
6	-1.4305E-04	-2.2145E-05	-19.947	-376.22	-15.363	-19.498	-2.7526	-6.5681	1962.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
7	-1.3962E-04	-2.2414E-05	-19.589	-382.36	-15.016	-19.831	-2.7069	-6.6154	2184.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
8	-1.3962E-04	-2.1281E-05	-18.299	-351.66	-13.360	-17.814	-2.3360	-6.5800	2142.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
9	-1.3962E-04	-2.2158E-05	-19.473	-376.22	-14.868	-19.505	-2.6726	-6.5692	2101.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
10	-1.3618E-04	-2.2695E-05	-19.551	-392.65	-15.100	-20.566	-2.7603	-6.5629	2323.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
11	-1.3618E-04	-2.1736E-05	-18.337	-362.77	-13.520	-18.554	-2.3998	-6.6132	2282.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
12	-1.3618E-04	-2.2469E-05	-19.445	-386.66	-14.968	-20.242	-2.7294	-6.5227	2240.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
13	-1.3275E-04	-2.3957E-05	-22.250	-468.12	-18.957	-26.079	-3.7244	-5.4487	2462.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 78 di 294

14	-1.3275E-04	-2.3722E-05	-21.574	-449.99	-17.996	-24.784	-3.4873	-5.7503	2421.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
15	-1.3275E-04	-2.3768E-05	-22.194	-462.57	-18.882	-25.776	-3.7054	-5.4295	2380.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000
Min. Pile N.	-1.4649E-04	-2.3957E-05	-22.250	-468.12	-18.957	-26.079	-3.7244	-6.6154	1822.9	7.8500E+06	7.8500E+06
	1	13	13	13	13	13	13	7	3	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.6594E-06	9.2749E-04	48.101	134.65	3.2167	122.06	0.9283	21.156	3098.9	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
2	3.5424E-06	9.2406E-04	43.918	125.32	2.9008	109.06	0.9529	18.279	2962.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
3	3.6502E-06	9.2062E-04	47.769	132.91	3.1897	120.03	0.9313	20.759	2998.1	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	3.5371E-06	9.2749E-04	44.548	130.99	3.0103	116.70	0.9155	19.955	3199.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	3.4104E-06	9.2406E-04	40.565	121.84	2.7108	104.12	0.9266	17.217	3065.6	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
6	3.5279E-06	9.2062E-04	44.192	129.24	2.9828	114.63	0.9177	19.549	3098.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	3.4593E-06	9.2749E-04	42.760	131.01	2.9378	116.68	0.8884	19.955	3338.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	3.3398E-06	9.2406E-04	38.897	121.85	2.6465	104.09	0.9000	17.216	3204.3	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	3.4508E-06	9.2062E-04	42.414	129.25	2.9112	114.61	0.8906	19.548	3237.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	3.4176E-06	9.2749E-04	42.303	134.03	2.9696	121.06	0.8502	20.943	3508.3	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	3.3154E-06	9.2406E-04	38.664	125.13	2.6886	108.67	0.8722	18.204	3376.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	3.4098E-06	9.2062E-04	41.998	132.33	2.9449	119.04	0.8530	20.547	3407.6	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	3.4616E-06	9.2749E-04	49.991	156.73	3.6692	154.84	0.6575	28.875	3875.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	3.4457E-06	9.2406E-04	47.956	151.28	3.4978	146.81	0.7030	26.985	3779.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
15	3.4595E-06	9.2062E-04	49.828	155.16	3.6551	152.96	0.6613	28.500	3775.8	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	3.6594E-06	9.2749E-04	49.991	156.73	3.6692	154.84	0.9529	28.875	3875.2	7.8500E+06	7.8500E+06
	1	1	13	13	13	13	2	13	13	1	1

LOAD CASE : 2  
CASE NAME : 2-2 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8511	1.0000
2	0.5742	1.0000
3	0.5845	1.0000
4	0.7914	1.0000
5	0.4931	1.0000
6	0.4987	1.0000
7	0.7914	1.0000
8	0.4921	1.0000
9	0.4978	1.0000
10	0.7930	1.0000
11	0.4952	1.0000
12	0.5012	1.0000
13	0.8661	1.0000
14	0.5958	1.0000
15	0.6061	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 81231.3	HOR. LOAD Y, KN -3954.86	HOR. LOAD Z, KN 1248.30
MOMENT X, KN- M -2.90400E-10	MOMENT Y, KN- M 18929.6	MOMENT Z, KN- M 45738.0

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 79 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 3.47569E-03	HORIZONTAL Y, M -2.44541E-03	HORIZONTAL Z, M 6.33317E-04
ANGLE ROT. X,RAD 2.41660E-06	ANGLE ROT. Y,RAD 2.73782E-05	ANGLE ROT. Z,RAD 2.12460E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	4.1854E-03	-2.4237E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
2	3.2293E-03	-2.4237E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
3	2.2732E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
4	4.3086E-03	-2.4345E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
5	3.3525E-03	-2.4345E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
6	2.3964E-03	-2.4345E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
7	4.4318E-03	-2.4454E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
8	3.4757E-03	-2.4454E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
9	2.5196E-03	-2.4454E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
10	4.5550E-03	-2.4563E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
11	3.5989E-03	-2.4563E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
12	2.6428E-03	-2.4563E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
13	4.6782E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
14	3.7221E-03	-2.4672E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
15	2.7660E-03	-2.4672E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
MINIMUM	2.2732E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	4.6782E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	6333.1	-321.96	99.524	3.5113	-295.22	-800.34
2	5148.3	-245.95	79.165	3.5113	-251.78	-635.10
3	3749.7	-249.33	81.782	3.5113	-259.64	-641.62
4	6485.8	-308.26	95.024	3.5113	-285.50	-774.10
5	5301.0	-222.73	71.837	3.5113	-234.54	-584.41
6	3951.9	-224.81	73.920	3.5113	-241.20	-588.18
7	6638.5	-310.17	95.014	3.5113	-285.50	-780.68
8	5453.7	-223.85	71.736	3.5113	-234.33	-589.14
9	4154.1	-225.93	73.815	3.5113	-240.99	-592.96
10	6791.1	-312.49	95.121	3.5113	-285.76	-788.13
11	5606.4	-226.25	72.009	3.5113	-235.00	-596.82
12	4356.3	-228.44	74.125	3.5113	-241.76	-600.94
13	6943.8	-333.88	100.59	3.5113	-297.60	-835.61
14	5759.0	-258.73	81.008	3.5113	-256.15	-672.82
15	4558.5	-262.09	83.632	3.5113	-264.05	-679.39
MINIMUM	3749.7	-333.88	71.736	3.5113	-297.60	-835.61
Pile N.	3	13	8	1	13	13
MAXIMUM	6943.8	-222.73	100.59	3.5113	-234.33	-584.41
Pile N.	13	5	13	1	8	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	4.1854E-03	-2.4237E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
2	3.2293E-03	-2.4237E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
3	2.2732E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
4	4.3086E-03	-2.4345E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
5	3.3525E-03	-2.4345E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
6	2.3964E-03	-2.4345E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
7	4.4318E-03	-2.4454E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
8	3.4757E-03	-2.4454E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
9	2.5196E-03	-2.4454E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
10	4.5550E-03	-2.4563E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
11	3.5989E-03	-2.4563E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
12	2.6428E-03	-2.4563E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
13	4.6782E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
14	3.7221E-03	-2.4672E-03	6.3332E-04	2.4166E-06	2.7378E-05	2.1246E-04
15	2.7660E-03	-2.4672E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 80 di 294

MINIMUM	2.2732E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	4.6782E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	6333.1	-321.96	99.524	3.5113	-295.22	-800.34
2	5148.3	-245.95	79.165	3.5113	-251.78	-635.10
3	3749.7	-249.33	81.782	3.5113	-259.64	-641.62
4	6485.8	-308.26	95.024	3.5113	-285.50	-774.10
5	5301.0	-222.73	71.837	3.5113	-234.54	-584.41
6	3951.9	-224.81	73.920	3.5113	-241.20	-588.18
7	6638.5	-310.17	95.014	3.5113	-285.50	-780.68
8	5453.7	-223.85	71.736	3.5113	-234.33	-589.14
9	4154.1	-225.93	73.815	3.5113	-240.99	-592.96
10	6791.1	-312.49	95.121	3.5113	-285.76	-788.13
11	5606.4	-226.25	72.009	3.5113	-235.00	-596.82
12	4356.3	-228.44	74.125	3.5113	-241.76	-600.94
13	6943.8	-333.88	100.59	3.5113	-297.60	-835.61
14	5759.0	-258.73	81.008	3.5113	-256.15	-672.82
15	4558.5	-262.09	83.632	3.5113	-264.05	-679.39
MINIMUM	3749.7	-333.88	71.736	3.5113	-297.60	-835.61
Pile N.	3	13	8	1	13	13
MAXIMUM	6943.8	-222.73	100.59	3.5113	-234.33	-584.41
Pile N.	13	5	13	1	8	5

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	6143.0
2	4962.9
3	4198.4
4	6145.4
5	4888.9
6	4143.5
7	6250.3
8	4988.3
9	4270.9
10	6358.0
11	5096.8
12	4408.4
13	6590.5
14	5418.7
15	4766.3
MINIMUM	4143.5
Pile N.	6
MAXIMUM	6590.5
Pile N.	13

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.4237E-03	-1.6123E-05	-404.82	-295.22	-322.04	-17.286	-64.541	-3.5878	3583.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000
2	-2.4237E-03	-1.5529E-05	-347.18	-251.78	-246.00	-13.841	-46.162	-4.3942	2913.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
3	-2.4237E-03	-1.5802E-05	-349.39	-259.64	-249.36	-14.201	-46.874	-4.4624	2121.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	6.9600	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
4	-2.4345E-03	-1.6042E-05	-395.33	-285.50	-308.34	-16.543	-61.036	-3.7857	3670.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
5	-2.4345E-03	-1.4995E-05	-329.04	-234.54	-222.78	-12.640	-40.759	-4.4438	2999.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
6	-2.4345E-03	-1.5238E-05	-330.28	-241.20	-224.84	-12.920	-41.166	-4.5253	2236.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
7	-2.4454E-03	-1.6047E-05	-397.06	-285.50	-310.25	-16.547	-61.377	-3.7857	3756.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
8	-2.4454E-03	-1.4993E-05	-330.20	-234.33	-223.90	-12.628	-40.921	-4.4442	3086.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
9	-2.4454E-03	-1.5238E-05	-331.45	-240.99	-225.97	-12.910	-41.331	-4.5260	2350.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
10	-2.4563E-03	-1.6054E-05	-399.10	-285.76	-312.58	-16.570	-61.820	-3.7808	3843.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
11	-2.4563E-03	-1.5023E-05	-332.40	-235.00	-226.30	-12.679	-41.371	-4.4452	3172.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
12	-2.4563E-03	-1.5272E-05	-333.76	-241.76	-228.48	-12.968	-41.809	-4.5270	2465.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
13	-2.4672E-03	-1.6170E-05	-414.81	-297.60	-333.96	-17.487	-66.965	-3.5361	3929.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000



APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 81 di 294	

14	-2.4672E-03	-1.5674E-05	-358.35	-256.15	-258.79	-14.161	-48.718	-4.3644	3258.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	6.9600	0.0000	0.0000	11.280	4.0800	18.720	24.000	0.0000	0.0000
15	-2.4672E-03	-1.5945E-05	-360.59	-264.05	-262.13	-14.534	-49.437	-4.4300	2579.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	6.9600	0.0000	0.0000	11.280	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-2.4672E-03	-1.6170E-05	-414.81	-297.60	-333.96	-17.487	-66.965	-4.5270	2121.9	7.8500E+06	7.8500E+06
	13	13	13	13	13	13	13	12	3	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	6.3875E-05	6.2244E-04	800.34	104.20	66.394	99.553	11.540	18.693	6143.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.080	0.0000	13.440	4.0800	0.0000	0.0000	0.0000
2	6.1891E-05	6.3332E-04	635.10	90.649	52.325	79.185	14.395	13.788	4962.9	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	10.800	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
3	6.1842E-05	6.4419E-04	641.62	92.832	52.767	81.797	14.314	14.264	4198.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	10.800	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	6.3992E-05	6.2244E-04	774.10	101.19	63.859	95.052	12.265	17.615	6145.4	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
5	6.0779E-05	6.3332E-04	584.41	85.385	48.022	71.856	14.889	12.155	4888.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
6	6.0674E-05	6.4419E-04	588.18	87.210	48.221	73.934	14.859	12.510	4143.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	6.4273E-05	6.2244E-04	780.68	101.20	64.160	95.043	12.342	17.615	6250.3	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
8	6.1018E-05	6.3332E-04	589.14	85.323	48.193	71.755	14.979	12.135	4988.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
9	6.0922E-05	6.4419E-04	592.96	87.150	48.399	73.830	14.950	12.489	4270.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	6.4563E-05	6.2244E-04	788.13	101.29	64.536	95.151	12.400	17.643	6358.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
11	6.1331E-05	6.3332E-04	596.82	85.538	48.592	72.029	15.058	12.197	5096.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
12	6.1247E-05	6.4419E-04	600.94	87.396	48.823	74.141	15.028	12.560	4408.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	6.5028E-05	6.2244E-04	835.61	104.94	68.365	100.62	11.933	18.961	6590.5	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.080	0.0000	13.440	3.8400	0.0000	0.0000	0.0000
14	6.3260E-05	6.3332E-04	672.82	92.019	54.516	81.030	14.582	14.212	5418.7	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	10.800	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
15	6.3207E-05	6.4419E-04	679.39	94.211	54.967	83.650	14.492	14.693	4766.3	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	10.800	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
Max. Pile N.	6.5028E-05	6.4419E-04	835.61	104.94	68.365	100.62	15.058	18.961	6590.5	7.8500E+06	7.8500E+06
	13	3	13	13	13	13	11	13	13	1	1

LOAD CASE : 3  
CASE NAME : 3-3 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5006	1.0000
3	0.6003	1.0000
4	0.5423	1.0000
5	0.4641	1.0000
6	0.5590	1.0000
7	0.5423	1.0000
8	0.4640	1.0000
9	0.5590	1.0000
10	0.5755	1.0000
11	0.4961	1.0000
12	0.5913	1.0000
13	0.8552	1.0000
14	0.7964	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 69480.1	HOR. LOAD Y, KN 335.863	HOR. LOAD Z, KN 1825.00
MOMENT X, KN- M 2.17900E-11	MOMENT Y, KN- M 27336.7	MOMENT Z, KN- M -3743.41

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 82 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.84236E-03	HORIZONTAL Y, M 2.06103E-04	HORIZONTAL Z, M 9.41986E-04
ANGLE ROT. X,RAD 9.85414E-07	ANGLE ROT. Y,RAD 3.85641E-05	ANGLE ROT. Z,RAD -1.61859E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.4225E-03	2.1497E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
2	2.4953E-03	2.1497E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
3	2.5681E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
4	2.5960E-03	2.1054E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
5	2.6688E-03	2.1054E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
6	2.7417E-03	2.1054E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
7	2.7695E-03	2.0610E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
8	2.8424E-03	2.0610E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
9	2.9152E-03	2.0610E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
10	2.9431E-03	2.0167E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
11	3.0159E-03	2.0167E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
12	3.0887E-03	2.0167E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
13	3.1166E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
14	3.1894E-03	1.9723E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
15	3.2623E-03	1.9723E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
MINIMUM	2.4225E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	3.2623E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3994.6	23.527	119.68	1.4318	-381.82	65.057
2	4114.2	21.190	109.08	1.4318	-357.70	59.705
3	4233.7	23.946	123.04	1.4318	-391.30	66.018
4	4279.4	21.728	114.10	1.4318	-368.86	60.128
5	4398.9	19.547	103.92	1.4318	-345.37	55.066
6	4518.5	22.174	117.59	1.4318	-378.71	61.161
7	4564.2	21.087	114.07	1.4318	-368.85	57.835
8	4668.9	18.962	103.89	1.4318	-345.36	52.911
9	4759.1	21.523	117.57	1.4318	-378.72	58.842
10	4793.7	21.295	118.44	1.4318	-379.11	57.465
11	4883.9	19.242	108.38	1.4318	-356.22	52.770
12	4974.2	21.686	121.80	1.4318	-388.62	58.359
13	5008.7	27.000	152.16	1.4318	-454.46	68.936
14	5099.0	25.728	146.24	1.4318	-442.61	66.260
15	5189.2	27.227	155.04	1.4318	-462.61	69.421
MINIMUM	3994.6	18.962	103.89	1.4318	-462.61	52.770
Pile N.	1	8	8	1	15	11
MAXIMUM	5189.2	27.227	155.04	1.4318	-345.36	69.421
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.4225E-03	2.1497E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
2	2.4953E-03	2.1497E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
3	2.5681E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
4	2.5960E-03	2.1054E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
5	2.6688E-03	2.1054E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
6	2.7417E-03	2.1054E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
7	2.7695E-03	2.0610E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
8	2.8424E-03	2.0610E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
9	2.9152E-03	2.0610E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
10	2.9431E-03	2.0167E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
11	3.0159E-03	2.0167E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
12	3.0887E-03	2.0167E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
13	3.1166E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
14	3.1894E-03	1.9723E-04	9.4199E-04	9.8541E-07	3.8564E-05	-1.6186E-05
15	3.2623E-03	1.9723E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 83 di 294

MINIMUM	2.4225E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	3.2623E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3994.6	23.527	119.68	1.4318	-381.82	65.057
2	4114.2	21.190	109.08	1.4318	-357.70	59.705
3	4233.7	23.946	123.04	1.4318	-391.30	66.018
4	4279.4	21.728	114.10	1.4318	-368.86	60.128
5	4398.9	19.547	103.92	1.4318	-345.37	55.066
6	4518.5	22.174	117.59	1.4318	-378.71	61.161
7	4564.2	21.087	114.07	1.4318	-368.85	57.835
8	4668.9	18.962	103.89	1.4318	-345.36	52.911
9	4759.1	21.523	117.57	1.4318	-378.72	58.842
10	4793.7	21.295	118.44	1.4318	-379.11	57.465
11	4883.9	19.242	108.38	1.4318	-356.22	52.770
12	4974.2	21.686	121.80	1.4318	-388.62	58.359
13	5008.7	27.000	152.16	1.4318	-454.46	68.936
14	5099.0	25.728	146.24	1.4318	-442.61	66.260
15	5189.2	27.227	155.04	1.4318	-462.61	69.421
MINIMUM	3994.6	18.962	103.89	1.4318	-462.61	52.770
Pile N.	1	8	8	1	15	11
MAXIMUM	5189.2	27.227	155.04	1.4318	-345.36	69.421
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	3422.5
2	3416.1
3	3586.3
4	3542.8
5	3538.5
6	3707.8
7	3702.9
8	3690.2
9	3842.9
10	3863.0
11	3844.1
12	3993.7
13	4213.3
14	4228.1
15	4339.9
MINIMUM	3416.1
Pile N.	2
MAXIMUM	4339.9
Pile N.	15

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-5.4060E-06	-2.2995E-05	-65.057	-381.82	-4.6827	-20.697	-1.3299	-6.5245	2260.5	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-5.2667E-06	-2.2290E-05	-59.705	-357.70	-4.2674	-18.960	-1.3649	-6.6487	2328.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
3	-5.4245E-06	-2.3352E-05	-66.018	-391.30	-4.7592	-21.233	-1.3200	-6.5598	2395.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
4	-5.2439E-06	-2.2648E-05	-60.128	-368.86	-4.3831	-19.788	-1.3167	-6.5932	2421.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-5.0942E-06	-2.1814E-05	-55.066	-345.37	-3.9979	-18.138	-1.3336	-6.6239	2489.3	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-5.2761E-06	-2.3022E-05	-61.161	-378.71	-4.4674	-20.365	-1.3092	-6.6427	2556.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
7	-5.1492E-06	-2.2663E-05	-57.835	-368.85	-4.2930	-19.797	-1.2818	-6.5945	2582.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
8	-5.0032E-06	-2.1829E-05	-52.911	-345.36	-3.9148	-18.146	-1.2992	-6.6256	2642.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-5.1785E-06	-2.3035E-05	-58.842	-378.72	-4.3752	-20.374	-1.2742	-6.6437	2693.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-5.0967E-06	-2.2952E-05	-57.465	-379.11	-4.3561	-20.534	-1.2305	-6.5454	2712.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-4.9792E-06	-2.2280E-05	-52.770	-356.22	-3.9876	-18.881	-1.2613	-6.6522	2763.7	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-5.1165E-06	-2.3320E-05	-58.359	-388.62	-4.4268	-21.072	-1.2214	-6.5834	2814.8	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-5.1685E-06	-2.4226E-05	-68.936	-454.46	-5.4061	-26.104	-0.9531	-5.4475	2834.3	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 84 di 294	

14	-5.1463E-06	-2.4219E-05	-66.260	-442.61	-5.1831	-25.127	-1.0136	-5.7740	2885.4	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-5.1714E-06	-2.4497E-05	-69.421	-462.61	-5.4501	-26.571	-0.9523	-5.4509	2936.5	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.080	10.560	13.440	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.4245E-06	-2.4497E-05	-69.421	-462.61	-5.4501	-26.571	-1.3649	-6.6522	2260.5	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	11	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1497E-04	9.3755E-04	30.872	135.18	23.531	119.71	4.3202	20.842	3422.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.1497E-04	9.4199E-04	29.072	127.80	21.194	109.10	3.7865	18.435	3416.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	2.1497E-04	9.4642E-04	31.202	137.96	23.951	123.07	4.4182	21.526	3586.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.0000	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
4	2.1054E-04	9.3755E-04	29.370	131.25	21.732	114.13	3.9509	19.594	3542.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.1054E-04	9.4199E-04	27.657	124.05	19.550	103.94	3.4602	17.315	3538.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	2.1054E-04	9.4642E-04	29.726	134.08	22.178	117.62	4.0540	20.302	3707.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	2.0610E-04	9.3755E-04	28.769	131.26	21.001	114.10	3.8476	19.592	3702.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.0610E-04	9.4199E-04	27.097	124.06	18.966	103.91	3.3685	17.313	3690.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	2.0610E-04	9.4642E-04	29.121	134.09	21.528	117.59	3.9484	20.302	3842.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	2.0167E-04	9.3755E-04	28.839	134.38	21.299	118.46	3.9388	20.575	3863.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.0167E-04	9.4199E-04	27.226	127.37	19.246	108.40	3.4703	18.294	3844.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.0167E-04	9.4642E-04	29.145	137.17	21.691	121.83	4.0300	21.259	3993.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.9723E-04	9.3755E-04	32.949	157.34	27.005	152.20	5.3606	28.490	4213.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.9723E-04	9.4199E-04	32.030	153.58	25.733	146.28	5.0475	27.021	4228.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.9723E-04	9.4642E-04	33.115	159.66	27.232	155.07	5.4175	29.085	4339.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.1497E-04	9.4642E-04	33.115	159.66	27.232	155.07	5.4175	29.085	4339.9	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 4  
CASE NAME : 4-4 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4945	1.0000
8	0.4941	1.0000
9	0.8053	1.0000
10	0.4955	1.0000
11	0.4951	1.0000
12	0.8053	1.0000
13	0.5845	1.0000
14	0.5791	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
69480.1	335.863	-2.99900E-16
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
2.17700E-11	-3.62069E-05	-3743.41

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 85 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.81908E-03	HORIZONTAL Y, M 2.01441E-04	HORIZONTAL Z, M -1.49456E-13
ANGLE ROT. X,RAD 3.11366E-16	ANGLE ROT. Y,RAD -4.25044E-14	ANGLE ROT. Z,RAD -1.63191E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
2	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
3	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
4	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
5	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
6	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
7	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
8	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
9	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
10	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
11	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
12	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
13	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
14	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
15	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
MINIMUM	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4525.0	21.421	1.0490E-10	4.5241E-10	-4.9705E-08	57.442
2	4640.0	21.282	3.5680E-10	4.5241E-10	-5.0500E-08	57.137
3	4731.0	27.950	-1.5120E-09	4.5241E-10	-4.8429E-08	71.597
4	4525.0	19.136	7.8704E-10	4.5241E-10	-5.0602E-08	52.220
5	4640.0	19.123	9.8148E-10	4.5241E-10	-5.1299E-08	52.196
6	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
7	4525.0	19.108	7.9507E-10	4.5241E-10	-5.0612E-08	52.156
8	4640.0	19.095	9.8925E-10	4.5241E-10	-5.1309E-08	52.132
9	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
10	4525.0	19.136	7.8704E-10	4.5241E-10	-5.0602E-08	52.220
11	4640.0	19.123	9.8148E-10	4.5241E-10	-5.1299E-08	52.196
12	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
13	4525.0	21.421	1.0490E-10	4.5241E-10	-4.9705E-08	57.442
14	4640.0	21.282	3.5680E-10	4.5241E-10	-5.0500E-08	57.137
15	4731.0	27.950	-1.5120E-09	4.5241E-10	-4.8429E-08	71.597
MINIMUM	4525.0	19.095	-1.5120E-09	4.5241E-10	-5.1309E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8925E-10	4.5241E-10	-4.8429E-08	71.597
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
2	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
3	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
4	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
5	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
6	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
7	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
8	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
9	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
10	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
11	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
12	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
13	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
14	2.8191E-03	2.0144E-04	-1.4946E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
15	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 86 di 294

MINIMUM	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4525.0	21.421	1.0490E-10	4.5241E-10	-4.9705E-08	57.442
2	4640.0	21.282	3.5680E-10	4.5241E-10	-5.0500E-08	57.137
3	4731.0	27.950	-1.5120E-09	4.5241E-10	-4.8429E-08	71.597
4	4525.0	19.136	7.8704E-10	4.5241E-10	-5.0602E-08	52.220
5	4640.0	19.123	9.8148E-10	4.5241E-10	-5.1299E-08	52.196
6	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
7	4525.0	19.108	7.9507E-10	4.5241E-10	-5.0612E-08	52.156
8	4640.0	19.095	9.8925E-10	4.5241E-10	-5.1309E-08	52.132
9	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
10	4525.0	19.136	7.8704E-10	4.5241E-10	-5.0602E-08	52.220
11	4640.0	19.123	9.8148E-10	4.5241E-10	-5.1299E-08	52.196
12	4731.0	26.612	-1.0736E-09	4.5241E-10	-4.9038E-08	68.782
13	4525.0	21.421	1.0490E-10	4.5241E-10	-4.9705E-08	57.442
14	4640.0	21.282	3.5680E-10	4.5241E-10	-5.0500E-08	57.137
15	4731.0	27.950	-1.5120E-09	4.5241E-10	-4.8429E-08	71.597
MINIMUM	4525.0	19.095	-1.5120E-09	4.5241E-10	-5.1309E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8925E-10	4.5241E-10	-4.8429E-08	71.597
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
1	2733.0
2	2797.1
3	2892.0
4	2717.3
5	2782.3
6	2883.5
7	2717.1
8	2782.1
9	2883.5
10	2717.3
11	2782.3
12	2883.5
13	2733.0
14	2797.1
15	2892.0
MINIMUM	2717.1
Pile N.	7
MAXIMUM	2892.0
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.1006E-06	-1.5086E-13	-57.442	-4.9725E-08	-4.3887	-5.1985E-10	-1.2204	-1.5230E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	0.4800	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
2	-5.0964E-06	-1.4946E-13	-57.137	-5.0500E-08	-4.3655	-5.2089E-10	-1.2236	-1.4822E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
3	-5.2744E-06	-1.4806E-13	-71.597	-5.0055E-08	-5.5622	-1.5085E-09	-0.9721	-2.1609E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.080	0.0000	13.440	2.4000	24.000	0.0000	0.0000
4	-4.9738E-06	-1.5086E-13	-52.220	-5.0602E-08	-3.9779	-5.5644E-10	-1.2566	-1.2938E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
5	-4.9745E-06	-1.4946E-13	-52.196	-5.1299E-08	-3.9767	-5.5515E-10	-1.2568	-1.2696E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
6	-5.2528E-06	-1.4806E-13	-68.782	-5.0100E-08	-5.3270	-1.0701E-09	-1.0312	-2.0126E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
7	-4.9718E-06	-1.5086E-13	-52.156	-5.0612E-08	-3.9729	-5.5696E-10	-1.2568	-1.2911E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
8	-4.9725E-06	-1.4946E-13	-52.132	-5.1309E-08	-3.9717	-5.5569E-10	-1.2570	-1.2670E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
9	-5.2528E-06	-1.4806E-13	-68.782	-5.0100E-08	-5.3270	-1.0701E-09	-1.0312	-2.0126E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
10	-4.9738E-06	-1.5086E-13	-52.220	-5.0602E-08	-3.9779	-5.5644E-10	-1.2566	-1.2938E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
11	-4.9745E-06	-1.4946E-13	-52.196	-5.1299E-08	-3.9767	-5.5515E-10	-1.2568	-1.2696E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
12	-5.2528E-06	-1.4806E-13	-68.782	-5.0100E-08	-5.3270	-1.0701E-09	-1.0312	-2.0126E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
13	-5.1006E-06	-1.5086E-13	-57.442	-4.9725E-08	-4.3887	-5.1985E-10	-1.2204	-1.5230E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	0.4800	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000

APPALDATORE: <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>						
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>									
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>									
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 87 di 294	

14	-5.0964E-06	-1.4946E-13	-57.137	-5.0500E-08	-4.3655	-5.2089E-10	-1.2236	-1.4822E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
15	-5.2744E-06	-1.4806E-13	-71.597	-5.0055E-08	-5.5622	-1.5085E-09	-0.9721	-2.1609E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.080	0.0000	13.440	2.4000	24.000	0.0000	0.0000
Min. Pile N.	-5.2744E-06 3	-1.5086E-13 1	-71.597 3	-5.1309E-08 8	-5.5622 3	-1.5085E-09 3	-1.2570 8	-2.1609E-09 3	2560.6 1	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.0144E-04	9.9073E-15	28.983	2.2615E-09	21.425	6.2703E-09	3.9774	9.4713E-10	2733.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
2	2.0144E-04	1.0068E-14	28.880	2.2818E-09	21.286	6.2982E-09	3.9458	9.4845E-10	2797.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
3	2.0144E-04	8.5544E-15	33.808	2.2912E-09	27.955	7.0476E-09	5.5501	1.1617E-09	2892.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
4	2.0144E-04	1.0671E-14	27.184	2.2903E-09	19.140	6.0210E-09	3.4549	8.7534E-10	2717.3	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.0800	10.800	0.0000	0.0000	0.0000
5	2.0144E-04	1.0810E-14	27.177	2.3117E-09	19.126	6.0649E-09	3.4523	8.8067E-10	2782.3	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.0800	10.560	0.0000	0.0000	0.0000
6	2.0144E-04	8.8195E-15	32.844	2.2878E-09	26.617	6.9070E-09	5.2200	1.1196E-09	2883.5	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
7	2.0144E-04	1.0681E-14	27.163	2.2907E-09	19.112	6.0180E-09	3.4486	8.7448E-10	2717.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.0800	10.800	0.0000	0.0000	0.0000
8	2.0144E-04	1.0820E-14	27.155	2.3122E-09	19.099	6.0619E-09	3.4460	8.7978E-10	2782.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.0800	10.560	0.0000	0.0000	0.0000
9	2.0144E-04	8.8195E-15	32.844	2.2878E-09	26.617	6.9070E-09	5.2200	1.1196E-09	2883.5	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
10	2.0144E-04	1.0671E-14	27.184	2.2903E-09	19.140	6.0210E-09	3.4549	8.7534E-10	2717.3	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.0800	10.800	0.0000	0.0000	0.0000
11	2.0144E-04	1.0810E-14	27.177	2.3117E-09	19.126	6.0649E-09	3.4523	8.8067E-10	2782.3	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.0800	10.560	0.0000	0.0000	0.0000
12	2.0144E-04	8.8195E-15	32.844	2.2878E-09	26.617	6.9070E-09	5.2200	1.1196E-09	2883.5	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
13	2.0144E-04	9.9073E-15	28.983	2.2615E-09	21.425	6.2703E-09	3.9774	9.4713E-10	2733.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
14	2.0144E-04	1.0068E-14	28.880	2.2818E-09	21.286	6.2982E-09	3.9458	9.4845E-10	2797.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
15	2.0144E-04	8.5544E-15	33.808	2.2912E-09	27.955	7.0476E-09	5.5501	1.1617E-09	2892.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
Max. Pile N.	2.0144E-04 1	1.0820E-14 8	33.808 3	2.3122E-09 8	27.955 3	7.0476E-09 3	5.5501 3	1.1617E-09 3	2892.0 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 5  
CASE NAME : 5-5 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5716	1.0000
3	0.8430	1.0000
4	0.5005	1.0000
5	0.4921	1.0000
6	0.7839	1.0000
7	0.4995	1.0000
8	0.4911	1.0000
9	0.7839	1.0000
10	0.5042	1.0000
11	0.4952	1.0000
12	0.7863	1.0000
13	0.6173	1.0000
14	0.6046	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 81932.4	HOR. LOAD Y, KN 3573.18	HOR. LOAD Z, KN 1399.50
MOMENT X, KN- M 2.46900E-10	MOMENT Y, KN- M 23393.5	MOMENT Z, KN- M -40423.5

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 88 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 3.50307E-03	HORIZONTAL Y, M 2.20630E-03	HORIZONTAL Z, M 7.21172E-04
ANGLE ROT. X,RAD -2.33525E-06	ANGLE ROT. Y,RAD 3.38520E-05	ANGLE ROT. Z,RAD -1.90908E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3393E-03	2.1853E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
2	3.1984E-03	2.1853E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
3	4.0575E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
4	2.4917E-03	2.1958E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
5	3.3507E-03	2.1958E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
6	4.2098E-03	2.1958E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
7	2.6440E-03	2.2063E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
8	3.5031E-03	2.2063E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
9	4.3622E-03	2.2063E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
10	2.7963E-03	2.2168E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
11	3.6554E-03	2.2168E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
12	4.5145E-03	2.2168E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
13	2.9487E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
14	3.8077E-03	2.2273E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
15	4.6668E-03	2.2273E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
MINIMUM	2.3393E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.6668E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3858.2	225.13	91.411	-3.3931	-286.47	580.55
2	5110.1	221.42	88.475	-3.3931	-277.95	573.06
3	6174.7	288.84	111.35	-3.3931	-327.04	719.80
4	4108.2	203.57	82.750	-3.3931	-266.22	533.78
5	5298.8	200.94	80.358	-3.3931	-258.89	528.53
6	6363.4	276.68	106.29	-3.3931	-316.11	696.66
7	4358.2	204.68	82.633	-3.3931	-265.99	538.48
8	5487.6	202.05	80.244	-3.3931	-258.66	533.16
9	6552.2	278.51	106.28	-3.3931	-316.12	702.99
10	4608.2	207.39	83.110	-3.3931	-267.17	546.87
11	5676.4	204.60	80.661	-3.3931	-259.69	541.15
12	6741.0	280.92	106.47	-3.3931	-316.57	710.56
13	4800.6	240.05	94.585	-3.3931	-293.94	622.86
14	5865.2	236.41	91.655	-3.3931	-285.43	615.47
15	6929.7	301.98	113.23	-3.3931	-331.20	757.34
MINIMUM	3858.2	200.94	80.244	-3.3931	-331.20	528.53
Pile N.	1	5	8	1	15	5
MAXIMUM	6929.7	301.98	113.23	-3.3931	-258.66	757.34
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3393E-03	2.1853E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
2	3.1984E-03	2.1853E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
3	4.0575E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
4	2.4917E-03	2.1958E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
5	3.3507E-03	2.1958E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
6	4.2098E-03	2.1958E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
7	2.6440E-03	2.2063E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
8	3.5031E-03	2.2063E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
9	4.3622E-03	2.2063E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
10	2.7963E-03	2.2168E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
11	3.6554E-03	2.2168E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
12	4.5145E-03	2.2168E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
13	2.9487E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
14	3.8077E-03	2.2273E-03	7.2117E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
15	4.6668E-03	2.2273E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 89 di 294

MINIMUM	2.3393E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.6668E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3858.2	225.13	91.411	-3.3931	-286.47	580.55
2	5110.1	221.42	88.475	-3.3931	-277.95	573.06
3	6174.7	288.84	111.35	-3.3931	-327.04	719.80
4	4108.2	203.57	82.750	-3.3931	-266.22	533.78
5	5298.8	200.94	80.358	-3.3931	-258.89	528.53
6	6363.4	276.68	106.29	-3.3931	-316.11	696.66
7	4358.2	204.68	82.633	-3.3931	-265.99	538.48
8	5487.6	202.05	80.244	-3.3931	-258.66	533.16
9	6552.2	278.51	106.28	-3.3931	-316.12	702.99
10	4608.2	207.39	83.110	-3.3931	-267.17	546.87
11	5676.4	204.60	80.661	-3.3931	-259.69	541.15
12	6741.0	280.92	106.47	-3.3931	-316.57	710.56
13	4800.6	240.05	94.585	-3.3931	-293.94	622.86
14	5865.2	236.41	91.655	-3.3931	-285.43	615.47
15	6929.7	301.98	113.23	-3.3931	-331.20	757.34
MINIMUM	3858.2	200.94	80.244	-3.3931	-331.20	528.53
Pile N.	1	5	8	1	15	5
MAXIMUM	6929.7	301.98	113.23	-3.3931	-258.66	757.34
Pile N.	15	15	15	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	4125.4
2	4802.4
3	5866.0
4	4114.2
5	4764.1
6	5896.0
7	4268.0
8	4883.1
9	6020.2
10	4433.6
11	5012.9
12	6148.3
13	4782.8
14	5354.3
15	6401.2
MINIMUM	4114.2
Pile N.	4
MAXIMUM	6401.2
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-5.5750E-05	-1.7990E-05	-580.55	-286.47	-47.583	-16.090	-12.921	-5.0064	2183.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000
2	-5.5734E-05	-1.7706E-05	-573.06	-277.95	-47.039	-15.679	-13.010	-4.9474	2891.7	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
3	-5.7563E-05	-1.8399E-05	-719.80	-327.04	-59.495	-19.578	-10.421	-4.0658	3494.1	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.080	10.560	18.720	18.720	24.000	0.0000	0.0000
4	-5.4744E-05	-1.7371E-05	-533.78	-266.22	-43.590	-14.677	-13.414	-5.0839	2324.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-5.4772E-05	-1.7112E-05	-528.53	-258.89	-43.258	-14.345	-13.446	-5.0053	2998.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-5.7639E-05	-1.8306E-05	-696.66	-316.11	-57.261	-18.735	-11.163	-4.2869	3601.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-5.4991E-05	-1.7374E-05	-538.48	-265.99	-43.770	-14.667	-13.501	-5.0849	2466.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.5007E-05	-1.7112E-05	-533.16	-258.66	-43.430	-14.333	-13.533	-5.0060	3105.4	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-5.7912E-05	-1.8312E-05	-702.99	-316.12	-57.551	-18.740	-11.238	-4.2870	3707.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-5.5324E-05	-1.7421E-05	-546.87	-267.17	-44.234	-14.754	-13.573	-5.0856	2607.7	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.5329E-05	-1.7154E-05	-541.15	-259.69	-43.861	-14.409	-13.608	-5.0072	3212.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-5.8200E-05	-1.8324E-05	-710.56	-316.57	-57.948	-18.779	-11.287	-4.2784	3814.6	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-5.7163E-05	-1.8189E-05	-622.86	-293.94	-50.191	-16.666	-13.019	-4.9453	2716.6	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	
	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 90 di 294

14	-5.7186E-05	-1.7922E-05	-615.47	-285.43	-49.658	-16.243	-13.121	-4.8919	3319.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000
15	-5.8693E-05	-1.8469E-05	-757.34	-331.20	-61.717	-19.923	-10.774	-3.9754	3921.4	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.080	10.560	13.440	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.8693E-05	-1.8469E-05	-757.34	-331.20	-61.717	-19.923	-13.608	-5.0856	2183.3	7.8500E+06	7.8500E+06
	15	15	15	15	15	15	11	10	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1853E-03	7.3168E-04	314.98	105.32	225.16	91.428	42.303	16.024	4125.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.1853E-03	7.2117E-04	312.46	102.92	221.46	88.497	41.501	15.474	4802.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	2.1853E-03	7.1066E-04	363.62	118.35	288.91	111.38	57.777	20.967	5866.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	2.1958E-03	7.3168E-04	298.25	99.072	203.60	82.767	37.277	14.092	4114.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.1958E-03	7.2117E-04	296.46	97.036	200.99	80.379	36.732	13.666	4764.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.1958E-03	7.1066E-04	355.17	114.97	276.75	106.32	54.659	19.756	5896.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	2.2063E-03	7.3168E-04	299.41	99.011	204.72	82.651	37.443	14.070	4268.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.2063E-03	7.2117E-04	297.60	96.971	202.09	80.266	36.894	13.644	4883.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.2063E-03	7.1066E-04	356.84	114.98	278.58	106.31	54.986	19.756	6020.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.2168E-03	7.3168E-04	301.89	99.383	207.43	83.129	37.972	14.179	4433.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.2168E-03	7.2117E-04	299.94	97.296	204.65	80.684	37.384	13.738	5012.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.2168E-03	7.1066E-04	358.94	115.13	280.99	106.50	55.456	19.805	6148.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.2273E-03	7.3168E-04	327.87	107.62	240.10	94.607	45.385	16.756	4782.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	2.2273E-03	7.2117E-04	325.34	105.25	236.46	91.680	44.586	16.202	5354.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.2273E-03	7.1066E-04	374.45	119.63	302.06	113.26	60.526	21.444	6401.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	2.2273E-03	7.3168E-04	374.45	119.63	302.06	113.26	60.526	21.444	6401.2	7.8500E+06	7.8500E+06
	13	1	15	15	15	15	15	15	15	1	1

LOAD CASE : 6  
CASE NAME : 6-6 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.4986	1.0000
3	0.5923	1.0000
4	0.5434	1.0000
5	0.4633	1.0000
6	0.5516	1.0000
7	0.5434	1.0000
8	0.4633	1.0000
9	0.5516	1.0000
10	0.5773	1.0000
11	0.4961	1.0000
12	0.5851	1.0000
13	0.8608	1.0000
14	0.8009	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
49984.9	235.727	1825.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53200E-11	27335.6	-2627.62

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 91 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.39571E-04	HORIZONTAL Z, M 9.23771E-04
ANGLE ROT. X,RAD 7.62975E-07	ANGLE ROT. Y,RAD 3.33258E-05	ANGLE ROT. Z,RAD -9.90377E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.6744E-03	1.4644E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
2	1.7189E-03	1.4644E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
3	1.7635E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
4	1.8243E-03	1.4301E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
5	1.8689E-03	1.4301E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
6	1.9135E-03	1.4301E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
7	1.9743E-03	1.3957E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
8	2.0189E-03	1.3957E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
9	2.0634E-03	1.3957E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
10	2.1243E-03	1.3614E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
11	2.1688E-03	1.3614E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
12	2.2134E-03	1.3614E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
13	2.2742E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
14	2.3188E-03	1.3270E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
15	2.3634E-03	1.3270E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
MINIMUM	1.6744E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.3634E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2767.0	16.643	120.02	1.1086	-388.66	47.742
2	2840.1	14.974	109.05	1.1086	-363.41	43.893
3	2913.3	16.786	122.04	1.1086	-394.65	48.074
4	3013.1	15.361	114.61	1.1086	-376.07	44.166
5	3086.2	13.809	104.10	1.1086	-351.52	40.541
6	3159.4	15.513	116.68	1.1086	-382.21	44.522
7	3259.2	14.865	114.59	1.1086	-376.07	42.389
8	3332.3	13.358	104.07	1.1086	-351.52	38.874
9	3405.5	15.014	116.66	1.1086	-382.21	42.735
10	3505.3	14.966	119.02	1.1086	-386.50	41.973
11	3578.4	13.518	108.65	1.1086	-362.62	38.641
12	3651.6	15.098	121.03	1.1086	-392.50	42.278
13	3751.4	18.878	152.92	1.1086	-462.40	49.801
14	3824.5	17.992	146.78	1.1086	-449.81	47.930
15	3897.7	18.953	154.80	1.1086	-467.95	49.964
MINIMUM	2767.0	13.358	104.07	1.1086	-467.95	38.641
Pile N.	1	8	8	1	15	11
MAXIMUM	3897.7	18.953	154.80	1.1086	-351.52	49.964
Pile N.	15	15	15	1	5	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.6744E-03	1.4644E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
2	1.7189E-03	1.4644E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
3	1.7635E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
4	1.8243E-03	1.4301E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
5	1.8689E-03	1.4301E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
6	1.9135E-03	1.4301E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
7	1.9743E-03	1.3957E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
8	2.0189E-03	1.3957E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
9	2.0634E-03	1.3957E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
10	2.1243E-03	1.3614E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
11	2.1688E-03	1.3614E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
12	2.2134E-03	1.3614E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
13	2.2742E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
14	2.3188E-03	1.3270E-04	9.2377E-04	7.6297E-07	3.3326E-05	-9.9038E-06
15	2.3634E-03	1.3270E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 92 di 294

MINIMUM	1.6744E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.3634E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2767.0	16.643	120.02	1.1086	-388.66	47.742
2	2840.1	14.974	109.05	1.1086	-363.41	43.893
3	2913.3	16.786	122.04	1.1086	-394.65	48.074
4	3013.1	15.361	114.61	1.1086	-376.07	44.166
5	3086.2	13.809	104.10	1.1086	-351.52	40.541
6	3159.4	15.513	116.68	1.1086	-382.21	44.522
7	3259.2	14.865	114.59	1.1086	-376.07	42.389
8	3332.3	13.358	104.07	1.1086	-351.52	38.874
9	3405.5	15.014	116.66	1.1086	-382.21	42.735
10	3505.3	14.966	119.02	1.1086	-386.50	41.973
11	3578.4	13.518	108.65	1.1086	-362.62	38.641
12	3651.6	15.098	121.03	1.1086	-392.50	42.278
13	3751.4	18.878	152.92	1.1086	-462.40	49.801
14	3824.5	17.992	146.78	1.1086	-449.81	47.930
15	3897.7	18.953	154.80	1.1086	-467.95	49.964
MINIMUM	2767.0	13.358	104.07	1.1086	-467.95	38.641
Pile N.	1	8	8	1	15	11
MAXIMUM	3897.7	18.953	154.80	1.1086	-351.52	49.964
Pile N.	15	15	15	1	5	15

PILE GROUP	STRESS, KN/ M**2
1	2740.5
2	2705.3
3	2841.3
4	2841.0
5	2808.0
6	2942.2
7	2979.7
8	2946.7
9	3080.9
10	3149.9
11	3119.0
12	3250.7
13	3518.1
14	3521.3
15	3617.4
MINIMUM	2705.3
Pile N.	2
MAXIMUM	3617.4
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6452E-06	-2.2449E-05	-47.742	-388.66	-3.1861	-20.347	-0.9307	-6.5024	1565.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5373E-06	-2.1694E-05	-43.893	-363.41	-2.8975	-18.562	-0.9522	-6.6051	1607.2	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-3.6544E-06	-2.2694E-05	-48.074	-394.65	-3.2131	-20.670	-0.9277	-6.5414	1648.6	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-3.5230E-06	-2.2114E-05	-44.166	-376.07	-2.9794	-19.477	-0.9171	-6.5637	1705.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.4052E-06	-2.1235E-05	-40.541	-351.52	-2.7076	-17.786	-0.9259	-6.5733	1746.4	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-3.5323E-06	-2.2370E-05	-44.522	-382.21	-3.0069	-19.802	-0.9149	-6.6100	1787.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
7	-3.4461E-06	-2.2127E-05	-42.389	-376.07	-2.9079	-19.485	-0.8901	-6.5649	1844.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.3347E-06	-2.1249E-05	-38.874	-351.52	-2.6434	-17.794	-0.8993	-6.5749	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-3.4546E-06	-2.2383E-05	-42.735	-382.21	-2.9346	-19.810	-0.8879	-6.6111	1927.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
10	-3.4051E-06	-2.2439E-05	-41.973	-386.50	-2.9416	-20.220	-0.8525	-6.5187	1983.6	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-3.3104E-06	-2.1704E-05	-38.641	-362.62	-2.6856	-18.534	-0.8716	-6.6084	2025.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-3.4130E-06	-2.2664E-05	-42.278	-392.50	-2.9664	-20.544	-0.8497	-6.5589	2066.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-3.4555E-06	-2.3742E-05	-49.801	-462.40	-3.6516	-25.751	-0.6611	-5.4278	2122.9	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF3A	02	E ZZ CL	VI0103 003	A	93 di 294

14	-3.4416E-06	-2.3694E-05	-47.930	-449.81	-3.4943	-24.759	-0.7028	-5.7482	2164.2	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-3.4576E-06	-2.3931E-05	-49.964	-467.95	-3.6657	-26.053	-0.6573	-5.4470	2205.6	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.6544E-06	-2.3931E-05	-49.964	-467.95	-3.6657	-26.053	-0.9522	-6.6111	1565.8	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	9	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4644E-04	9.2034E-04	20.999	132.85	16.645	120.03	3.0121	20.753	2740.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4644E-04	9.2377E-04	19.728	125.26	14.976	109.06	2.6340	18.274	2705.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	1.4644E-04	9.2720E-04	21.107	134.58	16.788	122.05	3.0456	21.150	2841.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	1.4300E-04	9.2034E-04	19.936	129.17	15.363	114.63	2.7517	19.544	2841.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4300E-04	9.2377E-04	18.734	121.78	13.811	104.12	2.4060	17.212	2808.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	1.4300E-04	9.2720E-04	20.055	130.93	15.515	116.70	2.7869	19.950	2942.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	1.3957E-04	9.2034E-04	19.463	129.18	14.868	114.61	2.6717	19.543	2979.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.3957E-04	9.2377E-04	18.289	121.79	13.360	104.09	2.3353	17.211	2946.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	1.3957E-04	9.2720E-04	19.578	130.94	15.016	116.68	2.7060	19.949	3080.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	1.3614E-04	9.2034E-04	19.435	132.26	14.968	119.04	2.7285	20.541	3149.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.3614E-04	9.2377E-04	18.327	125.07	13.520	108.67	2.3990	18.199	3119.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	1.3614E-04	9.2720E-04	19.541	133.96	15.100	121.05	2.7594	20.937	3250.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.3270E-04	9.2034E-04	22.183	155.08	18.881	152.95	3.7043	28.491	3518.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.3270E-04	9.2377E-04	21.563	151.21	17.995	146.80	3.4862	26.977	3521.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.3270E-04	9.2720E-04	22.239	156.66	18.956	154.82	3.7233	28.867	3617.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4644E-04	9.2720E-04	22.239	156.66	18.956	154.82	3.7233	28.867	3617.4	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 7  
CASE NAME : 7-7 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4945	1.0000
8	0.4941	1.0000
9	0.8053	1.0000
10	0.4955	1.0000
11	0.4951	1.0000
12	0.8053	1.0000
13	0.5845	1.0000
14	0.5791	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
69480.1	335.863	-2.99900E-16
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
2.17700E-11	-3.62069E-05	-3743.41

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 94 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.81908E-03	HORIZONTAL Y, M 2.01441E-04	HORIZONTAL Z, M -1.49465E-13
ANGLE ROT. X,RAD 3.32728E-16	ANGLE ROT. Y,RAD -4.25043E-14	ANGLE ROT. Z,RAD -1.63191E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
2	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
3	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
4	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
5	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
6	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
7	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
8	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
9	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
10	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
11	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
12	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
13	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
14	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
15	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
MINIMUM	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4525.0	21.421	8.9190E-11	4.8345E-10	-4.9649E-08	57.442
2	4640.0	21.282	3.5547E-10	4.8345E-10	-5.0495E-08	57.137
3	4731.0	27.950	-1.4955E-09	4.8345E-10	-4.8484E-08	71.597
4	4525.0	19.136	7.7281E-10	4.8345E-10	-5.0549E-08	52.220
5	4640.0	19.123	9.8027E-10	4.8345E-10	-5.1295E-08	52.196
6	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
7	4525.0	19.108	7.8085E-10	4.8345E-10	-5.0559E-08	52.156
8	4640.0	19.095	9.8804E-10	4.8345E-10	-5.1304E-08	52.132
9	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
10	4525.0	19.136	7.7281E-10	4.8345E-10	-5.0549E-08	52.220
11	4640.0	19.123	9.8027E-10	4.8345E-10	-5.1295E-08	52.196
12	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
13	4525.0	21.421	8.9190E-11	4.8345E-10	-4.9649E-08	57.442
14	4640.0	21.282	3.5547E-10	4.8345E-10	-5.0495E-08	57.137
15	4731.0	27.950	-1.4955E-09	4.8345E-10	-4.8484E-08	71.597
MINIMUM	4525.0	19.095	-1.4955E-09	4.8345E-10	-5.1304E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8804E-10	4.8345E-10	-4.8484E-08	71.597
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
2	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
3	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
4	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
5	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
6	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
7	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
8	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
9	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
10	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
11	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
12	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
13	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
14	2.8191E-03	2.0144E-04	-1.4947E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
15	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 95 di 294

MINIMUM	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4525.0	21.421	8.9190E-11	4.8345E-10	-4.9649E-08	57.442
2	4640.0	21.282	3.5547E-10	4.8345E-10	-5.0495E-08	57.137
3	4731.0	27.950	-1.4955E-09	4.8345E-10	-4.8484E-08	71.597
4	4525.0	19.136	7.7281E-10	4.8345E-10	-5.0549E-08	52.220
5	4640.0	19.123	9.8027E-10	4.8345E-10	-5.1295E-08	52.196
6	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
7	4525.0	19.108	7.8085E-10	4.8345E-10	-5.0559E-08	52.156
8	4640.0	19.095	9.8804E-10	4.8345E-10	-5.1304E-08	52.132
9	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
10	4525.0	19.136	7.7281E-10	4.8345E-10	-5.0549E-08	52.220
11	4640.0	19.123	9.8027E-10	4.8345E-10	-5.1295E-08	52.196
12	4731.0	26.612	-1.0578E-09	4.8345E-10	-4.9091E-08	68.782
13	4525.0	21.421	8.9190E-11	4.8345E-10	-4.9649E-08	57.442
14	4640.0	21.282	3.5547E-10	4.8345E-10	-5.0495E-08	57.137
15	4731.0	27.950	-1.4955E-09	4.8345E-10	-4.8484E-08	71.597
MINIMUM	4525.0	19.095	-1.4955E-09	4.8345E-10	-5.1304E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8804E-10	4.8345E-10	-4.8484E-08	71.597
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2733.0
2	2797.1
3	2892.0
4	2717.3
5	2782.3
6	2883.5
7	2717.1
8	2782.1
9	2883.5
10	2717.3
11	2782.3
12	2883.5
13	2733.0
14	2797.1
15	2892.0
MINIMUM	2717.1
Pile N.	7
MAXIMUM	2892.0
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-5.1006E-06	-1.5096E-13	-57.442	-4.9676E-08	-4.3887	-5.1990E-10	-1.2204	-1.5250E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	0.4800	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
2	-5.0964E-06	-1.4947E-13	-57.137	-5.0495E-08	-4.3655	-5.2090E-10	-1.2236	-1.4824E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
3	-5.2744E-06	-1.4797E-13	-71.597	-5.0086E-08	-5.5622	-1.4920E-09	-0.9721	-2.1585E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.080	0.0000	13.440	2.4000	24.000	0.0000	0.0000
4	-4.9738E-06	-1.5096E-13	-52.220	-5.0549E-08	-3.9779	-5.5656E-10	-1.2566	-1.2956E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
5	-4.9745E-06	-1.4947E-13	-52.196	-5.1294E-08	-3.9767	-5.5516E-10	-1.2568	-1.2698E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
6	-5.2528E-06	-1.4797E-13	-68.782	-5.0134E-08	-5.3270	-1.0543E-09	-1.0312	-2.0103E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
7	-4.9718E-06	-1.5096E-13	-52.156	-5.0559E-08	-3.9729	-5.5708E-10	-1.2568	-1.2929E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
8	-4.9725E-06	-1.4947E-13	-52.132	-5.1304E-08	-3.9717	-5.5570E-10	-1.2570	-1.2671E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
9	-5.2528E-06	-1.4797E-13	-68.782	-5.0134E-08	-5.3270	-1.0543E-09	-1.0312	-2.0103E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
10	-4.9738E-06	-1.5096E-13	-52.220	-5.0549E-08	-3.9779	-5.5656E-10	-1.2566	-1.2956E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
11	-4.9745E-06	-1.4947E-13	-52.196	-5.1294E-08	-3.9767	-5.5516E-10	-1.2568	-1.2698E-09	2625.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	0.0000	11.280	20.160	18.720	2.4000	24.000	0.0000	0.0000
12	-5.2528E-06	-1.4797E-13	-68.782	-5.0134E-08	-5.3270	-1.0543E-09	-1.0312	-2.0103E-09	2677.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
13	-5.1006E-06	-1.5096E-13	-57.442	-4.9676E-08	-4.3887	-5.1990E-10	-1.2204	-1.5250E-09	2560.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	0.4800	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000





<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 97 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 3.18352E-03	HORIZONTAL Y, M 8.47568E-04	HORIZONTAL Z, M -7.12130E-04
ANGLE ROT. X,RAD 7.12641E-08	ANGLE ROT. Y,RAD -5.01116E-05	ANGLE ROT. Z, RAD -7.18293E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z, RAD
*****	*****	*****	*****	*****	*****	*****
1	3.3113E-03	8.4821E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
2	3.6345E-03	8.4821E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
3	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
4	3.0858E-03	8.4789E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
5	3.4090E-03	8.4789E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
6	3.7322E-03	8.4789E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
7	2.8603E-03	8.4757E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
8	3.1835E-03	8.4757E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
9	3.5067E-03	8.4757E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
10	2.6348E-03	8.4725E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
11	2.9580E-03	8.4725E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
12	3.2812E-03	8.4725E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
13	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
14	2.7325E-03	8.4693E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
15	3.0557E-03	8.4693E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
MINIMUM	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	5250.0	101.52	-91.176	0.1036	251.88	261.10
2	5650.5	98.284	-88.296	0.1036	245.58	254.18
3	6051.1	115.62	-103.37	0.1036	278.07	291.24
4	4970.5	82.872	-74.894	0.1036	215.27	219.57
5	5371.1	78.911	-71.377	0.1036	207.10	210.56
6	5771.6	101.97	-91.514	0.1036	252.59	262.15
7	4691.1	81.129	-73.404	0.1036	211.75	215.44
8	5091.6	77.312	-70.011	0.1036	203.84	206.72
9	5492.2	100.85	-90.582	0.1036	250.50	259.59
10	4343.1	81.177	-73.484	0.1036	211.87	215.40
11	4812.2	77.362	-70.091	0.1036	203.97	206.71
12	5212.7	100.83	-90.602	0.1036	250.49	259.39
13	3973.0	88.392	-79.856	0.1036	226.42	231.61
14	4503.5	84.350	-76.263	0.1036	218.26	222.63
15	4933.3	105.89	-95.077	0.1036	260.15	270.13
MINIMUM	3973.0	77.312	-103.37	0.1036	203.84	206.71
Pile N.	13	8	3	1	8	11
MAXIMUM	6051.1	115.62	-70.011	0.1036	278.07	291.24
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z, RAD
*****	*****	*****	*****	*****	*****	*****
1	3.3113E-03	8.4821E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
2	3.6345E-03	8.4821E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
3	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
4	3.0858E-03	8.4789E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
5	3.4090E-03	8.4789E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
6	3.7322E-03	8.4789E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
7	2.8603E-03	8.4757E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
8	3.1835E-03	8.4757E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
9	3.5067E-03	8.4757E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
10	2.6348E-03	8.4725E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
11	2.9580E-03	8.4725E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
12	3.2812E-03	8.4725E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
13	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
14	2.7325E-03	8.4693E-04	-7.1213E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
15	3.0557E-03	8.4693E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 98 di 294

MINIMUM	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	5250.0	101.52	-91.176	0.1036	251.88	261.10
2	5650.5	98.284	-88.296	0.1036	245.58	254.18
3	6051.1	115.62	-103.37	0.1036	278.07	291.24
4	4970.5	82.872	-74.894	0.1036	215.27	219.57
5	5371.1	78.911	-71.377	0.1036	207.10	210.56
6	5771.6	101.97	-91.514	0.1036	252.59	262.15
7	4691.1	81.129	-73.404	0.1036	211.75	215.44
8	5091.6	77.312	-70.011	0.1036	203.84	206.72
9	5492.2	100.85	-90.582	0.1036	250.50	259.59
10	4343.1	81.177	-73.484	0.1036	211.87	215.40
11	4812.2	77.362	-70.091	0.1036	203.97	206.71
12	5212.7	100.83	-90.602	0.1036	250.49	259.39
13	3973.0	88.392	-79.856	0.1036	226.42	231.61
14	4503.5	84.350	-76.263	0.1036	218.26	222.63
15	4933.3	105.89	-95.077	0.1036	260.15	270.13
MINIMUM	3973.0	77.312	-103.37	0.1036	203.84	206.71
Pile N.	13	8	3	1	8	11
MAXIMUM	6051.1	115.62	-70.011	0.1036	278.07	291.24
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
1	4059.3
2	4257.8
3	4632.2
4	3735.2
5	3925.4
6	4358.2
7	3560.9
8	3752.2
9	4190.2
10	3364.1
11	3594.3
12	4031.6
13	3220.0
14	3483.8
15	3916.8
MINIMUM	3220.0
Pile N.	13
MAXIMUM	4632.2
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-2.2047E-05	-7.1245E-04	-261.10	-110.66	-20.882	-91.197	-4.6420	-17.198	2970.9	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-2.1997E-05	-7.1213E-04	-254.18	-108.65	-20.315	-88.317	-4.7652	-16.528	3197.5	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
3	-2.2305E-05	-7.1181E-04	-291.24	-119.33	-23.471	-103.40	-4.0984	-20.204	3424.2	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	6.9600	10.080	0.0000	13.440	3.8400	24.000	0.0000	0.0000
4	-2.1328E-05	-7.1245E-04	-219.57	-98.578	-17.477	-74.911	-5.1788	-13.410	2812.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
5	-2.1102E-05	-7.1213E-04	-210.56	-95.838	-16.772	-71.394	-5.2278	-12.629	3039.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-2.2081E-05	-7.1181E-04	-262.15	-110.92	-20.989	-91.536	-4.6174	-17.294	3266.1	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	6.9600	10.560	0.0000	18.720	3.8400	24.000	0.0000	0.0000
7	-2.1186E-05	-7.1245E-04	-215.44	-97.389	-17.140	-73.419	-5.1996	-13.067	2654.6	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-2.0972E-05	-7.1213E-04	-206.72	-94.760	-16.472	-70.026	-5.2353	-12.324	2881.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-2.2024E-05	-7.1181E-04	-259.59	-110.24	-20.778	-90.603	-4.6586	-17.068	3107.9	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
10	-2.1166E-05	-7.1245E-04	-215.40	-97.417	-17.135	-73.498	-5.1951	-13.080	2457.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
11	-2.0955E-05	-7.1213E-04	-206.71	-94.794	-16.470	-70.106	-5.2314	-12.338	2723.1	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-2.2003E-05	-7.1181E-04	-259.39	-110.23	-20.761	-90.622	-4.6561	-17.068	2949.8	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
13	-2.1534E-05	-7.1245E-04	-231.61	-102.21	-18.435	-79.870	-5.0568	-14.534	2248.3	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.4400	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>												
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 003</td> <td>A</td> <td>99 di 294</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 003	A	99 di 294
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF3A	02	E ZZ CL	VI0103 003	A	99 di 294								

14	-2.1371E-05	-7.1213E-04	-222.63	-99.573	-17.732	-76.278	-5.1432	-13.719	2548.4	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
15	-2.2107E-05	-7.1181E-04	-270.13	-113.45	-21.665	-95.097	-4.4409	-18.146	2791.7	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	6.9600	10.320	0.0000	18.720	3.8400	24.000	0.0000	0.0000
Min. Pile N.	-2.2305E-05	-7.1245E-04	-291.24	-119.33	-23.471	-103.40	-5.2353	-20.204	2248.3	7.8500E+06	7.8500E+06
	3	1	3	3	3	3	8	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	8.4821E-04	1.8322E-05	132.14	251.88	101.54	17.558	19.648	4.1443	4059.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
2	8.4821E-04	1.8223E-05	129.80	245.58	98.306	17.082	18.874	4.2437	4257.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
3	8.4821E-04	1.8578E-05	142.52	278.07	115.65	19.746	23.121	3.5955	4632.2	7.8500E+06	7.8500E+06
x( M)	0.0000	12.960	6.7200	0.0000	0.0000	10.320	3.8400	18.720	0.0000	0.0000	0.0000
4	8.4789E-04	1.7588E-05	117.80	215.27	82.889	14.697	15.266	4.5722	3735.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
5	8.4789E-04	1.7342E-05	114.63	207.10	78.928	14.092	14.372	4.6006	3925.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
6	8.4789E-04	1.8339E-05	132.52	252.59	102.00	17.644	19.772	4.1212	4358.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.560	3.8400	18.720	0.0000	0.0000	0.0000
7	8.4757E-04	1.7471E-05	116.36	211.75	81.145	14.420	14.867	4.5874	3560.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
8	8.4757E-04	1.7233E-05	113.30	203.84	77.328	13.846	14.009	4.6041	3752.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
9	8.4757E-04	1.8301E-05	131.66	250.50	100.88	17.470	19.499	4.1573	4190.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
10	8.4725E-04	1.7460E-05	116.35	211.87	81.192	14.421	14.875	4.5858	3364.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
11	8.4725E-04	1.7226E-05	113.30	203.97	77.377	13.849	14.018	4.6030	3594.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
12	8.4725E-04	1.8290E-05	131.60	250.49	100.85	17.462	19.491	4.1571	4031.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
13	8.4693E-04	1.7830E-05	121.96	226.42	88.406	15.528	16.527	4.4872	3220.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	7.2000	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
14	8.4693E-04	1.7639E-05	118.90	218.26	84.365	14.920	15.605	4.5496	3483.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
15	8.4693E-04	1.8377E-05	135.28	260.15	105.91	18.246	20.720	3.9796	3916.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.560	3.8400	18.720	0.0000	0.0000	0.0000
Max. Pile N.	8.4821E-04	1.8578E-05	142.52	278.07	115.65	19.746	23.121	4.6041	4632.2	7.8500E+06	7.8500E+06
	1	3	3	3	3	3	3	8	3	1	1

LOAD CASE : 9  
CASE NAME : 9-9 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.4986	1.0000
3	0.5923	1.0000
4	0.5434	1.0000
5	0.4633	1.0000
6	0.5516	1.0000
7	0.5434	1.0000
8	0.4633	1.0000
9	0.5516	1.0000
10	0.5773	1.0000
11	0.4961	1.0000
12	0.5851	1.0000
13	0.8608	1.0000
14	0.8009	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
56801.9	235.727	1825.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53200E-11	27335.6	-2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 100 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.29580E-03	HORIZONTAL Y, M 1.39617E-04	HORIZONTAL Z, M 9.24058E-04
ANGLE ROT. X,RAD 7.63360E-07	ANGLE ROT. Y,RAD 3.33281E-05	ANGLE ROT. Z,RAD -9.90491E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9513E-03	1.4649E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
2	1.9958E-03	1.4649E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
3	2.0404E-03	1.4649E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
4	2.1012E-03	1.4305E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
5	2.1458E-03	1.4305E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
6	2.1904E-03	1.4305E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
7	2.2512E-03	1.3962E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
8	2.2958E-03	1.3962E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
9	2.3404E-03	1.3962E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
10	2.4012E-03	1.3618E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
11	2.4458E-03	1.3618E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
12	2.4904E-03	1.3618E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
13	2.5512E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
14	2.5958E-03	1.3275E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
15	2.6403E-03	1.3275E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
MINIMUM	1.9513E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.6403E-03	1.4649E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3221.4	16.643	120.02	1.1092	-388.81	47.769
2	3294.6	14.973	109.04	1.1092	-363.56	43.918
3	3367.7	16.786	122.04	1.1092	-394.81	48.101
4	3467.5	15.361	114.61	1.1092	-376.22	44.192
5	3540.7	13.809	104.10	1.1092	-351.67	40.565
6	3613.8	15.513	116.68	1.1092	-382.36	44.548
7	3713.7	14.865	114.59	1.1092	-376.22	42.414
8	3786.8	13.358	104.07	1.1092	-351.66	38.897
9	3859.9	15.013	116.65	1.1092	-382.36	42.760
10	3959.8	14.966	119.02	1.1092	-386.66	41.998
11	4032.9	13.517	108.64	1.1092	-362.77	38.664
12	4106.1	15.098	121.03	1.1092	-392.65	42.303
13	4205.9	18.879	152.93	1.1092	-462.57	49.828
14	4279.0	17.993	146.78	1.1092	-449.99	47.956
15	4352.2	18.953	154.80	1.1092	-468.12	49.991
MINIMUM	3221.4	13.358	104.07	1.1092	-468.12	38.664
Pile N.	1	8	8	1	15	11
MAXIMUM	4352.2	18.953	154.80	1.1092	-351.66	49.991
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9513E-03	1.4649E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
2	1.9958E-03	1.4649E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
3	2.0404E-03	1.4649E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
4	2.1012E-03	1.4305E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
5	2.1458E-03	1.4305E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
6	2.1904E-03	1.4305E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
7	2.2512E-03	1.3962E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
8	2.2958E-03	1.3962E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
9	2.3404E-03	1.3962E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
10	2.4012E-03	1.3618E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
11	2.4458E-03	1.3618E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
12	2.4904E-03	1.3618E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
13	2.5512E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
14	2.5958E-03	1.3275E-04	9.2406E-04	7.6336E-07	3.3328E-05	-9.9049E-06
15	2.6403E-03	1.3275E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF3A	02	E ZZ CL	VI0103 003	A	101 di 294

MINIMUM	1.9513E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.6403E-03	1.4649E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3221.4	16.643	120.02	1.1092	-388.81	47.769
2	3294.6	14.973	109.04	1.1092	-363.56	43.918
3	3367.7	16.786	122.04	1.1092	-394.81	48.101
4	3467.5	15.361	114.61	1.1092	-376.22	44.192
5	3540.7	13.809	104.10	1.1092	-351.67	40.565
6	3613.8	15.513	116.68	1.1092	-382.36	44.548
7	3713.7	14.865	114.59	1.1092	-376.22	42.414
8	3786.8	13.358	104.07	1.1092	-351.66	38.897
9	3859.9	15.013	116.65	1.1092	-382.36	42.760
10	3959.8	14.966	119.02	1.1092	-386.66	41.998
11	4032.9	13.517	108.64	1.1092	-362.77	38.664
12	4106.1	15.098	121.03	1.1092	-392.65	42.303
13	4205.9	18.879	152.93	1.1092	-462.57	49.828
14	4279.0	17.993	146.78	1.1092	-449.99	47.956
15	4352.2	18.953	154.80	1.1092	-468.12	49.991
MINIMUM	3221.4	13.358	104.07	1.1092	-468.12	38.664
Pile N.	1	8	8	1	15	11
MAXIMUM	4352.2	18.953	154.80	1.1092	-351.66	49.991
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

1	2998.1
2	2962.9
3	3098.9
4	3098.6
5	3065.6
6	3199.8
7	3237.3
8	3204.3
9	3338.5
10	3407.6
11	3376.6
12	3508.3
13	3775.8
14	3779.0
15	3875.2
MINIMUM	2962.9
Pile N.	2
MAXIMUM	3875.2
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6502E-06	-2.2479E-05	-47.769	-388.81	-3.1897	-20.369	-0.9313	-6.5064	1822.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5424E-06	-2.1726E-05	-43.918	-363.56	-2.9008	-18.582	-0.9529	-6.6099	1864.3	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-3.6594E-06	-2.2725E-05	-48.101	-394.81	-3.2167	-20.691	-0.9283	-6.5453	1905.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-3.5279E-06	-2.2145E-05	-44.192	-376.22	-2.9828	-19.498	-0.9177	-6.5681	1962.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.4104E-06	-2.1267E-05	-40.565	-351.67	-2.7108	-17.806	-0.9266	-6.5785	2003.6	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-3.5371E-06	-2.2401E-05	-44.548	-382.36	-3.0103	-19.823	-0.9155	-6.6143	2045.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
7	-3.4508E-06	-2.2158E-05	-42.414	-376.22	-2.9112	-19.505	-0.8906	-6.5692	2101.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.3398E-06	-2.1281E-05	-38.897	-351.66	-2.6465	-17.814	-0.9000	-6.5800	2142.9	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-3.4593E-06	-2.2414E-05	-42.760	-382.36	-2.9378	-19.831	-0.8884	-6.6154	2184.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
10	-3.4098E-06	-2.2469E-05	-41.998	-386.66	-2.9449	-20.242	-0.8530	-6.5227	2240.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-3.3154E-06	-2.1736E-05	-38.664	-362.77	-2.6886	-18.554	-0.8722	-6.6132	2282.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-3.4176E-06	-2.2695E-05	-42.303	-392.65	-2.9696	-20.566	-0.8502	-6.5629	2323.6	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-3.4595E-06	-2.3768E-05	-49.828	-462.57	-3.6551	-25.776	-0.6613	-5.4295	2380.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 102 di 294

14	-3.4457E-06	-2.3722E-05	-47.956	-449.99	-3.4978	-24.784	-0.7030	-5.7503	2421.4	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-3.4616E-06	-2.3957E-05	-49.991	-468.12	-3.6692	-26.079	-0.6575	-5.4487	2462.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.6594E-06	-2.3957E-05	-49.991	-468.12	-3.6692	-26.079	-0.9529	-6.6154	1822.9	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	9	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4649E-04	9.2062E-04	21.011	132.91	16.645	120.03	3.0130	20.759	2998.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4649E-04	9.2406E-04	19.739	125.32	14.976	109.06	2.6349	18.279	2962.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	1.4649E-04	9.2749E-04	21.119	134.65	16.789	122.06	3.0466	21.156	3098.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	1.4305E-04	9.2062E-04	19.947	129.24	15.363	114.63	2.7526	19.549	3098.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4305E-04	9.2406E-04	18.744	121.84	13.811	104.12	2.4068	17.217	3065.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	1.4305E-04	9.2749E-04	20.066	130.99	15.516	116.70	2.7878	19.955	3199.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	1.3962E-04	9.2062E-04	19.473	129.25	14.868	114.61	2.6726	19.548	3237.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.3962E-04	9.2406E-04	18.299	121.85	13.360	104.09	2.3360	17.216	3204.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	1.3962E-04	9.2749E-04	19.589	131.01	15.016	116.68	2.7069	19.955	3338.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	1.3618E-04	9.2062E-04	19.445	132.33	14.968	119.04	2.7294	20.547	3407.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.3618E-04	9.2406E-04	18.337	125.13	13.520	108.67	2.3998	18.204	3376.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	1.3618E-04	9.2749E-04	19.551	134.03	15.100	121.06	2.7603	20.943	3508.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.3275E-04	9.2062E-04	22.194	155.16	18.882	152.96	3.7054	28.500	3775.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.3275E-04	9.2406E-04	21.574	151.28	17.996	146.81	3.4873	26.985	3779.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.3275E-04	9.2749E-04	22.250	156.73	18.957	154.84	3.7244	28.875	3875.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4649E-04	9.2749E-04	22.250	156.73	18.957	154.84	3.7244	28.875	3875.2	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 10  
CASE NAME : 10-10 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5740	1.0000
3	0.8505	1.0000
4	0.4989	1.0000
5	0.4930	1.0000
6	0.7909	1.0000
7	0.4979	1.0000
8	0.4921	1.0000
9	0.7909	1.0000
10	0.5014	1.0000
11	0.4952	1.0000
12	0.7925	1.0000
13	0.6070	1.0000
14	0.5965	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
77161.1	3825.72	1248.30
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
3.86900E-10	20395.5	-50313.9

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 103 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 3.28144E-03	HORIZONTAL Y, M 2.41642E-03	HORIZONTAL Z, M 6.39256E-04
ANGLE ROT. X,RAD -2.40354E-06	ANGLE ROT. Y,RAD 2.90979E-05	ANGLE ROT. Z,RAD -2.20095E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0291E-03	2.3948E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
2	3.0196E-03	2.3948E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
3	4.0100E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
4	2.1601E-03	2.4056E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
5	3.1505E-03	2.4056E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
6	4.1409E-03	2.4056E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
7	2.2910E-03	2.4164E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
8	3.2814E-03	2.4164E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
9	4.2719E-03	2.4164E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
10	2.4219E-03	2.4272E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
11	3.4124E-03	2.4272E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
12	4.4028E-03	2.4272E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
13	2.5529E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
14	3.5433E-03	2.4381E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
15	4.5337E-03	2.4381E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
MINIMUM	2.0291E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.5337E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3349.2	241.03	81.770	-3.4923	-257.50	602.75
2	4888.4	237.64	79.132	-3.4923	-249.64	596.33
3	6115.8	311.73	99.551	-3.4923	-293.16	756.90
4	3564.0	217.18	73.896	-3.4923	-239.06	551.05
5	5050.7	215.05	71.790	-3.4923	-232.39	547.29
6	6278.1	298.39	95.034	-3.4923	-283.42	731.52
7	3778.9	218.30	73.790	-3.4923	-238.85	555.82
8	5213.0	216.17	71.688	-3.4923	-232.17	552.02
9	6440.3	300.28	95.023	-3.4923	-283.42	738.06
10	3993.8	220.80	74.109	-3.4923	-239.65	563.77
11	5375.2	218.56	71.968	-3.4923	-232.87	559.66
12	6602.6	302.60	95.135	-3.4923	-283.69	745.49
13	4208.7	253.84	83.698	-3.4923	-262.09	640.57
14	5537.5	250.48	81.054	-3.4923	-254.18	634.10
15	6764.8	323.66	100.66	-3.4923	-295.65	792.14
MINIMUM	3349.2	215.05	71.688	-3.4923	-295.65	547.29
Pile N.	1	5	8	1	15	5
MAXIMUM	6764.8	323.66	100.66	-3.4923	-232.17	792.14
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0291E-03	2.3948E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
2	3.0196E-03	2.3948E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
3	4.0100E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
4	2.1601E-03	2.4056E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
5	3.1505E-03	2.4056E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
6	4.1409E-03	2.4056E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
7	2.2910E-03	2.4164E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
8	3.2814E-03	2.4164E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
9	4.2719E-03	2.4164E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
10	2.4219E-03	2.4272E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
11	3.4124E-03	2.4272E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
12	4.4028E-03	2.4272E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
13	2.5529E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
14	3.5433E-03	2.4381E-03	6.3926E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
15	4.5337E-03	2.4381E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6							COMMESSA IF3A	LOTTO 02

MINIMUM	2.0291E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.5337E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05	-2.2010E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3349.2	241.03	81.770	-3.4923	-257.50	602.75
2	4888.4	237.64	79.132	-3.4923	-249.64	596.33
3	6115.8	311.73	99.551	-3.4923	-293.16	756.90
4	3564.0	217.18	73.896	-3.4923	-239.06	551.05
5	5050.7	215.05	71.790	-3.4923	-232.39	547.29
6	6278.1	298.39	95.034	-3.4923	-283.42	731.52
7	3778.9	218.30	73.790	-3.4923	-238.85	555.82
8	5213.0	216.17	71.688	-3.4923	-232.17	552.02
9	6440.3	300.28	95.023	-3.4923	-283.42	738.06
10	3993.8	220.80	74.109	-3.4923	-239.65	563.77
11	5375.2	218.56	71.968	-3.4923	-232.87	559.66
12	6602.6	302.60	95.135	-3.4923	-283.69	745.49
13	4208.7	253.84	83.698	-3.4923	-262.09	640.57
14	5537.5	250.48	81.054	-3.4923	-254.18	634.10
15	6764.8	323.66	100.66	-3.4923	-295.65	792.14
MINIMUM	3349.2	215.05	71.688	-3.4923	-295.65	547.29
Pile N.	1	5	8	1	15	5
MAXIMUM	6764.8	323.66	100.66	-3.4923	-232.17	792.14
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	3861.6
2	4705.7
3	5895.9
4	3818.8
5	4641.9
6	5906.2
7	3953.3
8	4746.5
9	6016.3
10	4097.8
11	4860.3
12	6129.2
13	4458.0
14	5183.0
15	6364.7
MINIMUM	3818.8
Pile N.	4
MAXIMUM	6364.7
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.1418E-05	-1.5952E-05	-602.75	-257.50	-52.152	-14.298	-13.911	-4.4689	1895.2	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-6.1512E-05	-1.5687E-05	-596.33	-249.64	-51.727	-13.940	-13.995	-4.4021	2766.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
3	-6.3308E-05	-1.6278E-05	-756.90	-293.16	-65.580	-17.418	-11.389	-3.5897	3460.8	7.8500E+06	7.8500E+06
x( M)	12.720	13.200	0.0000	0.0000	10.000	10.560	13.200	18.720	24.000	0.0000	0.0000
4	-6.0339E-05	-1.5386E-05	-551.05	-239.06	-47.677	-13.014	-14.470	-4.5349	2016.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-6.0435E-05	-1.5151E-05	-547.29	-232.39	-47.470	-12.735	-14.502	-4.4546	2858.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-6.3471E-05	-1.6195E-05	-731.52	-283.42	-63.405	-16.666	-11.881	-3.7888	3552.7	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-6.0570E-05	-1.5387E-05	-555.82	-238.85	-47.846	-13.004	-14.560	-4.5357	2138.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-6.0663E-05	-1.5149E-05	-552.02	-232.17	-47.632	-12.724	-14.592	-4.4550	2949.9	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-6.3750E-05	-1.6200E-05	-738.06	-283.42	-63.345	-16.670	-11.958	-3.7889	3644.5	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-6.0909E-05	-1.5421E-05	-563.77	-239.65	-48.278	-13.064	-14.636	-4.5366	2260.0	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-6.0979E-05	-1.5179E-05	-559.66	-232.87	-48.036	-12.776	-14.669	-4.4560	3041.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-6.4037E-05	-1.6208E-05	-745.49	-283.69	-63.720	-16.694	-12.015	-3.7837	3736.3	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-6.2726E-05	-1.6094E-05	-640.57	-262.09	-54.355	-14.654	-14.079	-4.4344	2381.6	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 105 di 294

14	-6.2822E-05	-1.5832E-05	-634.10	-254.18	-53.921	-14.282	-14.171	-4.3702	3133.6	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000
15	-6.4498E-05	-1.6325E-05	-792.14	-295.65	-67.552	-17.627	-11.792	-3.5355	3828.1	7.8500E+06	7.8500E+06
x( M)	12.720	13.200	0.0000	0.0000	10.080	10.560	13.200	18.720	24.000	0.0000	0.0000
Min.	-6.4498E-05	-1.6325E-05	-792.14	-295.65	-67.552	-17.627	-14.669	-4.5366	1895.2	7.8500E+06	7.8500E+06
Pile N.	15	15	15	15	15	15	11	10	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.3948E-03	6.5007E-04	346.10	93.595	241.06	81.784	45.696	14.301	3861.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.3948E-03	6.3926E-04	343.92	91.415	237.68	79.151	44.986	13.822	4705.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	2.3948E-03	6.2844E-04	400.36	105.07	311.80	99.578	62.945	18.744	5895.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.2000	0.0000	0.0000	3.8400	0.0000	0.0000	0.0000	0.0000
4	2.4056E-03	6.5007E-04	327.19	87.934	217.21	73.909	40.139	12.544	3818.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.4056E-03	6.3926E-04	325.97	86.109	215.10	71.808	39.726	12.186	4641.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.4056E-03	6.2844E-04	391.08	102.07	298.46	95.061	59.529	17.663	5906.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	2.4164E-03	6.5007E-04	328.37	87.875	218.33	73.804	40.304	12.523	3953.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.4164E-03	6.3926E-04	327.13	86.048	216.22	71.706	39.888	12.165	4746.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.4164E-03	6.2844E-04	392.80	102.07	300.36	95.051	59.868	17.662	6016.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.4272E-03	6.5007E-04	330.67	88.128	220.84	74.123	40.782	12.597	4097.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.4272E-03	6.3926E-04	329.32	86.269	218.60	71.987	40.337	12.229	4860.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.4272E-03	6.2844E-04	394.84	102.17	302.68	95.164	60.311	17.691	6129.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.4380E-03	6.5007E-04	357.30	95.027	253.88	83.715	48.282	14.747	4458.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	2.4380E-03	6.3926E-04	355.12	92.839	250.53	81.075	47.560	14.263	5183.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.4380E-03	6.2844E-04	410.31	105.84	323.74	100.69	65.377	19.029	6364.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.2000	0.0000	0.0000	3.8400	0.0000	0.0000	0.0000	0.0000
Max.	2.4380E-03	6.5007E-04	410.31	105.84	323.74	100.69	65.377	19.029	6364.7	7.8500E+06	7.8500E+06
Pile N.	13	1	15	15	15	15	15	15	15	1	1

LOAD CASE : 11  
CASE NAME : 11-1 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5747	1.0000
3	0.8526	1.0000
4	0.4984	1.0000
5	0.4933	1.0000
6	0.7928	1.0000
7	0.4974	1.0000
8	0.4923	1.0000
9	0.7928	1.0000
10	0.5006	1.0000
11	0.4952	1.0000
12	0.7942	1.0000
13	0.6040	1.0000
14	0.5942	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
53059.7	13267.6	3851.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5196.70	51545.5	-1.42439E+05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 106 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.38133E-03	HORIZONTAL Y, M 8.20654E-03	HORIZONTAL Z, M 2.00898E-03
ANGLE ROT. X,RAD 3.32127E-05	ANGLE ROT. Y,RAD 8.05835E-05	ANGLE ROT. Z,RAD -6.21783E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.1420E-03	8.5055E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
2	1.6561E-03	8.5055E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
3	4.4541E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
4	-7.7932E-04	8.3560E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
5	2.0187E-03	8.3560E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
6	4.8167E-03	8.3560E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
7	-4.1670E-04	8.2065E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
8	2.3813E-03	8.2065E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
9	5.1794E-03	8.2065E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
10	-5.4072E-05	8.0571E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
11	2.7440E-03	8.0571E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
12	5.5420E-03	8.0571E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
13	3.0855E-04	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
14	3.1066E-03	7.9076E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
15	5.9046E-03	7.9076E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
MINIMUM	-1.1420E-03	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9046E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-1749.7	879.97	220.91	48.258	-714.67	2503.1
2	2737.0	864.19	238.00	48.258	-784.46	2477.5
3	6666.1	1138.8	335.72	48.258	-1043.1	3116.0
4	-1198.1	771.99	199.73	48.258	-662.87	2218.4
5	3332.1	761.39	216.18	48.258	-730.82	2204.5
6	7115.5	1063.8	321.93	48.258	-1011.6	2917.9
7	-644.47	757.49	200.89	48.258	-665.67	2157.7
8	3927.1	746.94	217.40	48.258	-733.80	2143.9
9	7450.0	1044.9	323.84	48.258	-1015.7	2843.9
10	-83.629	747.43	203.24	48.258	-671.39	2107.6
11	4522.2	736.57	219.81	48.258	-739.71	2093.1
12	7640.8	1026.2	325.92	48.258	-1020.0	2770.0
13	516.90	837.65	231.83	48.258	-740.46	2293.8
14	4996.3	823.39	249.96	48.258	-812.91	2271.8
15	7831.6	1066.9	346.16	48.258	-1064.9	2825.6
MINIMUM	-1749.7	736.57	199.73	48.258	-1064.9	2093.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.6	1138.8	346.16	48.258	-662.87	3116.0
Pile N.	15	3	15	1	4	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.1420E-03	8.5055E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
2	1.6561E-03	8.5055E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
3	4.4541E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
4	-7.7932E-04	8.3560E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
5	2.0187E-03	8.3560E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
6	4.8167E-03	8.3560E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
7	-4.1670E-04	8.2065E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
8	2.3813E-03	8.2065E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
9	5.1794E-03	8.2065E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
10	-5.4072E-05	8.0571E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
11	2.7440E-03	8.0571E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
12	5.5420E-03	8.0571E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
13	3.0855E-04	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
14	3.1066E-03	7.9076E-03	2.0090E-03	3.3213E-05	8.0584E-05	-6.2178E-04
15	5.9046E-03	7.9076E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 107 di 294

MINIMUM	-1.1420E-03	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9046E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-1749.7	879.97	220.91	48.258	-714.67	2503.1
2	2737.0	864.19	238.00	48.258	-784.46	2477.5
3	6666.1	1138.8	335.72	48.258	-1043.1	3116.0
4	-1198.1	771.99	199.73	48.258	-662.87	2218.4
5	3332.1	761.39	216.18	48.258	-730.82	2204.5
6	7115.5	1063.8	321.93	48.258	-1011.6	2917.9
7	-644.47	757.49	200.89	48.258	-665.67	2157.7
8	3927.1	746.94	217.40	48.258	-733.80	2143.9
9	7450.0	1044.9	323.84	48.258	-1015.7	2843.9
10	-83.629	747.43	203.24	48.258	-671.39	2107.6
11	4522.2	736.57	219.81	48.258	-739.71	2093.1
12	7640.8	1026.2	325.92	48.258	-1020.0	2770.0
13	516.90	837.65	231.83	48.258	-740.46	2293.8
14	4996.3	823.39	249.96	48.258	-812.91	2271.8
15	7831.6	1066.9	346.16	48.258	-1064.9	2825.6
MINIMUM	-1749.7	736.57	199.73	48.258	-1064.9	2093.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.6	1138.8	346.16	48.258	-662.87	3116.0
Pile N.	15	3	15	1	4	3

PILE GROUP	STRESS, KN/ M**2
1	8799.6
2	9345.0
3	1.3630E+04
4	7624.1
5	8853.0
6	1.3291E+04
7	7138.7
8	9020.2
9	1.3275E+04
10	6683.1
11	9218.9
12	1.3179E+04
13	7523.5
14	1.0066E+04
15	1.3491E+04
MINIMUM	6683.1
Pile N.	10
MAXIMUM	1.3630E+04
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT y-DIR	MOMENT z-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.0238E-04	-4.3441E-05	-2503.1	-714.67	-179.13	-39.769	-53.849	-13.037	990.15	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-2.0370E-04	-4.7121E-05	-2477.5	-784.46	-178.52	-42.935	-54.197	-14.314	1548.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
3	-2.1727E-04	-5.4850E-05	-3116.0	-1043.1	-229.97	-59.464	-44.041	-13.059	3772.3	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
4	-1.9301E-04	-4.1638E-05	-2218.4	-662.87	-159.85	-36.183	-53.650	-13.132	677.98	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
5	-1.9459E-04	-4.5258E-05	-2204.5	-730.82	-160.07	-39.239	-53.868	-14.376	1885.6	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-2.1309E-04	-5.4523E-05	-2917.9	-1011.6	-216.43	-56.921	-45.513	-13.720	4026.6	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-1.9089E-04	-4.1825E-05	-2157.7	-665.67	-157.29	-36.239	-52.412	-13.118	364.70	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
8	-1.9247E-04	-4.5466E-05	-2143.9	-733.80	-157.52	-39.301	-52.628	-14.362	2222.3	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-2.1032E-04	-5.4710E-05	-2843.9	-1015.7	-213.04	-57.067	-44.279	-13.677	4215.8	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-1.8912E-04	-4.2169E-05	-2107.6	-671.39	-155.53	-36.479	-51.154	-13.108	47.324	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
11	-1.9068E-04	-4.5778E-05	-2093.1	-739.71	-155.69	-39.551	-51.374	-14.353	2559.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-2.0737E-04	-5.4862E-05	-2770.0	-1020.0	-209.73	-57.244	-43.018	-13.625	4323.8	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-1.9443E-04	-4.4633E-05	-2293.8	-740.46	-172.04	-41.061	-48.270	-12.865	292.50	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 109 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.19119E-03	HORIZONTAL Y, M -9.06816E-03	HORIZONTAL Z, M 2.06367E-03
ANGLE ROT. X,RAD -3.55005E-05	ANGLE ROT. Y,RAD 8.10794E-05	ANGLE ROT. Z,RAD 6.69303E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.4733E-03	-9.3877E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
2	1.4615E-03	-9.3877E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
3	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
4	4.8382E-03	-9.2279E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
5	1.8263E-03	-9.2279E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
6	-1.1855E-03	-9.2279E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
7	5.2030E-03	-9.0682E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
8	2.1912E-03	-9.0682E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
9	-8.2067E-04	-9.0682E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
10	5.5679E-03	-8.9084E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
11	2.5560E-03	-8.9084E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
12	-4.5581E-04	-8.9084E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
13	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
14	2.9209E-03	-8.7487E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
15	-9.0957E-05	-8.7487E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
MINIMUM	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	3	1	3	1	1	1
MAXIMUM	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	6690.0	-1217.8	334.30	-51.582	-1054.5	-3393.5
2	2417.6	-925.27	236.46	-51.582	-791.27	-2703.9
3	-2371.1	-941.60	218.54	-51.582	-717.41	-2729.3
4	7142.1	-1139.1	320.70	-51.582	-1023.1	-3183.7
5	3016.4	-816.18	214.83	-51.582	-737.49	-2411.4
6	-1816.0	-826.98	197.60	-51.582	-665.64	-2424.2
7	7462.5	-1121.5	323.07	-51.582	-1028.4	-3111.1
8	3615.1	-801.38	216.03	-51.582	-740.49	-2348.4
9	-1261.0	-812.14	198.74	-51.582	-668.46	-2361.0
10	7654.5	-1105.1	325.86	-51.582	-1034.5	-3040.6
11	4213.9	-790.70	218.35	-51.582	-746.29	-2295.4
12	-704.97	-801.75	200.98	-51.582	-674.01	-2308.7
13	7846.4	-1155.2	347.59	-51.582	-1083.7	-3118.0
14	4766.2	-883.88	248.10	-51.582	-819.43	-2491.0
15	-140.68	-899.68	229.36	-51.582	-743.39	-2514.9
MINIMUM	-2371.1	-1217.8	197.60	-51.582	-1083.7	-3393.5
Pile N.	3	1	6	1	13	1
MAXIMUM	7846.4	-790.70	347.59	-51.582	-665.64	-2295.4
Pile N.	13	11	13	1	6	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.4733E-03	-9.3877E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
2	1.4615E-03	-9.3877E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
3	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
4	4.8382E-03	-9.2279E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
5	1.8263E-03	-9.2279E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
6	-1.1855E-03	-9.2279E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
7	5.2030E-03	-9.0682E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
8	2.1912E-03	-9.0682E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
9	-8.2067E-04	-9.0682E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
10	5.5679E-03	-8.9084E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
11	2.5560E-03	-8.9084E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
12	-4.5581E-04	-8.9084E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
13	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
14	2.9209E-03	-8.7487E-03	2.0637E-03	-3.5500E-05	8.1079E-05	6.6930E-04
15	-9.0957E-05	-8.7487E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 110 di 294

MINIMUM	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	3	1	3	1	1	1
MAXIMUM	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	6690.0	-1217.8	334.30	-51.582	-1054.5	-3393.5
2	2417.6	-925.27	236.46	-51.582	-791.27	-2703.9
3	-2371.1	-941.60	218.54	-51.582	-717.41	-2729.3
4	7142.1	-1139.1	320.70	-51.582	-1023.1	-3183.7
5	3016.4	-816.18	214.83	-51.582	-737.49	-2411.4
6	-1816.0	-826.98	197.60	-51.582	-665.64	-2424.2
7	7462.5	-1121.5	323.07	-51.582	-1028.4	-3111.1
8	3615.1	-801.38	216.03	-51.582	-740.49	-2348.4
9	-1261.0	-812.14	198.74	-51.582	-668.46	-2361.0
10	7654.5	-1105.1	325.86	-51.582	-1034.5	-3040.6
11	4213.9	-790.70	218.35	-51.582	-746.29	-2295.4
12	-704.97	-801.75	200.98	-51.582	-674.01	-2308.7
13	7846.4	-1155.2	347.59	-51.582	-1083.7	-3118.0
14	4766.2	-883.88	248.10	-51.582	-819.43	-2491.0
15	-140.68	-899.68	229.36	-51.582	-743.39	-2514.9
MINIMUM	-2371.1	-1217.8	197.60	-51.582	-1083.7	-3393.5
Pile N.	3	1	6	1	13	1
MAXIMUM	7846.4	-790.70	347.59	-51.582	-665.64	-2295.4
Pile N.	13	11	13	1	6	11

PILE GROUP	STRESS, KN/ M**2
1	1.4447E+04
2	9820.1
3	9807.9
4	1.4074E+04
5	9271.8
6	8569.4
7	1.4053E+04
8	9432.7
9	8075.0
10	1.3967E+04
11	9625.5
12	7614.2
13	1.4343E+04
14	1.0564E+04
15	7947.1
MINIMUM	7614.2
Pile N.	12
MAXIMUM	1.4447E+04
Pile N.	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-9.3877E-03	-5.5543E-05	-1513.8	-1054.5	-1218.1	-60.721	-248.67	-13.780	3785.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
2	-9.3877E-03	-4.7449E-05	-1283.0	-791.27	-925.37	-43.759	-172.59	-14.887	1368.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
3	-9.3877E-03	-4.3582E-05	-1288.9	-717.41	-941.50	-40.345	-175.71	-13.516	1341.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
4	-9.2279E-03	-5.5282E-05	-1448.2	-1023.1	-1139.5	-58.189	-230.33	-14.439	4041.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.2000	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
5	-9.2279E-03	-4.5595E-05	-1188.2	-737.49	-816.30	-39.991	-148.10	-14.897	1706.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.9200	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
6	-9.2279E-03	-4.1778E-05	-1190.1	-665.64	-826.91	-36.685	-149.83	-13.559	1027.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.9200	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
7	-9.0682E-03	-5.5518E-05	-1427.4	-1028.4	-1121.9	-58.340	-228.27	-14.381	4222.9	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.2000	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
8	-9.0682E-03	-4.5823E-05	-1170.0	-740.49	-801.51	-40.049	-146.45	-14.883	2045.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
9	-9.0682E-03	-4.1983E-05	-1172.3	-668.46	-812.09	-36.750	-148.19	-13.545	713.57	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
10	-8.9084E-03	-5.5746E-05	-1407.7	-1034.5	-1105.4	-58.529	-226.50	-14.309	4331.5	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
11	-8.9084E-03	-4.6167E-05	-1156.0	-746.29	-790.85	-40.298	-145.80	-14.876	2384.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
12	-8.9084E-03	-4.2294E-05	-1158.5	-674.01	-801.72	-36.998	-147.62	-13.538	398.93	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
13	-8.7487E-03	-5.6576E-05	-1438.7	-1083.7	-1155.5	-61.895	-242.79	-13.379	4440.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 111 di 294

14	-8.7487E-03	-4.8868E-05	-1225.5	-819.43	-884.06	-45.040	-170.79	-14.719	2697.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
15	-8.7487E-03	-4.4813E-05	-1231.4	-743.39	-899.67	-41.548	-173.87	-13.350	79.606	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-9.3877E-03	-5.6576E-05	-1513.8	-1083.7	-1218.1	-61.895	-248.67	-14.897	79.606	7.8500E+06	7.8500E+06
	1	13	1	13	1	13	1	5	15	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.3530E-04	2.2234E-03	3393.5	363.41	251.05	334.40	50.075	64.869	1.4447E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	2.2003E-04	2.0637E-03	2703.9	285.43	194.83	236.49	60.796	41.611	9820.1	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
3	2.1848E-04	1.9039E-03	2729.3	264.05	195.28	218.52	60.435	38.720	9807.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
4	2.3061E-04	2.2234E-03	3183.7	353.19	236.39	320.81	51.633	61.399	1.4074E+04	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.6800	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
5	2.0973E-04	2.0637E-03	2411.4	268.96	174.99	214.86	60.230	36.498	9271.8	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
6	2.0777E-04	1.9039E-03	2424.2	248.05	174.51	197.59	59.984	33.747	8569.4	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.1600	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
7	2.2773E-04	2.2234E-03	3111.1	354.25	233.00	323.19	50.240	62.126	1.4053E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
8	2.0761E-04	2.0637E-03	2348.4	269.37	172.21	216.07	58.896	36.874	9432.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
9	2.0567E-04	1.9039E-03	2361.0	248.51	171.74	198.73	58.651	34.100	8075.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
10	2.2506E-04	2.2234E-03	3040.6	355.51	229.74	325.98	48.800	62.964	1.3967E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
11	2.0597E-04	2.0637E-03	2295.4	270.62	170.23	218.40	57.557	37.517	9625.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
12	2.0406E-04	1.9039E-03	2308.7	249.81	169.81	200.97	57.312	34.717	7614.2	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
13	2.2402E-04	2.2234E-03	3118.0	369.51	238.68	347.72	44.095	68.862	1.4343E+04	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.4400	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	2.1190E-04	2.0637E-03	2491.0	291.95	187.14	248.16	54.825	44.881	1.0564E+04	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
15	2.1037E-04	1.9039E-03	2514.9	270.15	187.49	229.36	54.452	41.761	7947.1	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.3530E-04	2.2234E-03	3393.5	369.51	251.05	347.72	60.796	68.862	1.4447E+04	7.8500E+06	7.8500E+06
	1	1	1	13	1	13	2	13	1	1	1

LOAD CASE : 13  
CASE NAME : 13-3 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5053	1.0000
3	0.6181	1.0000
4	0.5398	1.0000
5	0.4658	1.0000
6	0.5755	1.0000
7	0.5397	1.0000
8	0.4657	1.0000
9	0.5755	1.0000
10	0.5714	1.0000
11	0.4960	1.0000
12	0.6052	1.0000
13	0.8424	1.0000
14	0.7858	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
54777.3	3567.66	12875.8
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	1.71305E+05	-38094.4

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 112 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.33531E-03	HORIZONTAL Y, M 2.20070E-03	HORIZONTAL Z, M 6.64305E-03
ANGLE ROT. X,RAD 1.99158E-05	ANGLE ROT. Y,RAD 2.36851E-04	ANGLE ROT. Z,RAD -1.63485E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-5.3203E-04	2.3799E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
2	2.0365E-04	2.3799E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
3	9.3933E-04	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
4	5.3380E-04	2.2903E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
5	1.2695E-03	2.2903E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
6	2.0052E-03	2.2903E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
7	1.5996E-03	2.2007E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
8	2.3353E-03	2.2007E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
9	3.0710E-03	2.2007E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
10	2.6655E-03	2.1111E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
11	3.4011E-03	2.1111E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
12	4.1368E-03	2.1111E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
13	3.7313E-03	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
14	4.4670E-03	2.0215E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
15	5.2026E-03	2.0215E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
MINIMUM	-5.3203E-04	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.2026E-03	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-821.88	263.04	836.53	28.937	-2726.2	753.92
2	341.16	236.85	769.51	28.937	-2582.2	693.03
3	1560.8	271.42	889.04	28.937	-2888.0	775.44
4	894.23	236.28	793.64	28.937	-2626.1	676.02
5	2102.5	212.23	728.88	28.937	-2484.8	619.42
6	3309.8	245.21	847.90	28.937	-2793.0	698.95
7	2644.3	223.57	793.02	28.937	-2627.4	631.00
8	3851.6	200.66	728.29	28.937	-2486.1	577.25
9	4952.2	232.13	847.51	28.937	-2794.7	652.92
10	4393.4	219.48	822.52	28.937	-2701.1	606.09
11	5361.3	197.89	758.92	28.937	-2564.4	555.98
12	6273.0	227.03	875.72	28.937	-2864.0	625.08
13	5770.4	270.44	1056.5	28.937	-3239.9	702.47
14	6682.1	257.15	1023.9	28.937	-3188.2	674.52
15	7462.3	274.27	1103.9	28.937	-3386.9	712.24
MINIMUM	-821.88	197.89	728.29	28.937	-3386.9	555.98
Pile N.	1	11	8	1	15	11
MAXIMUM	7462.3	274.27	1103.9	28.937	-2484.8	775.44
Pile N.	15	15	15	1	5	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-5.3203E-04	2.3799E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
2	2.0365E-04	2.3799E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
3	9.3933E-04	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
4	5.3380E-04	2.2903E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
5	1.2695E-03	2.2903E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
6	2.0052E-03	2.2903E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
7	1.5996E-03	2.2007E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
8	2.3353E-03	2.2007E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
9	3.0710E-03	2.2007E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
10	2.6655E-03	2.1111E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
11	3.4011E-03	2.1111E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
12	4.1368E-03	2.1111E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
13	3.7313E-03	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
14	4.4670E-03	2.0215E-03	6.6431E-03	1.9916E-05	2.3685E-04	-1.6348E-04
15	5.2026E-03	2.0215E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>			
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	113 di 294	

MINIMUM	-5.3203E-04	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.2026E-03	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-821.88	263.04	836.53	28.937	-2726.2	753.92
2	341.16	236.85	769.51	28.937	-2582.2	693.03
3	1560.8	271.42	889.04	28.937	-2888.0	775.44
4	894.23	236.28	793.64	28.937	-2626.1	676.02
5	2102.5	212.23	728.88	28.937	-2484.8	619.42
6	3309.8	245.21	847.90	28.937	-2793.0	698.95
7	2644.3	223.57	793.02	28.937	-2627.4	631.00
8	3851.6	200.66	728.29	28.937	-2486.1	577.25
9	4952.2	232.13	847.51	28.937	-2794.7	652.92
10	4393.4	219.48	822.52	28.937	-2701.1	606.09
11	5361.3	197.89	758.92	28.937	-2564.4	555.98
12	6273.0	227.03	875.72	28.937	-2864.0	625.08
13	5770.4	270.44	1056.5	28.937	-3239.9	702.47
14	6682.1	257.15	1023.9	28.937	-3188.2	674.52
15	7462.3	274.27	1103.9	28.937	-3386.9	712.24
MINIMUM	-821.88	197.89	728.29	28.937	-3386.9	555.98
Pile N.	1	11	8	1	15	11
MAXIMUM	7462.3	274.27	1103.9	28.937	-2484.8	775.44
Pile N.	15	15	15	1	5	3

PILE GROUP STRESS, KN/ M\*\*2

1	8950.6
2	8213.9
3	9854.0
4	8641.1
5	8872.2
6	1.0510E+04
7	9602.7
8	9836.4
9	1.1412E+04
10	1.0791E+04
11	1.0906E+04
12	1.2344E+04
13	1.3211E+04
14	1.3557E+04
15	1.4606E+04
MINIMUM	8213.9
Pile N.	2
MAXIMUM	1.4606E+04
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-5.7415E-05	-1.5527E-04	-753.92	-2726.2	-50.725	-142.14	-15.170	-46.609	465.09	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-5.5596E-05	-1.5075E-04	-693.03	-2582.2	-46.369	-132.01	-15.496	-47.824	193.06	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-5.8220E-05	-1.6192E-04	-775.44	-2888.0	-52.612	-151.67	-14.980	-47.641	883.21	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-5.4770E-05	-1.5259E-04	-676.02	-2626.1	-46.560	-135.83	-14.687	-47.055	506.03	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-5.2759E-05	-1.4739E-04	-619.42	-2484.8	-42.575	-126.10	-14.806	-47.580	1189.8	7.8500E+06	7.8500E+06
x( M)	14.640	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
6	-5.5584E-05	-1.5991E-04	-698.95	-2793.0	-48.556	-145.53	-14.559	-48.329	1873.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
7	-5.3061E-05	-1.5330E-04	-631.00	-2627.4	-44.873	-136.26	-13.985	-47.108	1496.4	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.1150E-05	-1.4818E-04	-577.25	-2486.1	-41.008	-126.50	-14.121	-47.656	2179.6	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
9	-5.3835E-05	-1.6061E-04	-652.92	-2794.7	-46.755	-145.95	-13.852	-48.367	2802.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
10	-5.1911E-05	-1.5649E-04	-606.09	-2701.1	-44.700	-141.48	-13.135	-46.892	2486.2	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.0359E-05	-1.5210E-04	-555.98	-2564.4	-40.999	-131.79	-13.417	-47.975	3033.9	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-5.2468E-05	-1.6300E-04	-625.08	-2864.0	-46.392	-150.99	-12.958	-47.954	3549.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-5.2489E-05	-1.6810E-04	-702.47	-3239.9	-54.635	-180.50	-10.037	-39.614	3265.4	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 114 di 294

14	-5.2231E-05	-1.6902E-04	-674.52	-3188.2	-52.325	-175.32	-10.646	-42.298	3781.3	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-5.2642E-05	-1.7329E-04	-712.24	-3386.9	-55.608	-188.87	-9.7919	-40.026	4222.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.8220E-05	-1.7329E-04	-775.44	-3386.9	-55.608	-188.87	-15.496	-48.367	193.06	7.8500E+06	7.8500E+06
	3	15	3	15	15	15	2	9	2	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.3799E-03	6.5534E-03	335.09	931.23	263.03	836.50	49.095	148.84	8950.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.3799E-03	6.6431E-03	315.19	888.53	236.85	769.52	43.525	134.23	8213.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	2.3799E-03	6.7327E-03	342.48	978.27	271.44	889.11	51.475	160.55	9854.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	2.2903E-03	6.5534E-03	312.30	901.61	236.29	793.67	43.818	139.45	8641.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.2903E-03	6.6431E-03	293.70	860.24	212.25	728.96	38.793	125.48	8872.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.4000	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
6	2.2903E-03	6.7327E-03	320.35	951.02	245.24	848.04	46.278	151.50	1.0510E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	2.2007E-03	6.5534E-03	300.61	902.58	223.59	793.13	41.710	139.38	9602.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.2007E-03	6.6431E-03	282.73	861.16	200.70	728.44	36.902	125.40	9836.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.4000	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
9	2.2007E-03	6.7327E-03	308.25	952.05	232.18	847.72	44.059	151.44	1.1412E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	2.1111E-03	6.5534E-03	295.68	925.54	219.53	822.70	41.558	145.95	1.0791E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.1111E-03	6.6431E-03	278.65	884.79	197.94	759.13	36.911	132.05	1.0906E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
12	2.1111E-03	6.7327E-03	302.26	972.88	227.09	875.99	43.644	157.68	1.2344E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	2.0215E-03	6.5534E-03	333.03	1087.6	270.51	1056.8	54.549	199.88	1.3211E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	2.0215E-03	6.6431E-03	323.35	1071.4	257.22	1024.2	51.467	191.82	1.3557E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	2.0215E-03	6.7327E-03	336.54	1130.0	274.35	1104.3	55.845	210.62	1.4606E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.3799E-03	6.7327E-03	342.48	1130.0	274.35	1104.3	55.845	210.62	1.4606E+04	7.8500E+06	7.8500E+06
	1	3	3	15	15	15	15	15	15	1	1

LOAD CASE : 14  
CASE NAME : 14-4 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8328	1.0000
2	0.7779	1.0000
3	0.8661	1.0000
4	0.5682	1.0000
5	0.4960	1.0000
6	0.6154	1.0000
7	0.5378	1.0000
8	0.4670	1.0000
9	0.5875	1.0000
10	0.5379	1.0000
11	0.4672	1.0000
12	0.5875	1.0000
13	0.5845	1.0000
14	0.5088	1.0000
15	0.6310	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
48515.8	4336.25	-12833.8
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	-1.71778E+05	-46842.0

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 115 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.04800E-03	HORIZONTAL Y, M 2.64867E-03	HORIZONTAL Z, M -6.60790E-03
ANGLE ROT. X,RAD 1.61292E-06	ANGLE ROT. Y,RAD -2.31933E-04	ANGLE ROT. Z,RAD -1.94849E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.2586E-03	2.6632E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
2	4.1354E-03	2.6632E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
3	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
4	2.2149E-03	2.6559E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
5	3.0917E-03	2.6559E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
6	3.9685E-03	2.6559E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
7	1.1712E-03	2.6487E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
8	2.0480E-03	2.6487E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
9	2.9248E-03	2.6487E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
10	1.2748E-04	2.6414E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
11	1.0043E-03	2.6414E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
12	1.8811E-03	2.6414E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
13	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
14	-3.9394E-05	2.6342E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
15	8.3743E-04	2.6342E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
MINIMUM	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	5184.6	364.22	-1058.1	2.3436	3267.9	983.49
2	6271.2	347.42	-1010.9	2.3436	3162.4	947.58
3	7357.8	373.55	-1081.1	2.3436	3319.3	1005.3
4	3654.0	279.05	-826.45	2.3436	2730.5	788.96
5	4977.8	253.26	-753.91	2.3436	2555.1	728.90
6	6064.4	294.56	-867.43	2.3436	2829.6	826.87
7	1941.2	267.88	-798.11	2.3436	2659.2	760.00
8	3380.1	242.14	-725.42	2.3436	2481.8	699.55
9	4771.0	284.46	-842.36	2.3436	2767.8	801.09
10	213.56	267.37	-799.38	2.3436	2659.3	756.12
11	1667.4	241.72	-726.68	2.3436	2481.9	695.90
12	3106.3	283.84	-843.48	2.3436	2767.6	796.98
13	-1406.3	282.81	-845.38	2.3436	2767.1	789.68
14	-60.927	256.26	-769.99	2.3436	2585.9	728.20
15	1393.5	297.72	-885.05	2.3436	2863.1	826.27
MINIMUM	-1406.3	241.72	-1081.1	2.3436	2481.8	695.90
Pile N.	13	11	3	1	8	11
MAXIMUM	7357.8	373.55	-725.42	2.3436	3319.3	1005.3
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.2586E-03	2.6632E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
2	4.1354E-03	2.6632E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
3	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
4	2.2149E-03	2.6559E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
5	3.0917E-03	2.6559E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
6	3.9685E-03	2.6559E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
7	1.1712E-03	2.6487E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
8	2.0480E-03	2.6487E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
9	2.9248E-03	2.6487E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
10	1.2748E-04	2.6414E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
11	1.0043E-03	2.6414E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
12	1.8811E-03	2.6414E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
13	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
14	-3.9394E-05	2.6342E-03	-6.6079E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
15	8.3743E-04	2.6342E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>			
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	116 di 294	

MINIMUM	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
PILE N.	13	13	1	1	1	1
MAXIMUM	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
PILE N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	5184.6	364.22	-1058.1	2.3436	3267.9	983.49
2	6271.2	347.42	-1010.9	2.3436	3162.4	947.58
3	7357.8	373.55	-1081.1	2.3436	3319.3	1005.3
4	3654.0	279.05	-826.45	2.3436	2730.5	788.96
5	4977.8	253.26	-753.91	2.3436	2555.1	728.90
6	6064.4	294.56	-867.43	2.3436	2829.6	826.87
7	1941.2	267.88	-798.11	2.3436	2659.2	760.00
8	3380.1	242.14	-725.42	2.3436	2481.8	699.55
9	4771.0	284.46	-842.36	2.3436	2767.8	801.09
10	213.56	267.37	-799.38	2.3436	2659.3	756.12
11	1667.4	241.72	-726.68	2.3436	2481.9	695.90
12	3106.3	283.84	-843.48	2.3436	2767.6	796.98
13	-1406.3	282.81	-845.38	2.3436	2767.1	789.68
14	-60.927	256.26	-769.99	2.3436	2585.9	728.20
15	1393.5	297.72	-885.05	2.3436	2863.1	826.27
MINIMUM	-1406.3	241.72	-1081.1	2.3436	2481.8	695.90
PILE N.	13	11	3	1	8	11
MAXIMUM	7357.8	373.55	-725.42	2.3436	3319.3	1005.3
PILE N.	3	3	8	1	3	3

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	1.3172E+04
2	1.3453E+04
3	1.4568E+04
4	1.0594E+04
5	1.0788E+04
6	1.2276E+04
7	9395.4
8	9648.2
9	1.1344E+04
10	8414.9
11	8676.5
12	1.0398E+04
13	9428.5
14	8093.9
15	9728.4
MINIMUM	8093.9
PILE N.	14
MAXIMUM	1.4568E+04
PILE N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.8466E-05	-6.6152E-03	-983.49	-1090.9	-71.324	-1058.4	-13.894	-200.68	2933.9	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.320	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-6.8192E-05	-6.6079E-03	-947.58	-1059.9	-68.490	-1011.2	-14.656	-189.66	3548.8	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
3	-6.8998E-05	-6.6006E-03	-1005.3	-1107.3	-73.367	-1081.5	-13.403	-206.56	4163.6	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	24.000	0.0000	0.0000
4	-6.4503E-05	-6.6152E-03	-788.96	-929.85	-55.882	-826.61	-16.812	-147.35	2067.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
5	-6.2803E-05	-6.6079E-03	-728.90	-878.87	-51.507	-754.11	-17.112	-131.67	2816.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-6.5891E-05	-6.6006E-03	-826.87	-959.99	-58.983	-867.69	-16.470	-156.72	3431.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
7	-6.3376E-05	-6.6152E-03	-760.00	-908.03	-53.680	-798.19	-16.899	-140.92	1098.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-6.1341E-05	-6.6079E-03	-699.55	-856.80	-49.352	-725.55	-17.036	-124.68	1912.8	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-6.5012E-05	-6.6006E-03	-801.09	-941.46	-56.993	-842.56	-16.628	-150.98	2699.9	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
10	-6.2953E-05	-6.6152E-03	-756.12	-907.40	-53.375	-799.39	-16.822	-140.98	120.85	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
11	-6.0922E-05	-6.6079E-03	-695.90	-856.21	-49.072	-726.74	-16.954	-124.75	943.54	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-6.4597E-05	-6.6006E-03	-796.98	-940.78	-56.671	-843.61	-16.558	-151.01	1757.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
13	-6.3656E-05	-6.6152E-03	-789.68	-938.84	-55.897	-845.32	-16.489	-150.85	795.82	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000

APPALTATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>	
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A    LOTTO 02    CODIFICA E ZZ CL    DOCUMENTO VI0103 003    REV. A    FOGLIO 117 di 294	

14	-6.1912E-05	-6.6079E-03	-728.20	-886.09	-51.416	-769.99	-16.853	-134.53	34.477	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
15	-6.4954E-05	-6.6006E-03	-826.27	-967.82	-58.957	-885.11	-16.130	-160.00	788.58	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
Min. Pile N.	-6.8998E-05	-6.6152E-03	-1005.3	-1107.3	-73.367	-1081.5	-17.112	-206.56	34.477	7.8500E+06	7.8500E+06
	3	1	3	3	3	3	5	3	14	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.6632E-03	1.6882E-04	435.18	3267.9	364.30	180.58	72.815	40.615	1.3172E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
2	2.6632E-03	1.6755E-04	423.15	3162.4	347.51	173.04	68.766	42.495	1.3453E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	0.0000	0.0000	0.0000
3	2.6632E-03	1.6978E-04	442.67	3319.3	373.66	185.09	75.211	39.268	1.4568E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
4	2.6559E-03	1.5674E-04	369.75	2730.5	279.09	142.03	52.768	47.588	1.0594E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
5	2.6559E-03	1.5076E-04	349.78	2555.1	253.32	130.89	47.096	47.816	1.0788E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
6	2.6559E-03	1.6040E-04	382.53	2829.6	294.63	149.47	56.381	46.845	1.2276E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
7	2.6487E-03	1.5369E-04	359.98	2659.2	267.90	136.89	50.225	47.759	9395.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
8	2.6487E-03	1.4699E-04	340.06	2481.8	242.18	125.89	44.549	47.492	9648.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	0.0000	0.0000	0.0000
9	2.6487E-03	1.5822E-04	374.15	2767.8	284.52	144.91	54.068	47.262	1.1344E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
10	2.6414E-03	1.5306E-04	358.75	2659.3	267.37	136.50	50.078	47.696	8414.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
11	2.6414E-03	1.4632E-04	338.90	2481.9	241.73	125.54	44.422	47.412	8676.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	0.0000	0.0000	0.0000
12	2.6414E-03	1.5763E-04	372.84	2767.6	283.88	144.51	53.898	47.214	1.0398E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
13	2.6341E-03	1.5610E-04	370.18	2767.1	282.79	143.26	53.527	47.245	9428.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
14	2.6341E-03	1.4999E-04	349.64	2585.9	256.25	131.78	47.649	47.651	8093.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.6800	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
15	2.6341E-03	1.5973E-04	382.68	2863.1	297.73	150.66	57.032	46.434	9728.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
Max. Pile N.	2.6632E-03	1.6978E-04	442.67	3319.3	373.66	185.09	75.211	47.816	1.4568E+04	7.8500E+06	7.8500E+06
	1	3	3	3	3	3	3	5	3	1	1

LOAD CASE : 15  
CASE NAME : 15-5 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5429	1.0000
3	0.7505	1.0000
4	0.5185	1.0000
5	0.4805	1.0000
6	0.6982	1.0000
7	0.5179	1.0000
8	0.4799	1.0000
9	0.6982	1.0000
10	0.5354	1.0000
11	0.4956	1.0000
12	0.7108	1.0000
13	0.7270	1.0000
14	0.6918	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
61951.9	3566.55	3892.45
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.13	50994.3	-38092.0

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 118 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.55230E-03	HORIZONTAL Y, M 2.09835E-03	HORIZONTAL Z, M 1.92702E-03
ANGLE ROT. X,RAD 1.01388E-05	ANGLE ROT. Y,RAD 7.02406E-05	ANGLE ROT. Z,RAD -1.57464E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.2115E-03	2.1896E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
2	1.9201E-03	2.1896E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
3	2.6287E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
4	1.5276E-03	2.1440E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
5	2.2362E-03	2.1440E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
6	2.9448E-03	2.1440E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
7	1.8437E-03	2.0984E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
8	2.5523E-03	2.0984E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
9	3.2609E-03	2.0984E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
10	2.1598E-03	2.0527E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
11	2.8684E-03	2.0527E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
12	3.5770E-03	2.0527E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
13	2.4759E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
14	3.1845E-03	2.0071E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
15	3.8930E-03	2.0071E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
MINIMUM	1.2115E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	3.8930E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2007.5	244.01	244.36	14.732	-787.99	685.00
2	3170.3	232.00	239.56	14.732	-785.69	658.34
3	4333.1	287.64	301.33	14.732	-935.97	783.00
4	2526.2	218.74	226.49	14.732	-746.28	618.80
5	3689.0	207.58	221.73	14.732	-743.41	593.51
6	4795.8	266.45	287.88	14.732	-906.20	727.56
7	3044.9	212.13	226.24	14.732	-745.94	595.33
8	4207.7	201.24	221.46	14.732	-743.02	570.70
9	5187.5	258.78	287.80	14.732	-906.22	701.51
10	3563.6	210.33	230.92	14.732	-757.27	582.96
11	4701.1	199.39	225.91	14.732	-753.97	558.36
12	5579.2	254.15	290.97	14.732	-913.53	682.09
13	4082.3	250.57	279.88	14.732	-869.67	663.77
14	5092.8	242.13	278.62	14.732	-876.50	646.01
15	5970.9	281.42	329.30	14.732	-997.82	730.54
MINIMUM	2007.5	199.39	221.46	14.732	-997.82	558.36
Pile N.	1	11	8	1	15	11
MAXIMUM	5970.9	287.64	329.30	14.732	-743.02	783.00
Pile N.	15	3	15	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.2115E-03	2.1896E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
2	1.9201E-03	2.1896E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
3	2.6287E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
4	1.5276E-03	2.1440E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
5	2.2362E-03	2.1440E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
6	2.9448E-03	2.1440E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
7	1.8437E-03	2.0984E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
8	2.5523E-03	2.0984E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
9	3.2609E-03	2.0984E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
10	2.1598E-03	2.0527E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
11	2.8684E-03	2.0527E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
12	3.5770E-03	2.0527E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
13	2.4759E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
14	3.1845E-03	2.0071E-03	1.9270E-03	1.0139E-05	7.0241E-05	-1.5746E-04
15	3.8930E-03	2.0071E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandantia ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 119 di 294	

MINIMUM	1.2115E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	3.8930E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2007.5	244.01	244.36	14.732	-787.99	685.00
2	3170.3	232.00	239.56	14.732	-785.69	658.34
3	4333.1	287.64	301.33	14.732	-935.97	783.00
4	2526.2	218.74	226.49	14.732	-746.28	618.80
5	3689.0	207.58	221.73	14.732	-743.41	593.51
6	4795.8	266.45	287.88	14.732	-906.20	727.56
7	3044.9	212.13	226.24	14.732	-745.94	595.33
8	4207.7	201.24	221.46	14.732	-743.02	570.70
9	5187.5	258.78	287.80	14.732	-906.22	701.51
10	3563.6	210.33	230.92	14.732	-757.27	582.96
11	4701.1	199.39	225.91	14.732	-753.97	558.36
12	5579.2	254.15	290.97	14.732	-913.53	682.09
13	4082.3	250.57	279.88	14.732	-869.67	663.77
14	5092.8	242.13	278.62	14.732	-876.50	646.01
15	5970.9	281.42	329.30	14.732	-997.82	730.54
MINIMUM	2007.5	199.39	221.46	14.732	-997.82	558.36
Pile N.	1	11	8	1	15	11
MAXIMUM	5970.9	287.64	329.30	14.732	-743.02	783.00
Pile N.	15	3	15	1	8	3

PILE GROUP STRESS, KN/ M\*\*2

1	4268.3
2	4869.1
3	6113.0
4	4337.9
5	4941.4
6	6200.3
7	4586.2
8	5191.8
9	6373.6
10	4883.6
11	5474.9
12	6577.4
13	5592.2
14	6148.5
15	7088.8
MINIMUM	4268.3
Pile N.	1
MAXIMUM	7088.8
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-5.4637E-05	-4.5833E-05	-685.00	-787.99	-47.554	-41.510	-13.700	-13.239	1136.0	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-5.4094E-05	-4.6315E-05	-658.34	-785.69	-45.578	-40.762	-13.919	-13.736	1794.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
3	-5.6439E-05	-5.0316E-05	-783.00	-935.97	-55.529	-50.856	-12.287	-12.793	2452.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
4	-5.2562E-05	-4.4641E-05	-618.80	-746.28	-43.356	-38.661	-13.637	-13.400	1429.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-5.1890E-05	-4.4829E-05	-593.51	-743.41	-41.515	-37.947	-13.715	-13.751	2087.6	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-5.5078E-05	-4.9874E-05	-727.56	-906.20	-52.035	-48.715	-12.468	-13.255	2713.9	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000
7	-5.1605E-05	-4.4686E-05	-595.33	-745.94	-42.440	-38.672	-13.282	-13.406	1723.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.0949E-05	-4.4874E-05	-570.70	-743.02	-40.629	-37.954	-13.362	-13.756	2381.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-5.4019E-05	-4.9912E-05	-701.51	-906.22	-50.940	-48.745	-12.123	-13.257	2935.5	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
10	-5.0909E-05	-4.5113E-05	-582.96	-757.27	-42.367	-39.473	-12.867	-13.392	2016.6	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.0365E-05	-4.5402E-05	-558.36	-753.97	-40.543	-38.698	-12.988	-13.783	2660.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-5.3032E-05	-5.0036E-05	-682.09	-913.53	-50.421	-49.318	-11.663	-13.153	3157.2	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
13	-5.1819E-05	-4.7774E-05	-663.77	-869.67	-49.859	-47.521	-11.169	-12.327	2310.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 120 di 294

14	-5.1761E-05	-4.8700E-05	-646.01	-876.50	-48.443	-47.317	-11.487	-12.961	2881.9	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
15	-5.2600E-05	-5.1101E-05	-730.54	-997.82	-55.545	-55.607	-9.7526	-11.602	3378.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.6439E-05	-5.1101E-05	-783.00	-997.82	-55.545	-55.607	-13.919	-13.783	1136.0	7.8500E+06	7.8500E+06
	3	15	3	15	15	15	2	11	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1896E-03	1.8814E-03	313.87	271.37	244.03	244.38	44.468	42.292	4268.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.1896E-03	1.9270E-03	305.25	270.34	232.03	239.60	41.760	40.860	4869.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	2.1896E-03	1.9726E-03	346.80	314.91	287.69	301.40	54.857	54.682	6113.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
4	2.1440E-03	1.8814E-03	293.58	259.00	218.76	226.52	39.140	38.310	4337.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.1440E-03	1.9270E-03	285.06	257.68	207.61	221.77	36.694	36.944	4941.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	2.1440E-03	1.9726E-03	329.97	305.86	266.50	287.94	50.294	51.517	6200.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
7	2.0983E-03	1.8814E-03	287.37	258.95	212.15	226.28	38.084	38.274	4586.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.0983E-03	1.9270E-03	279.09	257.62	201.28	221.51	35.689	36.905	5191.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	2.0983E-03	1.9726E-03	323.14	305.91	258.83	287.87	48.996	51.515	6373.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.0527E-03	1.8814E-03	284.86	262.44	210.36	230.96	38.124	39.334	4883.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.0527E-03	1.9270E-03	276.70	260.86	199.43	225.97	35.684	37.882	5474.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.0527E-03	1.9726E-03	318.58	308.22	254.21	291.05	48.435	52.282	6577.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.0071E-03	1.8814E-03	314.20	296.29	250.61	279.93	48.045	50.571	5592.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	2.0071E-03	1.9270E-03	308.24	297.62	242.18	278.69	46.049	49.832	6148.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	2.0071E-03	1.9726E-03	336.86	333.58	281.48	329.39	55.696	61.457	7088.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.1896E-03	1.9726E-03	346.80	333.58	287.69	329.39	55.696	61.457	7088.8	7.8500E+06	7.8500E+06
	1	3	3	15	3	15	15	15	15	1	1

LOAD CASE : 16  
CASE NAME : 16-6 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5501	1.0000
3	0.7744	1.0000
4	0.5141	1.0000
5	0.4834	1.0000
6	0.7203	1.0000
7	0.5135	1.0000
8	0.4827	1.0000
9	0.7203	1.0000
10	0.5278	1.0000
11	0.4955	1.0000
12	0.7302	1.0000
13	0.7015	1.0000
14	0.6713	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
39735.4	4287.03	3850.45
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.13	51525.2	-46135.5



APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 121 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.60581E-03	HORIZONTAL Y, M 2.46603E-03	HORIZONTAL Z, M 1.88333E-03
ANGLE ROT. X,RAD 9.06153E-06	ANGLE ROT. Y,RAD 6.46319E-05	ANGLE ROT. Z,RAD -1.75638E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3375E-04	2.5476E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
2	1.0241E-03	2.5476E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
3	1.8145E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
4	5.2460E-04	2.5068E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
5	1.3150E-03	2.5068E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
6	2.1053E-03	2.5068E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
7	8.1544E-04	2.4660E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
8	1.6058E-03	2.4660E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
9	2.3962E-03	2.4660E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
10	1.1063E-03	2.4252E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
11	1.8967E-03	2.4252E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
12	2.6870E-03	2.4252E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
13	1.3971E-03	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
14	2.1875E-03	2.3845E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
15	2.9779E-03	2.3845E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
MINIMUM	2.3375E-04	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	2.9779E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	391.59	288.35	241.83	13.166	-784.41	819.94
2	1699.9	276.64	238.45	13.166	-784.59	794.16
3	2996.9	346.58	302.34	13.166	-938.34	950.51
4	878.82	258.99	223.03	13.166	-740.40	745.18
5	2177.2	248.24	219.78	13.166	-740.32	720.98
6	3474.2	323.35	288.86	13.166	-908.68	891.85
7	1357.5	253.01	222.77	13.166	-740.01	724.11
8	2654.5	242.45	219.50	13.166	-739.87	700.37
9	3951.5	316.31	288.76	13.166	-908.69	868.30
10	1834.7	251.86	226.58	13.166	-749.30	714.24
11	3131.8	241.10	223.05	13.166	-748.65	690.16
12	4428.8	312.10	291.14	13.166	-914.22	850.87
13	2312.0	297.61	270.74	13.166	-851.28	809.26
14	3609.1	288.68	269.76	13.166	-857.73	790.56
15	4836.8	341.75	323.86	13.166	-986.08	905.59
MINIMUM	391.59	241.10	219.50	13.166	-986.08	690.16
Pile N.	1	11	8	1	15	11
MAXIMUM	4836.8	346.58	323.86	13.166	-739.87	950.51
Pile N.	15	3	15	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3375E-04	2.5476E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
2	1.0241E-03	2.5476E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
3	1.8145E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
4	5.2460E-04	2.5068E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
5	1.3150E-03	2.5068E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
6	2.1053E-03	2.5068E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
7	8.1544E-04	2.4660E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
8	1.6058E-03	2.4660E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
9	2.3962E-03	2.4660E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
10	1.1063E-03	2.4252E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
11	1.8967E-03	2.4252E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
12	2.6870E-03	2.4252E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
13	1.3971E-03	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
14	2.1875E-03	2.3845E-03	1.8833E-03	9.0615E-06	6.4632E-05	-1.7564E-04
15	2.9779E-03	2.3845E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 122 di 294

MINIMUM	2.3375E-04	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	2.9779E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	391.59	288.35	241.83	13.166	-784.41	819.94
2	1699.9	276.64	238.45	13.166	-784.59	794.16
3	2996.9	346.58	302.34	13.166	-938.34	950.51
4	878.82	258.99	223.03	13.166	-740.40	745.18
5	2177.2	248.24	219.78	13.166	-740.32	720.98
6	3474.2	323.35	288.86	13.166	-908.68	891.85
7	1357.5	253.01	222.77	13.166	-740.01	724.11
8	2654.5	242.45	219.50	13.166	-739.87	700.37
9	3951.5	316.31	288.76	13.166	-908.69	868.30
10	1834.7	251.86	226.58	13.166	-749.30	714.24
11	3131.8	241.10	223.05	13.166	-748.65	690.16
12	4428.8	312.10	291.14	13.166	-914.22	850.87
13	2312.0	297.61	270.74	13.166	-851.28	809.26
14	3609.1	288.68	269.76	13.166	-857.73	790.56
15	4836.8	341.75	323.86	13.166	-986.08	905.59
MINIMUM	391.59	241.10	219.50	13.166	-986.08	690.16
Pile N.	1	11	8	1	15	11
MAXIMUM	4836.8	346.58	323.86	13.166	-739.87	950.51
Pile N.	15	3	15	1	8	3

PILE GROUP STRESS, KN/ M\*\*2

1	3625.8
2	4311.0
3	5702.9
4	3648.7
5	4332.2
6	5785.7
7	3874.2
8	4558.5
9	6006.6
10	4143.8
11	4826.9
12	6252.9
13	4832.0
14	5541.8
15	6753.5
MINIMUM	3625.8
Pile N.	1
MAXIMUM	6753.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.3149E-05	-4.4701E-05	-819.94	-784.41	-55.193	-40.609	-16.098	-13.047	221.60	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-6.2671E-05	-4.5211E-05	-794.16	-784.59	-53.352	-40.118	-16.311	-13.483	961.95	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
3	-6.5568E-05	-4.9106E-05	-950.51	-938.34	-65.761	-50.510	-14.181	-12.346	1695.9	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
4	-6.0818E-05	-4.3406E-05	-745.18	-740.40	-50.289	-37.616	-16.118	-13.195	497.31	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-6.0244E-05	-4.3669E-05	-720.98	-740.32	-48.612	-37.181	-16.184	-13.506	1232.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-6.4271E-05	-4.8684E-05	-891.85	-908.68	-61.905	-48.405	-14.531	-12.835	1966.0	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000
7	-5.9979E-05	-4.3443E-05	-724.11	-740.01	-49.473	-37.619	-15.803	-13.200	768.16	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.9409E-05	-4.3705E-05	-700.37	-739.87	-47.812	-37.181	-15.870	-13.510	1502.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-6.3334E-05	-4.8732E-05	-868.30	-908.69	-60.939	-48.441	-14.227	-12.837	2236.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
10	-5.9482E-05	-4.3786E-05	-714.24	-749.30	-49.522	-38.288	-15.440	-13.197	1038.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.8870E-05	-4.4124E-05	-690.16	-748.65	-47.775	-37.784	-15.540	-13.535	1772.2	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-6.2455E-05	-4.8893E-05	-850.87	-914.22	-60.481	-48.880	-13.813	-12.753	2506.2	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
13	-6.0983E-05	-4.6380E-05	-809.26	-851.28	-57.811	-45.477	-13.814	-12.369	1308.3	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 123 di 294

14	-6.0818E-05	-4.7233E-05	-790.56	-857.73	-56.441	-45.379	-14.120	-12.907	2042.3	7.8500E+06	7.8500E+06
x( M)	13.680	13.920	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000
15	-6.2203E-05	-4.9767E-05	-905.59	-986.08	-65.971	-54.211	-11.863	-11.410	2737.1	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-6.5568E-05	-4.9767E-05	-950.51	-986.08	-65.971	-54.211	-16.311	-13.535	221.60	7.8500E+06	7.8500E+06
	3	15	3	15	15	15	2	11	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.5476E-03	1.8426E-03	364.93	265.87	288.35	241.83	52.212	41.693	3625.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.5476E-03	1.8833E-03	356.65	265.70	276.66	238.47	49.589	40.625	4311.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	2.5476E-03	1.9241E-03	408.26	311.14	346.62	302.38	66.096	55.026	5702.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
4	2.5068E-03	1.8426E-03	341.61	252.82	259.00	223.04	45.920	37.504	3648.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
5	2.5068E-03	1.8833E-03	333.65	252.53	248.27	219.81	43.601	36.523	4332.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	2.5068E-03	1.9241E-03	390.25	302.26	323.40	288.91	60.973	51.846	5785.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	2.4660E-03	1.8426E-03	336.04	252.75	253.02	222.78	44.957	37.463	3874.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
8	2.4660E-03	1.8833E-03	328.13	252.45	242.48	219.53	42.680	36.479	4558.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	2.4660E-03	1.9241E-03	384.05	302.31	316.36	288.82	59.783	51.843	6006.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.4253E-03	1.8426E-03	334.25	255.63	251.88	226.60	45.100	38.328	4143.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.4253E-03	1.8833E-03	326.23	255.06	241.14	223.09	42.739	37.262	4826.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	2.4253E-03	1.9241E-03	379.95	304.05	312.15	291.20	59.275	52.426	6252.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.3845E-03	1.8426E-03	367.35	286.03	297.64	270.77	56.144	48.391	4832.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	2.3845E-03	1.8833E-03	361.31	287.66	288.73	269.81	54.109	47.788	5541.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.3845E-03	1.9241E-03	399.67	325.51	341.82	323.93	67.076	60.273	6753.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.5476E-03	1.9241E-03	408.26	325.51	346.62	323.93	67.076	60.273	6753.5	7.8500E+06	7.8500E+06
	1	3	3	15	3	15	15	15	15	1	1

LOAD CASE : 17  
CASE NAME : 17-7 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5065	1.0000
3	0.6224	1.0000
4	0.5392	1.0000
5	0.4663	1.0000
6	0.5795	1.0000
7	0.5391	1.0000
8	0.4662	1.0000
9	0.5795	1.0000
10	0.5703	1.0000
11	0.4960	1.0000
12	0.6086	1.0000
13	0.8393	1.0000
14	0.7832	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
53059.7	3816.62	12833.8
MOMENT X , KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	1.71757E+05	-40908.1

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 124 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.25739E-03	HORIZONTAL Y, M 2.34957E-03	HORIZONTAL Z, M 6.61808E-03
ANGLE ROT. X,RAD 2.00833E-05	ANGLE ROT. Y,RAD 2.35834E-04	ANGLE ROT. Z,RAD -1.73981E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-6.4803E-04	2.5303E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
2	1.3488E-04	2.5303E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
3	9.1780E-04	2.5303E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
4	4.1322E-04	2.4399E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
5	1.1961E-03	2.4399E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
6	1.9790E-03	2.4399E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
7	1.4745E-03	2.3496E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
8	2.2574E-03	2.3496E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
9	3.0403E-03	2.3496E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
10	2.5357E-03	2.2592E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
11	3.3186E-03	2.2592E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
12	4.1016E-03	2.2592E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
13	3.5970E-03	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
14	4.3799E-03	2.1688E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
15	5.1628E-03	2.1688E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
MINIMUM	-6.4803E-04	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.1628E-03	2.5303E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-998.35	279.44	832.93	29.181	-2714.8	800.71
2	225.96	251.98	767.41	29.181	-2574.7	736.92
3	1525.4	289.67	889.40	29.181	-2886.5	826.74
4	692.24	251.52	789.69	29.181	-2613.8	719.97
5	1982.2	226.22	726.30	29.181	-2476.1	660.48
6	3267.0	262.42	848.29	29.181	-2791.6	747.79
7	2439.0	238.72	789.16	29.181	-2615.3	674.68
8	3723.8	214.56	725.77	29.181	-2477.5	618.02
9	4914.2	249.20	847.99	29.181	-2793.5	701.34
10	4180.5	235.05	818.24	29.181	-2687.9	650.69
11	5259.1	212.17	755.86	29.181	-2554.4	597.63
12	6229.3	244.33	875.50	29.181	-2861.1	673.91
13	5604.0	290.24	1049.7	29.181	-3221.5	756.61
14	6574.2	276.05	1017.7	29.181	-3171.3	726.78
15	7441.3	295.06	1099.8	29.181	-3374.8	768.72
MINIMUM	-998.35	212.17	725.77	29.181	-3374.8	597.63
Pile N.	1	11	8	1	15	11
MAXIMUM	7441.3	295.06	1099.8	29.181	-2476.1	826.74
Pile N.	15	15	15	1	5	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-6.4803E-04	2.5303E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
2	1.3488E-04	2.5303E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
3	9.1780E-04	2.5303E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
4	4.1322E-04	2.4399E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
5	1.1961E-03	2.4399E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
6	1.9790E-03	2.4399E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
7	1.4745E-03	2.3496E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
8	2.2574E-03	2.3496E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
9	3.0403E-03	2.3496E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
10	2.5357E-03	2.2592E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
11	3.3186E-03	2.2592E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
12	4.1016E-03	2.2592E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
13	3.5970E-03	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
14	4.3799E-03	2.1688E-03	6.6181E-03	2.0083E-05	2.3583E-04	-1.7398E-04
15	5.1628E-03	2.1688E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04

APPALTATORE: <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF3A	02	E ZZ CL	VI0103 003	A	125 di 294

MINIMUM	-6.4803E-04	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.1628E-03	2.5303E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-998.35	279.44	832.93	29.181	-2714.8	800.71
2	225.96	251.98	767.41	29.181	-2574.7	736.92
3	1525.4	289.67	889.40	29.181	-2886.5	826.74
4	692.24	251.52	789.69	29.181	-2613.8	719.97
5	1982.2	226.22	726.30	29.181	-2476.1	660.48
6	3267.0	262.42	848.29	29.181	-2791.6	747.79
7	2439.0	238.72	789.16	29.181	-2615.3	674.68
8	3723.8	214.56	725.77	29.181	-2477.5	618.02
9	4914.2	249.20	847.99	29.181	-2793.5	701.34
10	4180.5	235.05	818.24	29.181	-2687.9	650.69
11	5259.1	212.17	755.86	29.181	-2554.4	597.63
12	6229.3	244.33	875.50	29.181	-2861.1	673.91
13	5604.0	290.24	1049.7	29.181	-3221.5	756.61
14	6574.2	276.05	1017.7	29.181	-3171.3	726.78
15	7441.3	295.06	1099.8	29.181	-3374.8	768.72
MINIMUM	-998.35	212.17	725.77	29.181	-3374.8	597.63
Pile N.	1	11	8	1	15	11
MAXIMUM	7441.3	295.06	1099.8	29.181	-2476.1	826.74
Pile N.	15	15	15	1	5	3

PILE GROUP	STRESS, KN/ M**2
1	9056.3
2	8162.2
3	9870.9
4	8525.2
5	8809.6
6	1.0519E+04
7	9482.8
8	9767.6
9	1.1422E+04
10	1.0662E+04
11	1.0846E+04
12	1.2343E+04
13	1.3099E+04
14	1.3481E+04
15	1.4595E+04
MINIMUM	8162.2
Pile N.	2
MAXIMUM	1.4595E+04
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-6.1004E-05	-1.5456E-04	-800.71	-2714.8	-53.902	-141.51	-16.126	-46.429	564.95	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-5.9109E-05	-1.5019E-04	-736.92	-2574.7	-49.348	-131.65	-16.470	-47.651	127.87	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-6.1952E-05	-1.6157E-04	-826.74	-2886.5	-56.169	-151.74	-15.890	-47.401	863.21	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-5.8280E-05	-1.5183E-04	-719.97	-2613.8	-49.539	-135.13	-15.652	-46.873	391.73	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-5.6179E-05	-1.4679E-04	-660.48	-2476.1	-45.366	-125.66	-15.777	-47.407	1121.7	7.8500E+06	7.8500E+06
x( M)	14.640	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
6	-5.9276E-05	-1.5956E-04	-747.79	-2791.6	-51.934	-145.57	-15.492	-48.116	1848.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
7	-5.6579E-05	-1.5254E-04	-674.68	-2615.3	-47.850	-135.57	-14.946	-46.925	1380.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.4568E-05	-1.4758E-04	-618.02	-2477.5	-43.793	-126.06	-15.087	-47.481	2107.2	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
9	-5.7528E-05	-1.6027E-04	-701.34	-2793.5	-50.116	-145.99	-14.779	-48.152	2780.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
10	-5.5464E-05	-1.5570E-04	-650.69	-2687.9	-47.757	-140.72	-14.084	-46.718	2365.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.3837E-05	-1.5146E-04	-597.63	-2554.4	-43.865	-131.25	-14.379	-47.797	2976.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-5.6154E-05	-1.6262E-04	-673.91	-2861.1	-49.811	-150.94	-13.867	-47.731	3525.0	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-5.6245E-05	-1.6731E-04	-756.61	-3221.5	-58.470	-179.33	-10.841	-39.579	3171.2	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000

<b>APPALDATORE:</b> <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV</b> <b>WEBUILD ITALIA</b> <b>PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> <b>LOTTO</b> <b>CODIFICA</b> <b>DOCUMENTO</b> <b>REV.</b> <b>FOGLIO</b> IF3A                    02                    E ZZ CL                    VI0103 003                    A                    126 di 294

14	-5.5984E-05	-1.6828E-04	-726.78	-3171.3	-56.005	-174.25	-11.487	-42.234	3720.2	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-5.6450E-05	-1.7265E-04	-768.72	-3374.8	-59.666	-188.18	-10.541	-39.890	4210.9	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-6.1952E-05	-1.7265E-04	-826.74	-3374.8	-59.666	-188.18	-16.470	-48.152	127.87	7.8500E+06	7.8500E+06
	3	15	3	15	15	15	2	9	2	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
	y-Dir	z-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	STRESS	z-Dir	y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.5303E-03	6.5277E-03	356.15	927.34	279.43	832.89	52.193	148.28	9056.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	2.5303E-03	6.6181E-03	335.32	885.80	251.98	767.42	46.358	134.00	8162.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	2.5303E-03	6.7085E-03	365.07	977.28	289.69	889.47	55.040	160.90	9870.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	2.4399E-03	6.5277E-03	332.43	897.42	251.53	789.72	46.652	138.80	8525.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.4399E-03	6.6181E-03	312.92	857.15	226.24	726.38	41.359	125.08	8809.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.4000	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
6	2.4399E-03	6.7085E-03	342.17	950.15	262.46	848.43	49.602	151.83	1.0519E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	2.3496E-03	6.5277E-03	320.69	898.38	238.74	789.26	44.525	138.72	9482.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.3496E-03	6.6181E-03	301.88	858.07	214.59	725.92	39.462	125.05	9767.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.4000	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
9	2.3496E-03	6.7085E-03	329.96	951.21	249.26	848.20	47.350	151.76	1.1422E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	2.2592E-03	6.5277E-03	316.11	921.03	235.10	818.41	44.469	145.18	1.0662E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.2592E-03	6.6181E-03	298.13	881.31	212.22	756.06	39.559	131.57	1.0846E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
12	2.2592E-03	6.7085E-03	324.13	971.45	244.39	875.77	46.989	157.84	1.2343E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	2.1688E-03	6.5277E-03	356.62	1081.5	290.31	1050.0	58.454	198.51	1.3099E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	2.1688E-03	6.6181E-03	346.40	1065.8	276.13	1018.1	55.171	190.61	1.3481E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	2.1688E-03	6.7085E-03	360.98	1125.8	295.14	1100.2	60.031	209.89	1.4595E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.5303E-03	6.7085E-03	365.07	1125.8	295.14	1100.2	60.031	209.89	1.4595E+04	7.8500E+06	7.8500E+06
	1	3	3	15	15	15	15	15	15	1	1

LOAD CASE : 18  
CASE NAME : 18-8 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8315	1.0000
2	0.7769	1.0000
3	0.8661	1.0000
4	0.5678	1.0000
5	0.4960	1.0000
6	0.6167	1.0000
7	0.5376	1.0000
8	0.4672	1.0000
9	0.5890	1.0000
10	0.5377	1.0000
11	0.4673	1.0000
12	0.5890	1.0000
13	0.5845	1.0000
14	0.5092	1.0000
15	0.6327	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47825.5	4430.81	-12813.8
MOMENT X , KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	-1.74385E+05	-47762.1

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01885E-03	HORIZONTAL Y, M 2.70514E-03	HORIZONTAL Z, M -6.60829E-03
ANGLE ROT. X,RAD 1.60254E-06	ANGLE ROT. Y,RAD -2.34477E-04	ANGLE ROT. Z,RAD -1.98695E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.2350E-03	2.7196E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
2	4.1291E-03	2.7196E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
3	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
4	2.1799E-03	2.7124E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
5	3.0740E-03	2.7124E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
6	3.9681E-03	2.7124E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
7	1.1247E-03	2.7051E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
8	2.0188E-03	2.7051E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
9	2.9130E-03	2.7051E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
10	6.9577E-05	2.6979E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
11	9.6370E-04	2.6979E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
12	1.8578E-03	2.6979E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
13	-9.8557E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
14	-9.1443E-05	2.6907E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
15	8.0269E-04	2.6907E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
MINIMUM	-9.8557E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	5155.4	371.59	-1055.3	2.3285	3257.0	1004.2
2	6263.5	354.50	-1008.3	2.3285	3152.0	967.66
3	7367.9	381.49	-1079.3	2.3285	3310.7	1027.3
4	3596.5	284.87	-824.50	2.3285	2721.5	806.05
5	4955.9	258.68	-752.43	2.3285	2547.3	745.04
6	6063.9	301.30	-867.02	2.3285	2824.3	846.17
7	1865.0	273.56	-796.36	2.3285	2650.6	776.69
8	3332.3	247.42	-724.15	2.3285	2474.4	715.30
9	4756.4	291.10	-842.22	2.3285	2763.2	820.14
10	116.56	273.08	-797.65	2.3285	2650.7	772.83
11	1600.8	247.01	-725.43	2.3285	2474.6	711.67
12	3068.1	290.51	-843.36	2.3285	2763.0	816.04
13	-1511.8	288.97	-843.86	2.3285	2759.0	807.46
14	-141.43	261.99	-768.98	2.3285	2579.1	745.01
15	1336.5	304.74	-884.97	2.3285	2858.5	846.12
MINIMUM	-1511.8	247.01	-1079.3	2.3285	2474.4	711.67
Pile N.	13	11	3	1	8	11
MAXIMUM	7367.9	381.49	-724.15	2.3285	3310.7	1027.3
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.2350E-03	2.7196E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
2	4.1291E-03	2.7196E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
3	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
4	2.1799E-03	2.7124E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
5	3.0740E-03	2.7124E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
6	3.9681E-03	2.7124E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
7	1.1247E-03	2.7051E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
8	2.0188E-03	2.7051E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
9	2.9130E-03	2.7051E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
10	6.9577E-05	2.6979E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
11	9.6370E-04	2.6979E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
12	1.8578E-03	2.6979E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
13	-9.8557E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
14	-9.1443E-05	2.6907E-03	-6.6083E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
15	8.0269E-04	2.6907E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>			
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	128 di 294	

MINIMUM	-9.857E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	5155.4	371.59	-1055.3	2.3285	3257.0	1004.2
2	6263.5	354.50	-1008.3	2.3285	3152.0	967.66
3	7367.9	381.49	-1079.3	2.3285	3310.7	1027.3
4	3596.5	284.87	-824.50	2.3285	2721.5	806.05
5	4955.9	258.68	-752.43	2.3285	2547.3	745.04
6	6063.9	301.30	-867.02	2.3285	2824.3	846.17
7	1865.0	273.56	-796.36	2.3285	2650.6	776.69
8	3332.3	247.42	-724.15	2.3285	2474.4	715.30
9	4756.4	291.10	-842.22	2.3285	2763.2	820.14
10	116.56	273.08	-797.65	2.3285	2650.7	772.83
11	1600.8	247.01	-725.43	2.3285	2474.6	711.67
12	3068.1	290.51	-843.36	2.3285	2763.0	816.04
13	-1511.8	288.97	-843.86	2.3285	2759.0	807.46
14	-141.43	261.99	-768.98	2.3285	2579.1	745.01
15	1336.5	304.74	-884.97	2.3285	2858.5	846.12
MINIMUM	-1511.8	247.01	-1079.3	2.3285	2474.4	711.67
Pile N.	13	11	3	1	8	11
MAXIMUM	7367.9	381.49	-724.15	2.3285	3310.7	1027.3
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
1	1.3142E+04
2	1.3436E+04
3	1.4569E+04
4	1.0550E+04
5	1.0766E+04
6	1.2277E+04
7	9341.5
8	9613.0
9	1.1339E+04
10	8349.1
11	8630.6
12	1.0379E+04
13	9479.6
14	8133.7
15	9699.6
MINIMUM	8133.7
Pile N.	14
MAXIMUM	1.4569E+04
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.9896E-05	-6.6155E-03	-1004.2	-1089.9	-72.756	-1055.6	-14.215	-200.25	2917.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.320	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-6.9610E-05	-6.6083E-03	-967.66	-1059.1	-69.879	-1008.6	-14.989	-189.28	3544.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
3	-7.0449E-05	-6.6011E-03	-1027.3	-1107.2	-74.918	-1079.7	-13.694	-206.37	4169.4	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	24.000	0.0000	0.0000
4	-6.5842E-05	-6.6155E-03	-806.05	-929.34	-57.036	-824.65	-17.179	-147.12	2035.2	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
5	-6.4114E-05	-6.6083E-03	-745.04	-878.66	-52.595	-752.62	-17.482	-131.54	2804.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-6.7296E-05	-6.6011E-03	-846.17	-960.56	-60.311	-867.28	-16.817	-156.83	3431.5	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
7	-6.4688E-05	-6.6155E-03	-776.69	-907.57	-54.797	-796.43	-17.267	-140.73	1055.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-6.2627E-05	-6.6083E-03	-715.30	-856.66	-50.408	-724.28	-17.406	-124.48	1885.7	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-6.6413E-05	-6.6011E-03	-820.14	-942.25	-58.298	-842.42	-16.980	-151.15	2691.6	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
10	-6.4257E-05	-6.6155E-03	-772.83	-906.95	-54.487	-797.65	-17.190	-140.79	65.958	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
11	-6.2200E-05	-6.6083E-03	-711.67	-856.06	-50.125	-725.49	-17.323	-124.55	905.84	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	8.4000	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-6.5990E-05	-6.6011E-03	-816.04	-941.56	-57.971	-843.49	-16.909	-151.18	1736.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
13	-6.4986E-05	-6.6155E-03	-807.46	-938.57	-57.085	-843.79	-16.851	-150.70	855.53	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000



APPALTATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>						
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<table border="1"> <tr> <td>COMMESSA IF3A</td> <td>LOTTO 02</td> <td>CODIFICA E ZZ CL</td> <td>DOCUMENTO VI0103 003</td> <td>REV. A</td> <td>FOGLIO 129 di 294</td> </tr> </table>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 129 di 294		

14	-6.3222E-05	-6.6083E-03	-745.01	-886.16	-52.538	-768.97	-17.221	-134.49	80.031	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
15	-6.6358E-05	-6.6011E-03	-846.12	-968.69	-60.312	-885.03	-16.470	-160.18	756.31	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	24.000	0.0000	0.0000
Min. Pile N.	-7.0449E-05	-6.6155E-03	-1027.3	-1107.2	-74.918	-1079.7	-17.482	-206.37	65.958	7.8500E+06	7.8500E+06
	3	1	3	3	3	3	5	3	10	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.7196E-03	1.6877E-04	444.07	3257.0	371.67	180.35	74.288	40.605	1.3142E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
2	2.7196E-03	1.6751E-04	431.83	3152.0	354.59	172.85	70.167	42.474	1.3436E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	0.0000	0.0000	0.0000
3	2.7196E-03	1.6977E-04	452.01	3310.7	381.61	185.04	76.828	39.213	1.4569E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
4	2.7123E-03	1.5670E-04	377.44	2721.5	284.92	141.90	53.878	47.540	1.0550E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
5	2.7123E-03	1.5076E-04	357.17	2547.3	258.73	130.84	48.115	47.768	1.0766E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
6	2.7123E-03	1.6049E-04	390.95	2824.3	301.38	149.62	57.701	46.769	1.2277E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
7	2.7051E-03	1.5365E-04	367.52	2650.6	273.58	136.79	51.297	47.708	9341.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
8	2.7051E-03	1.4703E-04	347.31	2474.4	247.45	125.86	45.531	47.447	9613.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	0.0000	0.0000	0.0000
9	2.7051E-03	1.5832E-04	382.48	2763.2	291.16	145.11	55.363	47.189	1.1339E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
10	2.6979E-03	1.5301E-04	366.29	2650.7	273.08	136.39	51.153	47.644	8349.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
11	2.6979E-03	1.4635E-04	346.14	2474.6	247.03	125.51	45.406	47.367	8630.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	0.0000	0.0000	0.0000
12	2.6979E-03	1.5771E-04	381.17	2763.0	290.55	144.70	55.194	47.141	1.0379E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
13	2.6907E-03	1.5607E-04	378.06	2759.0	288.96	143.19	54.701	47.191	9479.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	0.0000	0.0000	0.0000
14	2.6907E-03	1.5004E-04	357.23	2579.1	261.99	131.79	48.731	47.601	8133.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.6800	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
15	2.6907E-03	1.5981E-04	391.27	2858.5	304.76	150.83	58.409	46.347	9699.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
Max. Pile N.	2.7196E-03	1.6977E-04	452.01	3310.7	381.61	185.04	76.828	47.768	1.4569E+04	7.8500E+06	7.8500E+06
	1	3	3	3	3	3	3	5	3	1	1

LOAD CASE : 19  
CASE NAME : 19-9 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8522	1.0000
2	0.5746	1.0000
3	0.5845	1.0000
4	0.7924	1.0000
5	0.4933	1.0000
6	0.4985	1.0000
7	0.7924	1.0000
8	0.4923	1.0000
9	0.4975	1.0000
10	0.7938	1.0000
11	0.4952	1.0000
12	0.5008	1.0000
13	0.8661	1.0000
14	0.5947	1.0000
15	0.6046	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 53059.7	HOR. LOAD Y, KN -13267.6	HOR. LOAD Z, KN 3851.50
MOMENT X, KN- M 5196.70	MOMENT Y, KN- M 51545.5	MOMENT Z, KN- M 1.42439E+05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 130 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.38155E-03	HORIZONTAL Y, M -8.21826E-03	HORIZONTAL Z, M 2.04838E-03
ANGLE ROT. X,RAD 5.34203E-05	ANGLE ROT. Y,RAD 8.07187E-05	ANGLE ROT. Z,RAD 6.21946E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.4538E-03	-7.7375E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
2	1.6551E-03	-7.7375E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
3	-1.1437E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
4	4.8171E-03	-7.9779E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
5	2.0183E-03	-7.9779E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
6	-7.8045E-04	-7.9779E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
7	5.1803E-03	-8.2183E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
8	2.3816E-03	-8.2183E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
9	-4.1721E-04	-8.2183E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
10	5.5435E-03	-8.4587E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
11	2.7448E-03	-8.4587E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
12	-5.3977E-05	-8.4587E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
13	5.9068E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
14	3.1080E-03	-8.6990E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
15	3.0926E-04	-8.6990E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
MINIMUM	-1.1437E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	5.9068E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	6665.8	-1032.3	280.90	77.619	-844.92	-2706.7
2	2735.3	-786.28	251.89	77.619	-822.67	-2146.4
3	-1752.4	-796.90	289.85	77.619	-953.76	-2160.9
4	7115.9	-1017.0	266.26	77.619	-813.33	-2729.2
5	3331.4	-727.90	225.25	77.619	-758.68	-2054.6
6	-1199.8	-733.80	258.10	77.619	-877.41	-2058.1
7	7450.5	-1049.8	264.16	77.619	-809.51	-2856.2
8	3927.5	-747.39	222.09	77.619	-751.80	-2146.9
9	-645.27	-753.68	254.59	77.619	-869.76	-2151.1
10	7641.6	-1081.2	261.85	77.619	-805.01	-2979.1
11	4523.6	-770.88	220.22	77.619	-748.09	-2249.0
12	-83.482	-777.91	252.64	77.619	-865.94	-2254.7
13	7832.7	-1178.5	274.43	77.619	-834.10	-3248.6
14	4998.1	-901.40	246.15	77.619	-812.57	-2608.2
15	518.07	-912.64	283.11	77.619	-941.71	-2623.6
MINIMUM	-1752.4	-1178.5	220.22	77.619	-953.76	-3248.6
Pile N.	3	13	11	1	3	13
MAXIMUM	7832.7	-727.90	289.85	77.619	-748.09	-2054.6
Pile N.	13	5	3	1	11	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.4538E-03	-7.7375E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
2	1.6551E-03	-7.7375E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
3	-1.1437E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
4	4.8171E-03	-7.9779E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
5	2.0183E-03	-7.9779E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
6	-7.8045E-04	-7.9779E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
7	5.1803E-03	-8.2183E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
8	2.3816E-03	-8.2183E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
9	-4.1721E-04	-8.2183E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
10	5.5435E-03	-8.4587E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
11	2.7448E-03	-8.4587E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
12	-5.3977E-05	-8.4587E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
13	5.9068E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
14	3.1080E-03	-8.6990E-03	2.0484E-03	5.3420E-05	8.0719E-05	6.2195E-04
15	3.0926E-04	-8.6990E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 131 di 294

MINIMUM	-1.1437E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	5.9068E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	6665.8	-1032.3	280.90	77.619	-844.92	-2706.7
2	2735.3	-786.28	251.89	77.619	-822.67	-2146.4
3	-1752.4	-796.90	289.85	77.619	-953.76	-2160.9
4	7115.9	-1017.0	266.26	77.619	-813.33	-2729.2
5	3331.4	-727.90	225.25	77.619	-758.68	-2054.6
6	-1199.8	-733.80	258.10	77.619	-877.41	-2058.1
7	7450.5	-1049.8	264.16	77.619	-809.51	-2856.2
8	3927.5	-747.39	222.09	77.619	-751.80	-2146.9
9	-645.27	-753.68	254.59	77.619	-869.76	-2151.1
10	7641.6	-1081.2	261.85	77.619	-805.01	-2979.1
11	4523.6	-770.88	220.22	77.619	-748.09	-2249.0
12	-83.482	-777.91	252.64	77.619	-865.94	-2254.7
13	7832.7	-1178.5	274.43	77.619	-834.10	-3248.6
14	4998.1	-901.40	246.15	77.619	-812.57	-2608.2
15	518.07	-912.64	283.11	77.619	-941.71	-2623.6
MINIMUM	-1752.4	-1178.5	220.22	77.619	-953.76	-3248.6
Pile N.	3	13	11	1	3	13
MAXIMUM	7832.7	-727.90	289.85	77.619	-748.09	-2054.6
Pile N.	13	5	3	1	11	5

PILE GROUP	STRESS, KN/ M**2
1	1.2279E+04
2	8443.8
3	8077.8
4	1.2570E+04
5	8455.7
6	7391.0
7	1.3122E+04
8	9046.7
9	7326.1
10	1.3582E+04
11	9670.3
12	7293.1
13	1.4494E+04
14	1.1024E+04
15	8655.6
MINIMUM	7293.1
Pile N.	12
MAXIMUM	1.4494E+04
Pile N.	13

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-7.7375E-03	-4.6483E-05	-1281.8	-844.92	-1032.6	-49.971	-211.18	-10.464	3772.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000
2	-7.7375E-03	-4.8886E-05	-1086.5	-822.67	-786.37	-44.187	-151.78	-14.488	1547.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
3	-7.7375E-03	-5.4130E-05	-1090.6	-953.76	-796.84	-49.624	-154.17	-16.328	991.64	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
4	-7.9779E-03	-4.6065E-05	-1279.1	-813.33	-1017.1	-47.712	-206.48	-11.079	4026.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
5	-7.9779E-03	-4.6548E-05	-1047.8	-758.68	-728.01	-40.202	-137.73	-14.636	1885.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
6	-7.9779E-03	-5.1378E-05	-1048.3	-877.41	-733.76	-44.954	-138.30	-16.504	678.94	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
7	-8.2183E-03	-4.5917E-05	-1313.3	-809.51	-1050.1	-47.621	-214.38	-11.119	4216.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
8	-8.2183E-03	-4.6314E-05	-1074.0	-751.80	-747.52	-40.080	-139.81	-14.676	2222.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
9	-8.2183E-03	-5.1115E-05	-1074.6	-869.76	-753.66	-44.815	-140.45	-16.548	365.15	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
10	-8.4587E-03	-4.5716E-05	-1346.9	-805.01	-1081.5	-47.542	-222.77	-11.161	4324.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
11	-8.4587E-03	-4.6199E-05	-1103.5	-748.09	-771.04	-40.156	-142.87	-14.721	2559.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
12	-8.4587E-03	-5.1005E-05	-1104.5	-865.94	-777.90	-44.920	-143.65	-16.600	47.241	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
13	-8.6990E-03	-4.5960E-05	-1431.4	-834.10	-1178.9	-50.034	-245.71	-10.509	4432.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6								
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO			
IF3A	02	E ZZ CL	VI0103 003	A	132 di 294			

14	-8.6990E-03	-4.8465E-05	-1218.0	-812.57	-901.60	-44.773	-172.24	-14.612	2828.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
15	-8.6990E-03	-5.3677E-05	-1222.3	-941.71	-912.66	-50.292	-174.08	-16.474	293.17	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
Min.	-8.6990E-03	-5.4130E-05	-1431.4	-953.76	-1178.9	-50.292	-245.71	-16.600	47.241	7.8500E+06	7.8500E+06
Pile N.	13	3	13	3	13	15	13	12	12	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.0145E-04	1.8080E-03	2706.7	300.88	210.98	280.99	38.116	54.414	1.2279E+04	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	1.9049E-04	2.0484E-03	2146.4	289.47	164.03	251.93	47.561	45.435	8443.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
3	1.8875E-04	2.2888E-03	2160.9	325.46	164.34	289.82	47.296	52.155	8077.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	2.0576E-04	1.8080E-03	2729.2	291.13	207.55	266.35	42.410	51.356	1.2570E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
5	1.8862E-04	2.0484E-03	2054.6	271.08	153.61	225.29	50.669	39.611	8455.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
6	1.8647E-04	2.2888E-03	2058.1	303.86	153.15	258.08	50.514	44.943	7391.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
7	2.1096E-04	1.8080E-03	2856.2	290.41	213.51	264.25	44.306	51.436	1.3122E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
8	1.9260E-04	2.0484E-03	2146.9	269.99	157.68	222.14	52.730	38.762	9046.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
9	1.9042E-04	2.2888E-03	2151.1	302.63	157.21	254.58	52.567	43.998	7326.1	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
10	2.1581E-04	1.8080E-03	2979.1	289.68	219.46	261.95	46.219	51.627	1.3582E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
11	1.9695E-04	2.0484E-03	2249.0	269.80	162.52	220.28	54.786	38.229	9670.3	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
12	1.9478E-04	2.2888E-03	2254.7	302.52	162.11	252.64	54.614	43.434	7293.1	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
13	2.2223E-04	1.8080E-03	3248.6	299.41	237.66	274.53	44.866	54.944	1.4494E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	2.0929E-04	2.0484E-03	2608.2	289.83	186.69	246.21	55.539	44.486	1.1024E+04	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
15	2.0746E-04	2.2888E-03	2623.6	325.80	186.98	283.11	55.249	50.796	8655.6	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
Max.	2.2223E-04	2.2888E-03	3248.6	325.80	237.66	289.82	55.539	54.944	1.4494E+04	7.8500E+06	7.8500E+06
Pile N.	13	3	13	15	13	3	14	13	13	1	1

LOAD CASE : 20  
CASE NAME : 20-10 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5753	1.0000
3	0.8544	1.0000
4	0.4980	1.0000
5	0.4935	1.0000
6	0.7944	1.0000
7	0.4971	1.0000
8	0.4925	1.0000
9	0.7944	1.0000
10	0.5000	1.0000
11	0.4952	1.0000
12	0.7957	1.0000
13	0.6015	1.0000
14	0.5922	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47969.5	14220.4	3830.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5196.70	51986.8	-1.54095E+05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 133 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.16254E-03	HORIZONTAL Y, M 9.05642E-03	HORIZONTAL Z, M 2.06183E-03
ANGLE ROT. X,RAD 3.54818E-05	ANGLE ROT. Y,RAD 8.08835E-05	ANGLE ROT. Z,RAD -6.69600E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.5786E-03	9.3758E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
2	1.4346E-03	9.3758E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
3	4.4478E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
4	-1.2146E-03	9.2161E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
5	1.7986E-03	9.2161E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
6	4.8118E-03	9.2161E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
7	-8.5065E-04	9.0564E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
8	2.1625E-03	9.0564E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
9	5.1757E-03	9.0564E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
10	-4.8668E-04	8.8968E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
11	2.5265E-03	8.8968E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
12	5.5397E-03	8.8968E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
13	-1.2270E-04	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
14	2.8905E-03	8.7371E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
15	5.9037E-03	8.7371E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
MINIMUM	-1.5786E-03	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9037E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-2414.0	940.46	218.54	51.555	-717.40	2723.7
2	2373.5	924.14	236.46	51.555	-791.25	2698.4
3	6658.3	1216.3	334.29	51.555	-1054.4	3387.1
4	-1860.3	825.94	197.61	51.555	-665.65	2418.9
5	2970.8	815.15	214.83	51.555	-737.48	2406.1
6	7109.4	1137.7	320.69	51.555	-1023.0	3177.4
7	-1306.6	811.10	198.74	51.555	-668.47	2355.8
8	3568.1	800.35	216.04	51.555	-740.49	2343.1
9	7448.1	1120.1	323.06	51.555	-1028.3	3104.9
10	-752.71	800.71	200.98	51.555	-674.02	2303.4
11	4165.4	789.67	218.35	51.555	-746.29	2290.1
12	7639.6	1103.7	325.85	51.555	-1034.4	3034.4
13	-189.78	898.53	229.36	51.555	-743.39	2509.3
14	4728.5	882.73	248.10	51.555	-819.43	2485.5
15	7831.1	1153.7	347.59	51.555	-1083.6	3111.6
MINIMUM	-2414.0	789.67	197.61	51.555	-1083.6	2290.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.1	1216.3	347.59	51.555	-665.65	3387.1
Pile N.	15	3	15	1	4	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.5786E-03	9.3758E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
2	1.4346E-03	9.3758E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
3	4.4478E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
4	-1.2146E-03	9.2161E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
5	1.7986E-03	9.2161E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
6	4.8118E-03	9.2161E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
7	-8.5065E-04	9.0564E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
8	2.1625E-03	9.0564E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
9	5.1757E-03	9.0564E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
10	-4.8668E-04	8.8968E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
11	2.5265E-03	8.8968E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
12	5.5397E-03	8.8968E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
13	-1.2270E-04	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
14	2.8905E-03	8.7371E-03	2.0618E-03	3.5482E-05	8.0883E-05	-6.6960E-04
15	5.9037E-03	8.7371E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 134 di 294

MINIMUM	-1.5786E-03	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9037E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-2414.0	940.46	218.54	51.555	-717.40	2723.7
2	2373.5	924.14	236.46	51.555	-791.25	2698.4
3	6658.3	1216.3	334.29	51.555	-1054.4	3387.1
4	-1860.3	825.94	197.61	51.555	-665.65	2418.9
5	2970.8	815.15	214.83	51.555	-737.48	2406.1
6	7109.4	1137.7	320.69	51.555	-1023.0	3177.4
7	-1306.6	811.10	198.74	51.555	-668.47	2355.8
8	3568.1	800.35	216.04	51.555	-740.49	2343.1
9	7448.1	1120.1	323.06	51.555	-1028.3	3104.9
10	-752.71	800.71	200.98	51.555	-674.02	2303.4
11	4165.4	789.67	218.35	51.555	-746.29	2290.1
12	7639.6	1103.7	325.85	51.555	-1034.4	3034.4
13	-189.78	898.53	229.36	51.555	-743.39	2509.3
14	4728.5	882.73	248.10	51.555	-819.43	2485.5
15	7831.1	1153.7	347.59	51.555	-1083.6	3111.6
MINIMUM	-2414.0	789.67	197.61	51.555	-1083.6	2290.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.1	1216.3	347.59	51.555	-665.65	3387.1
Pile N.	15	3	15	1	4	3

PILE GROUP	STRESS, KN/ M**2
1	9815.9
2	9779.1
3	1.4410E+04
4	8579.1
5	9230.9
6	1.4037E+04
7	8085.7
8	9391.1
9	1.4027E+04
10	7626.0
11	9583.1
12	1.3941E+04
13	7958.7
14	1.0527E+04
15	1.4316E+04
MINIMUM	7626.0
Pile N.	10
MAXIMUM	1.4410E+04
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-2.1828E-04	-4.3550E-05	-2723.7	-717.40	-195.05	-40.313	-60.321	-13.504	1366.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
2	-2.1983E-04	-4.7417E-05	-2698.4	-791.25	-194.60	-43.726	-60.681	-14.874	1343.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
3	-2.3507E-04	-5.5509E-05	-3387.1	-1054.4	-250.76	-60.680	-49.965	-13.766	3767.8	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
4	-2.0758E-04	-4.1747E-05	-2418.9	-665.65	-174.29	-36.656	-59.875	-13.547	1052.7	7.8500E+06	7.8500E+06
x( M)	14.640	14.880	0.0000	0.0000	11.760	12.000	18.720	18.720	24.000	0.0000	0.0000
5	-2.0953E-04	-4.5563E-05	-2406.1	-737.48	-174.77	-39.960	-60.120	-14.884	1681.1	7.8500E+06	7.8500E+06
x( M)	14.640	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
6	-2.3038E-04	-5.5247E-05	-3177.4	-1023.0	-236.12	-58.148	-51.521	-14.425	4023.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
7	-2.0550E-04	-4.1952E-05	-2355.8	-668.47	-171.53	-36.721	-58.542	-13.533	739.39	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.760	12.000	18.720	18.720	24.000	0.0000	0.0000
8	-2.0744E-04	-4.5790E-05	-2343.1	-740.49	-172.00	-40.818	-58.787	-14.870	2019.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.760	12.240	18.720	18.720	24.000	0.0000	0.0000
9	-2.2754E-04	-5.5486E-05	-3104.9	-1028.3	-232.74	-58.301	-50.129	-14.367	4214.8	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
10	-2.0388E-04	-4.2262E-05	-2303.4	-674.02	-169.61	-36.968	-57.204	-13.526	425.95	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
11	-2.0579E-04	-4.6134E-05	-2290.1	-746.29	-170.03	-40.267	-57.449	-14.863	2357.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-2.2485E-04	-5.5712E-05	-3034.4	-1034.4	-229.47	-58.489	-48.691	-14.295	4323.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
13	-2.1017E-04	-4.4780E-05	-2509.3	-743.39	-187.27	-41.516	-54.340	-13.337	107.39	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 135 di 294

14	-2.1171E-04	-4.8836E-05	-2485.5	-819.43	-186.91	-45.008	-54.713	-14.706	2675.8	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
15	-2.2382E-04	-5.6542E-05	-3111.6	-1083.6	-238.41	-61.854	-43.990	-13.366	4431.5	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-2.3507E-04	-5.6542E-05	-3387.1	-1083.6	-250.76	-61.854	-60.681	-14.884	107.39	7.8500E+06	7.8500E+06
	3	15	3	15	3	15	2	5	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	9.3758E-03	1.9022E-03	1287.5	263.86	940.36	218.51	175.59	38.729	9815.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.9200	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
2	9.3758E-03	2.0618E-03	1281.6	285.24	924.24	236.49	172.47	41.621	9779.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	9.3758E-03	2.2215E-03	1512.3	363.18	1216.7	334.39	248.50	64.883	1.4410E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
4	9.2161E-03	1.9022E-03	1188.8	247.87	825.87	197.59	149.73	33.755	8579.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.9200	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	9.2161E-03	2.0618E-03	1186.9	268.77	815.26	214.87	148.00	36.507	9230.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.9200	8.4000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	9.2161E-03	2.2215E-03	1446.6	352.96	1138.1	320.80	230.17	61.413	1.4037E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	9.0564E-03	1.9022E-03	1171.0	248.34	811.05	198.73	148.09	34.108	8085.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	9.0564E-03	2.0618E-03	1168.8	269.18	800.48	216.08	146.35	36.883	9391.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.4000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	9.0564E-03	2.2215E-03	1425.8	354.03	1120.5	323.18	228.11	62.141	1.4027E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	8.8967E-03	1.9022E-03	1157.2	249.63	800.68	200.97	147.52	34.726	7626.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	8.8967E-03	2.0618E-03	1154.8	270.44	789.81	218.40	145.69	37.528	9583.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	8.8967E-03	2.2215E-03	1406.2	355.29	1104.0	325.97	226.34	62.980	1.3941E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	8.7371E-03	1.9022E-03	1230.0	269.97	898.52	229.36	173.75	41.772	7958.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
14	8.7371E-03	2.0618E-03	1224.2	291.76	882.91	248.16	170.66	44.893	1.0527E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	8.7371E-03	2.2215E-03	1437.2	369.28	1154.1	347.72	242.62	68.879	1.4316E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	9.3758E-03	2.2215E-03	1512.3	369.28	1216.7	347.72	248.50	68.879	1.4410E+04	7.8500E+06	7.8500E+06
	1	3	3	15	3	15	3	15	3	1	1

LOAD CASE : 21  
CASE NAME : 21-1 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6014	1.0000
2	0.5009	1.0000
3	0.5845	1.0000
4	0.5600	1.0000
5	0.4642	1.0000
6	0.5422	1.0000
7	0.5600	1.0000
8	0.4641	1.0000
9	0.5421	1.0000
10	0.5921	1.0000
11	0.4961	1.0000
12	0.5753	1.0000
13	0.8661	1.0000
14	0.7957	1.0000
15	0.8545	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
49984.9	-235.727	1216.67
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53100E-11	18223.7	2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 136 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M -1.39331E-04	HORIZONTAL Z, M 6.14959E-04
ANGLE ROT. X,RAD -6.72744E-07	ANGLE ROT. Y,RAD 2.22149E-05	ANGLE ROT. Z,RAD 9.90195E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.8635E-03	-1.4538E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
2	1.8189E-03	-1.4538E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
3	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
4	1.9635E-03	-1.4236E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
5	1.9189E-03	-1.4236E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
6	1.8743E-03	-1.4236E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
7	2.0634E-03	-1.3933E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
8	2.0189E-03	-1.3933E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
9	1.9743E-03	-1.3933E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
10	2.1634E-03	-1.3630E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
11	2.1188E-03	-1.3630E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
12	2.0743E-03	-1.3630E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
13	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
14	2.2188E-03	-1.3328E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
15	2.1742E-03	-1.3328E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
MINIMUM	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3077.3	-16.794	82.106	-0.9775	-264.84	-47.898
2	3004.2	-14.876	72.784	-0.9775	-242.35	-43.482
3	2931.1	-16.484	79.758	-0.9775	-258.25	-47.187
4	3241.4	-15.575	78.502	-0.9775	-256.48	-44.549
5	3168.3	-13.742	69.365	-0.9775	-234.13	-40.275
6	3095.1	-15.245	76.061	-0.9775	-249.62	-43.784
7	3405.4	-15.132	78.492	-0.9775	-256.48	-42.963
8	3332.3	-13.344	69.350	-0.9775	-234.12	-38.801
9	3259.2	-14.809	76.047	-0.9775	-249.61	-42.217
10	3569.5	-15.247	81.282	-0.9775	-263.01	-42.647
11	3496.4	-13.542	72.313	-0.9775	-241.30	-38.727
12	3423.3	-14.957	78.931	-0.9775	-256.40	-41.984
13	3733.5	-19.064	103.18	-0.9775	-311.88	-50.326
14	3660.4	-18.020	97.306	-0.9775	-298.47	-48.113
15	3587.3	-18.896	101.19	-0.9775	-306.25	-49.967
MINIMUM	2931.1	-19.064	69.350	-0.9775	-311.88	-50.326
Pile N.	3	13	8	1	13	13
MAXIMUM	3733.5	-13.344	103.18	-0.9775	-234.12	-38.727
Pile N.	13	8	13	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.8635E-03	-1.4538E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
2	1.8189E-03	-1.4538E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
3	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
4	1.9635E-03	-1.4236E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
5	1.9189E-03	-1.4236E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
6	1.8743E-03	-1.4236E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
7	2.0634E-03	-1.3933E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
8	2.0189E-03	-1.3933E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
9	1.9743E-03	-1.3933E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
10	2.1634E-03	-1.3630E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
11	2.1188E-03	-1.3630E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
12	2.0743E-03	-1.3630E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
13	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
14	2.2188E-03	-1.3328E-04	6.1496E-04	-6.7274E-07	2.2215E-05	9.9019E-06
15	2.1742E-03	-1.3328E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI - BARI</b>					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE - ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 137 di 294

MINIMUM	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3077.3	-16.794	82.106	-0.9775	-264.84	-47.898
2	3004.2	-14.876	72.784	-0.9775	-242.35	-43.482
3	2931.1	-16.484	79.758	-0.9775	-258.25	-47.187
4	3241.4	-15.575	78.502	-0.9775	-256.48	-44.549
5	3168.3	-13.742	69.365	-0.9775	-234.13	-40.275
6	3095.1	-15.245	76.061	-0.9775	-249.62	-43.784
7	3405.4	-15.132	78.492	-0.9775	-256.48	-42.963
8	3332.3	-13.344	69.350	-0.9775	-234.12	-38.801
9	3259.2	-14.809	76.047	-0.9775	-249.61	-42.217
10	3569.5	-15.247	81.282	-0.9775	-263.01	-42.647
11	3496.4	-13.542	72.313	-0.9775	-241.30	-38.727
12	3423.3	-14.957	78.931	-0.9775	-256.40	-41.984
13	3733.5	-19.064	103.18	-0.9775	-311.88	-50.326
14	3660.4	-18.020	97.306	-0.9775	-298.47	-48.113
15	3587.3	-18.896	101.19	-0.9775	-306.25	-49.967
MINIMUM	2931.1	-19.064	69.350	-0.9775	-311.88	-50.326
Pile N.	3	13	8	1	13	13
MAXIMUM	3733.5	-13.344	103.18	-0.9775	-234.12	-38.727
Pile N.	13	8	13	1	8	11

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2548.8
2	2438.7
3	2446.2
4	2615.2
5	2505.6
6	2511.8
7	2707.2
8	2597.6
9	2603.8
10	2819.2
11	2711.7
12	2716.6
13	3060.5
14	2978.4
15	2960.9
MINIMUM	2438.7
Pile N.	2
MAXIMUM	3060.5
Pile N.	13

\* EFFECTS FOR Laterally Loaded PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.4539E-04	-1.5185E-05	-21.079	-264.84	-16.797	-13.904	-3.0583	-4.3469	1741.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
2	-1.4539E-04	-1.4469E-05	-19.622	-242.35	-14.878	-12.393	-2.6214	-4.3975	1700.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
3	-1.4539E-04	-1.4932E-05	-20.849	-258.25	-16.486	-13.532	-2.9861	-4.3226	1658.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
4	-1.4236E-04	-1.4966E-05	-20.083	-256.48	-15.578	-13.322	-2.8075	-4.3985	1834.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
5	-1.4236E-04	-1.4148E-05	-18.664	-234.13	-13.744	-11.856	-2.3967	-4.3766	1792.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
6	-1.4236E-04	-1.4698E-05	-19.830	-249.62	-15.247	-12.934	-2.7314	-4.3640	1751.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
7	-1.3933E-04	-1.4971E-05	-19.659	-256.48	-15.134	-13.326	-2.7353	-4.3990	1927.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
8	-1.3933E-04	-1.4154E-05	-18.271	-234.12	-13.346	-11.858	-2.3341	-4.3772	1885.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
9	-1.3933E-04	-1.4704E-05	-19.412	-249.61	-14.811	-12.937	-2.6609	-4.3646	1844.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
10	-1.3630E-04	-1.5148E-05	-19.658	-263.01	-15.249	-13.789	-2.7917	-4.3617	2019.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
11	-1.3630E-04	-1.4445E-05	-18.348	-241.30	-13.544	-12.335	-2.4026	-4.3983	1978.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	4.3200	18.720	24.000	0.0000	0.0000
12	-1.3630E-04	-1.4908E-05	-19.431	-256.40	-14.959	-13.413	-2.7245	-4.3352	1937.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
13	-1.3328E-04	-1.5946E-05	-22.332	-311.88	-19.067	-17.360	-3.7429	-3.6304	2112.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 138 di 294

14	-1.3328E-04	-1.5755E-05	-21.600	-298.47	-18.023	-16.412	-3.4854	-3.8423	2071.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
15	-1.3328E-04	-1.5777E-05	-22.209	-306.25	-18.899	-17.037	-3.7009	-3.6290	2030.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000
Min.	-1.4539E-04	-1.5946E-05	-22.332	-311.88	-19.067	-17.360	-3.7429	-4.3990	1658.7	7.8500E+06	7.8500E+06
Pile N.	1	13	13	13	13	13	13	7	3	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.6391E-06	6.1799E-04	47.898	90.261	3.2206	82.119	0.9157	14.273	2548.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
2	3.5182E-06	6.1496E-04	43.482	83.540	2.8851	72.795	0.9438	12.211	2438.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.520	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
3	3.6220E-06	6.1193E-04	47.187	88.331	3.1640	79.770	0.9225	13.795	2446.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	3.5255E-06	6.1799E-04	44.549	87.780	3.0202	78.515	0.9074	13.463	2615.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	3.3939E-06	6.1496E-04	40.275	81.130	2.6989	69.376	0.9210	11.474	2505.6	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
6	3.5075E-06	6.1193E-04	43.784	85.807	2.9621	76.073	0.9124	12.967	2511.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	3.4585E-06	6.1799E-04	42.963	87.787	2.9554	78.505	0.8835	13.462	2707.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	3.3311E-06	6.1496E-04	38.801	81.133	2.6418	69.362	0.8975	11.473	2597.6	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	3.4393E-06	6.1193E-04	42.217	85.810	2.8988	76.060	0.8885	12.965	2603.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	3.4216E-06	6.1799E-04	42.647	89.712	2.9912	81.296	0.8483	14.093	2819.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	3.3132E-06	6.1496E-04	38.727	83.250	2.6885	72.326	0.8729	12.113	2711.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.1600	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	3.4063E-06	6.1193E-04	41.984	87.814	2.9383	78.945	0.8545	13.614	2716.6	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.9200	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	3.4708E-06	6.1799E-04	50.326	104.41	3.6809	103.20	0.6612	19.240	3060.5	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	3.4537E-06	6.1496E-04	48.113	100.40	3.4941	97.322	0.7104	17.861	2978.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.4400	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
15	3.4670E-06	6.1193E-04	49.967	102.80	3.6506	101.20	0.6695	18.827	2960.9	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
Max.	3.6391E-06	6.1799E-04	50.326	104.41	3.6809	103.20	0.9438	19.240	3060.5	7.8500E+06	7.8500E+06
Pile N.	1	1	13	13	13	13	2	13	13	1	1

LOAD CASE : 22  
CASE NAME : 22-2 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8509	1.0000
2	0.5742	1.0000
3	0.5845	1.0000
4	0.7912	1.0000
5	0.4931	1.0000
6	0.4988	1.0000
7	0.7912	1.0000
8	0.4921	1.0000
9	0.4978	1.0000
10	0.7928	1.0000
11	0.4952	1.0000
12	0.5013	1.0000
13	0.8661	1.0000
14	0.5961	1.0000
15	0.6065	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 58089.1	HOR. LOAD Y, KN -2731.59	HOR. LOAD Z, KN 835.000
MOMENT X, KN- M -2.00600E-10	MOMENT Y, KN- M 12666.2	MOMENT Z, KN- M 31593.8

APPALTATORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 139 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.35658E-03	HORIZONTAL Y, M -1.59472E-03	HORIZONTAL Z, M 4.16827E-04
ANGLE ROT. X,RAD 1.57655E-06	ANGLE ROT. Y,RAD 1.65014E-05	ANGLE ROT. Z,RAD 1.20372E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7497E-03	-1.5805E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
2	2.2081E-03	-1.5805E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
3	1.6664E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
4	2.8240E-03	-1.5876E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
5	2.2823E-03	-1.5876E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
6	1.7407E-03	-1.5876E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
7	2.8983E-03	-1.5947E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
8	2.3566E-03	-1.5947E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
9	1.8149E-03	-1.5947E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
10	2.9725E-03	-1.6018E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
11	2.4308E-03	-1.6018E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
12	1.8892E-03	-1.6018E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
13	3.0468E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
14	2.5051E-03	-1.6089E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
15	1.9634E-03	-1.6089E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
MINIMUM	1.6664E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	3.0468E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4531.7	-221.48	66.522	2.2907	-199.30	-581.60
2	3642.8	-170.23	52.965	2.2907	-170.32	-469.40
3	2753.9	-172.44	54.668	2.2907	-175.49	-473.98
4	4646.1	-212.23	63.534	2.2907	-192.83	-563.62
5	3764.7	-154.53	48.097	2.2907	-158.84	-434.69
6	2875.8	-155.88	49.450	2.2907	-163.22	-437.40
7	4738.1	-213.48	63.530	2.2907	-192.83	-567.90
8	3886.5	-155.26	48.031	2.2907	-158.69	-437.75
9	2997.6	-156.62	49.384	2.2907	-163.07	-440.48
10	4830.1	-215.02	63.605	2.2907	-193.01	-572.78
11	4008.4	-156.86	48.216	2.2907	-159.15	-442.83
12	3119.5	-158.30	49.596	2.2907	-163.59	-445.77
13	4922.2	-229.42	67.253	2.2907	-200.92	-604.88
14	4130.3	-178.81	54.217	2.2907	-173.27	-494.56
15	3241.3	-181.03	55.933	2.2907	-178.47	-499.14
MINIMUM	2753.9	-229.42	48.031	2.2907	-200.92	-604.88
Pile N.	3	13	8	1	13	13
MAXIMUM	4922.2	-154.53	67.253	2.2907	-158.69	-434.69
Pile N.	13	5	13	1	8	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7497E-03	-1.5805E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
2	2.2081E-03	-1.5805E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
3	1.6664E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
4	2.8240E-03	-1.5876E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
5	2.2823E-03	-1.5876E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
6	1.7407E-03	-1.5876E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
7	2.8983E-03	-1.5947E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
8	2.3566E-03	-1.5947E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
9	1.8149E-03	-1.5947E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
10	2.9725E-03	-1.6018E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
11	2.4308E-03	-1.6018E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
12	1.8892E-03	-1.6018E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
13	3.0468E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
14	2.5051E-03	-1.6089E-03	4.1683E-04	1.5765E-06	1.6501E-05	1.2037E-04
15	1.9634E-03	-1.6089E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 140 di 294

MINIMUM	1.6664E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	3.0468E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4531.7	-221.48	66.522	2.2907	-199.30	-581.60
2	3642.8	-170.23	52.965	2.2907	-170.32	-469.40
3	2753.9	-172.44	54.668	2.2907	-175.49	-473.98
4	4646.1	-212.23	63.534	2.2907	-192.83	-563.62
5	3764.7	-154.53	48.097	2.2907	-158.84	-434.69
6	2875.8	-155.88	49.450	2.2907	-163.22	-437.40
7	4738.1	-213.48	63.530	2.2907	-192.83	-567.90
8	3886.5	-155.26	48.031	2.2907	-158.69	-437.75
9	2997.6	-156.62	49.384	2.2907	-163.07	-440.48
10	4830.1	-215.02	63.605	2.2907	-193.01	-572.78
11	4008.4	-156.86	48.216	2.2907	-159.15	-442.83
12	3119.5	-158.30	49.596	2.2907	-163.59	-445.77
13	4922.2	-229.42	67.253	2.2907	-200.92	-604.88
14	4130.3	-178.81	54.217	2.2907	-173.27	-494.56
15	3241.3	-181.03	55.933	2.2907	-178.47	-499.14
MINIMUM	2753.9	-229.42	48.031	2.2907	-200.92	-604.88
Pile N.	3	13	8	1	13	13
MAXIMUM	4922.2	-154.53	67.253	2.2907	-158.69	-434.69
Pile N.	13	5	13	1	8	5

PILE GROUP STRESS, KN/ M\*\*2

1	4408.8
2	3559.4
3	3074.7
4	4416.2
5	3518.8
6	3027.9
7	4480.5
8	3596.2
9	3105.4
10	4546.6
11	3680.0
12	3189.8
13	4697.5
14	3909.3
15	3424.5
MINIMUM	3027.9
Pile N.	6
MAXIMUM	4697.5
Pile N.	13

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.5805E-03	-1.0573E-05	-263.12	-199.30	-221.52	-11.369	-43.499	-2.3990	2564.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000
2	-1.5805E-03	-1.0165E-05	-225.39	-170.32	-170.26	-9.1087	-31.204	-2.9236	2061.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
3	-1.5805E-03	-1.0355E-05	-226.91	-175.49	-172.46	-9.3540	-31.685	-2.9691	1558.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
4	-1.5876E-03	-1.0516E-05	-256.84	-192.83	-212.27	-10.884	-41.136	-2.5289	2629.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
5	-1.5876E-03	-9.8046E-06	-213.43	-158.84	-154.56	-8.3131	-27.559	-2.9519	2130.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
6	-1.5876E-03	-9.9770E-06	-214.30	-163.22	-155.90	-8.5047	-27.835	-3.0064	1627.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
7	-1.5947E-03	-1.0518E-05	-257.99	-192.83	-213.52	-10.886	-41.359	-2.5289	2681.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
8	-1.5947E-03	-9.8019E-06	-214.21	-158.69	-155.29	-8.3046	-27.664	-2.9520	2199.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
9	-1.5947E-03	-9.9746E-06	-215.08	-163.07	-156.64	-8.4962	-27.941	-3.0066	1696.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
10	-1.6018E-03	-1.0522E-05	-259.35	-193.01	-215.07	-10.900	-41.652	-2.5256	2733.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	24.000	0.0000	0.0000
11	-1.6018E-03	-9.8226E-06	-215.67	-159.15	-156.89	-8.3385	-27.963	-2.9528	2268.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
12	-1.6018E-03	-9.9968E-06	-216.62	-163.59	-158.32	-8.5345	-28.261	-3.0073	1765.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
13	-1.6089E-03	-1.0600E-05	-269.74	-200.92	-229.46	-11.502	-45.112	-2.3645	2785.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.560	3.8400	18.720	24.000	0.0000	0.0000

APPALDATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>	
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A    LOTTO 02    CODIFICA E ZZ CL    DOCUMENTO VI0103 003    REV. A    FOGLIO 141 di 294	

14	-1.6089E-03	-1.0263E-05	-232.84	-173.27	-178.84	-9.3200	-32.921	-2.9043	2337.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	4.0800	18.720	24.000	0.0000	0.0000
15	-1.6089E-03	-1.0450E-05	-234.34	-178.47	-181.06	-9.5653	-33.407	-2.9476	1834.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-1.6089E-03	-1.0600E-05	-269.74	-200.92	-229.46	-11.502	-45.112	-3.0073	1558.4	7.8500E+06	7.8500E+06
	13	13	13	13	13	13	13	12	3	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	4.1224E-05	4.0973E-04	581.60	68.632	43.223	66.536	7.8984	12.428	4408.8	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	3.9656E-05	4.1683E-04	469.40	59.683	34.035	52.975	9.7897	9.1718	3559.4	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
3	3.9669E-05	4.2392E-04	473.98	61.134	34.353	54.675	9.7412	9.4852	3074.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	4.1241E-05	4.0973E-04	563.62	66.624	41.534	63.547	8.4402	11.712	4416.2	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
5	3.8758E-05	4.1683E-04	434.69	56.219	31.204	48.106	10.070	8.0869	3518.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
6	3.8772E-05	4.2392E-04	437.40	57.432	31.374	49.458	10.056	8.3205	3027.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	4.1425E-05	4.0973E-04	567.90	66.626	41.726	63.544	8.4908	11.712	4480.5	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
8	3.8904E-05	4.1683E-04	437.75	56.177	31.311	48.040	10.128	8.0733	3596.2	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
9	3.8919E-05	4.2392E-04	440.48	57.390	31.483	49.392	10.115	8.3068	3105.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	4.1613E-05	4.0973E-04	572.78	66.683	41.971	63.620	8.5286	11.731	4546.6	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
11	3.9126E-05	4.1683E-04	442.83	56.322	31.578	48.225	10.181	8.1151	3680.0	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
12	3.9146E-05	4.2392E-04	445.77	57.554	31.765	49.604	10.167	8.3547	3189.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	4.2003E-05	4.0973E-04	604.88	69.130	44.505	67.268	7.9598	12.608	4697.5	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.2000	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	4.0545E-05	4.1683E-04	494.56	60.612	35.470	54.228	9.9169	9.4581	3909.3	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
15	4.0549E-05	4.2392E-04	499.14	62.063	35.780	55.942	9.8619	9.7751	3424.5	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.6800	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
Max. Pile N.	4.2003E-05	4.2392E-04	604.88	69.130	44.505	67.268	10.181	12.608	4697.5	7.8500E+06	7.8500E+06
	13	3	13	13	13	13	11	13	13	1	1

LOAD CASE : 23  
CASE NAME : 23-3 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5009	1.0000
3	0.6014	1.0000
4	0.5422	1.0000
5	0.4642	1.0000
6	0.5600	1.0000
7	0.5421	1.0000
8	0.4641	1.0000
9	0.5600	1.0000
10	0.5753	1.0000
11	0.4961	1.0000
12	0.5921	1.0000
13	0.8545	1.0000
14	0.7957	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1216.67
MOMENT X, KN- M 1.53100E-11	MOMENT Y, KN- M 18223.7	MOMENT Z, KN- M -2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 142 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.39331E-04	HORIZONTAL Z, M 6.14959E-04
ANGLE ROT. X,RAD 6.72741E-07	ANGLE ROT. Y,RAD 2.22149E-05	ANGLE ROT. Z,RAD -9.90195E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
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MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

1	2446.2
2	2438.7
3	2548.8
4	2511.8
5	2505.6
6	2615.2
7	2603.8
8	2597.6
9	2707.2
10	2716.6
11	2711.7
12	2819.2
13	2960.9
14	2978.4
15	3060.5
MINIMUM	2438.7
Pile N.	2
MAXIMUM	3060.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6220E-06	-1.4932E-05	-47.187	-258.25	-3.1640	-13.532	-0.9225	-4.3226	1658.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5182E-06	-1.4469E-05	-43.482	-242.35	-2.8851	-12.393	-0.9438	-4.3975	1700.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-3.6391E-06	-1.5185E-05	-47.898	-264.84	-3.2206	-13.904	-0.9157	-4.3469	1741.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-3.5075E-06	-1.4698E-05	-43.784	-249.62	-2.9621	-12.934	-0.9124	-4.3640	1751.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.3939E-06	-1.4148E-05	-40.275	-234.13	-2.6989	-11.856	-0.9210	-4.3766	1792.9	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-3.5255E-06	-1.4966E-05	-44.549	-256.48	-3.0202	-13.322	-0.9074	-4.3985	1834.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
7	-3.4393E-06	-1.4704E-05	-42.217	-249.61	-2.8988	-12.937	-0.8885	-4.3646	1844.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.3311E-06	-1.4154E-05	-38.801	-234.12	-2.6418	-11.858	-0.8975	-4.3772	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-3.4585E-06	-1.4971E-05	-42.963	-256.48	-2.9554	-13.326	-0.8835	-4.3990	1927.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-3.4063E-06	-1.4908E-05	-41.984	-256.40	-2.9383	-13.413	-0.8545	-4.3352	1937.2	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-3.3132E-06	-1.4445E-05	-38.727	-241.30	-2.6885	-12.335	-0.8729	-4.3983	1978.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-3.4216E-06	-1.5148E-05	-42.647	-263.01	-2.9912	-13.789	-0.8483	-4.3617	2019.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-3.4670E-06	-1.5777E-05	-49.967	-306.25	-3.6506	-17.037	-0.6695	-3.6290	2030.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA			<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 144 di 294

14	-3.4537E-06	-1.5755E-05	-48.113	-298.47	-3.4941	-16.412	-0.7104	-3.8423	2071.4	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-3.4708E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.6612	-3.6304	2112.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	9	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4539E-04	6.1193E-04	20.849	88.331	16.486	79.770	2.9861	13.795	2446.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4539E-04	6.1496E-04	19.622	83.540	14.878	72.795	2.6214	12.211	2438.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	1.4539E-04	6.1799E-04	21.079	90.261	16.797	82.119	3.0583	14.273	2548.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	1.4236E-04	6.1193E-04	19.830	85.807	15.247	76.073	2.7314	12.967	2511.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4236E-04	6.1496E-04	18.664	81.130	13.744	69.376	2.3967	11.474	2505.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	1.4236E-04	6.1799E-04	20.083	87.780	15.578	78.515	2.8075	13.463	2615.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	1.3933E-04	6.1193E-04	19.412	85.810	14.811	76.060	2.6609	12.965	2603.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.3933E-04	6.1496E-04	18.271	81.133	13.346	69.362	2.3341	11.473	2597.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	1.3933E-04	6.1799E-04	19.659	87.787	15.134	78.505	2.7353	13.462	2707.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	1.3630E-04	6.1193E-04	19.431	87.814	14.959	78.945	2.7245	13.614	2716.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.3630E-04	6.1496E-04	18.348	83.250	13.544	72.326	2.4026	12.113	2711.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	1.3630E-04	6.1799E-04	19.658	89.712	15.249	81.296	2.7917	14.093	2819.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.3328E-04	6.1193E-04	22.209	102.80	18.899	101.20	3.7009	18.827	2960.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.3328E-04	6.1496E-04	21.600	100.40	18.023	97.322	3.4854	17.861	2978.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.3328E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 24  
CASE NAME : 24-4 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4945	1.0000
8	0.4941	1.0000
9	0.8053	1.0000
10	0.4955	1.0000
11	0.4951	1.0000
12	0.8053	1.0000
13	0.5845	1.0000
14	0.5791	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN -2.10400E-16
MOMENT X, KN- M 1.52900E-11	MOMENT Y, KN- M -1.79506E-05	MOMENT Z, KN- M -2627.62



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 145 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.35710E-04	HORIZONTAL Z, M -6.21577E-14
ANGLE ROT. X,RAD 1.32984E-16	ANGLE ROT. Y,RAD -1.76918E-14	ANGLE ROT. Z, RAD -9.87136E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
2	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
3	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
4	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
5	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
6	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
7	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
8	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
9	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
10	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
11	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
12	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
13	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
14	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
15	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06

MINIMUM	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3259.4	15.047	4.1589E-11	1.9322E-10	-2.0734E-08	42.125
2	3332.3	14.952	1.4852E-10	1.9322E-10	-2.1074E-08	41.912
3	3405.2	19.549	-6.2508E-10	1.9322E-10	-2.0225E-08	51.942
4	3259.4	13.469	3.2527E-10	1.9322E-10	-2.1108E-08	38.494
5	3332.3	13.460	4.0810E-10	1.9322E-10	-2.1406E-08	38.477
6	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
7	3259.4	13.450	3.2861E-10	1.9322E-10	-2.1112E-08	38.449
8	3332.3	13.441	4.1133E-10	1.9322E-10	-2.1410E-08	38.432
9	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
10	3259.4	13.469	3.2527E-10	1.9322E-10	-2.1108E-08	38.494
11	3332.3	13.460	4.0810E-10	1.9322E-10	-2.1406E-08	38.477
12	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
13	3259.4	15.047	4.1589E-11	1.9322E-10	-2.0734E-08	42.125
14	3332.3	14.952	1.4852E-10	1.9322E-10	-2.1074E-08	41.912
15	3405.2	19.549	-6.2508E-10	1.9322E-10	-2.0225E-08	51.942

MINIMUM	3259.4	13.441	-6.2508E-10	1.9322E-10	-2.1410E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1133E-10	1.9322E-10	-2.0225E-08	51.942
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
2	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
3	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
4	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
5	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
6	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
7	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
8	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
9	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
10	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
11	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
12	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
13	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
14	2.0189E-03	1.3571E-04	-6.2158E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
15	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 146 di 294

MINIMUM	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3259.4	15.047	4.1589E-11	1.9322E-10	-2.0734E-08	42.125
2	3332.3	14.952	1.4852E-10	1.9322E-10	-2.1074E-08	41.912
3	3405.2	19.549	-6.2508E-10	1.9322E-10	-2.0225E-08	51.942
4	3259.4	13.469	3.2527E-10	1.9322E-10	-2.1108E-08	38.494
5	3332.3	13.460	4.0810E-10	1.9322E-10	-2.1406E-08	38.477
6	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
7	3259.4	13.450	3.2861E-10	1.9322E-10	-2.1112E-08	38.449
8	3332.3	13.441	4.1133E-10	1.9322E-10	-2.1410E-08	38.432
9	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
10	3259.4	13.469	3.2527E-10	1.9322E-10	-2.1108E-08	38.494
11	3332.3	13.460	4.0810E-10	1.9322E-10	-2.1406E-08	38.477
12	3405.2	18.628	-4.4303E-10	1.9322E-10	-2.0478E-08	49.992
13	3259.4	15.047	4.1589E-11	1.9322E-10	-2.0734E-08	42.125
14	3332.3	14.952	1.4852E-10	1.9322E-10	-2.1074E-08	41.912
15	3405.2	19.549	-6.2508E-10	1.9322E-10	-2.0225E-08	51.942
MINIMUM	3259.4	13.441	-6.2508E-10	1.9322E-10	-2.1410E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1133E-10	1.9322E-10	-2.0225E-08	51.942
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
1	1970.8
2	2011.4
3	2082.8
4	1959.9
5	2001.1
6	2076.9
7	1959.8
8	2001.0
9	2076.9
10	1959.9
11	2001.1
12	2076.9
13	1970.8
14	2011.4
15	2082.8
MINIMUM	1959.8
Pile N.	7
MAXIMUM	2082.8
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.3987E-06	-6.2756E-14	-42.125	-2.0738E-08	-2.9534	-2.1582E-10	-0.8471	-6.3336E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.2400	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
2	-3.3946E-06	-6.2158E-14	-41.912	-2.1074E-08	-2.9369	-2.1624E-10	-0.8491	-6.1610E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
3	-3.5291E-06	-6.1559E-14	-51.942	-2.0866E-08	-3.7480	-6.2403E-10	-0.6784	-8.9778E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
4	-3.2964E-06	-6.2756E-14	-38.494	-2.1108E-08	-2.6738	-2.3104E-10	-0.8688	-5.3807E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
5	-3.2966E-06	-6.2158E-14	-38.477	-2.1406E-08	-2.6728	-2.3048E-10	-0.8689	-5.2775E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
6	-3.5144E-06	-6.1559E-14	-49.992	-2.0889E-08	-3.5837	-4.4196E-10	-0.7218	-8.3615E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
7	-3.2953E-06	-6.2756E-14	-38.449	-2.1112E-08	-2.6705	-2.3126E-10	-0.8689	-5.3694E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
8	-3.2954E-06	-6.2158E-14	-38.432	-2.1410E-08	-2.6696	-2.3070E-10	-0.8690	-5.2664E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
9	-3.5144E-06	-6.1559E-14	-49.992	-2.0889E-08	-3.5837	-4.4196E-10	-0.7218	-8.3615E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
10	-3.2964E-06	-6.2756E-14	-38.494	-2.1108E-08	-2.6738	-2.3104E-10	-0.8688	-5.3807E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
11	-3.2966E-06	-6.2158E-14	-38.477	-2.1406E-08	-2.6728	-2.3048E-10	-0.8689	-5.2775E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
12	-3.5144E-06	-6.1559E-14	-49.992	-2.0889E-08	-3.5837	-4.4196E-10	-0.7218	-8.3615E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
13	-3.3987E-06	-6.2756E-14	-42.125	-2.0738E-08	-2.9534	-2.1582E-10	-0.8471	-6.3336E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.2400	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000

APPALTATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>	
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	COMMESSA IF3A    LOTTO 02    CODIFICA E ZZ CL    DOCUMENTO VI0103 003    REV. A    FOGLIO 147 di 294	

14	-3.3946E-06	-6.2158E-14	-41.912	-2.1074E-08	-2.9369	-2.1624E-10	-0.8491	-6.1610E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
15	-3.5291E-06	-6.1559E-14	-51.942	-2.0866E-08	-3.7480	-6.2403E-10	-0.6784	-8.9778E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
Min. Pile N.	-3.5291E-06	-6.2756E-14	-51.942	-2.1410E-08	-3.7480	-6.2403E-10	-0.8690	-8.9778E-10	1844.5	7.8500E+06	7.8500E+06
	3	1	3	8	3	3	8	3	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.3571E-04	4.1161E-15	19.469	9.3919E-10	15.049	2.6057E-09	2.7488	3.9351E-10	1970.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
2	1.3571E-04	4.1838E-15	19.396	9.4780E-10	14.954	2.6177E-09	2.7270	3.9410E-10	2011.4	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
3	1.3571E-04	3.5560E-15	22.731	9.5203E-10	19.552	2.9298E-09	3.8280	4.8281E-10	2082.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
4	1.3571E-04	4.4331E-15	18.258	9.5110E-10	13.471	2.5021E-09	2.3892	3.6366E-10	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
5	1.3571E-04	4.4921E-15	18.253	9.6017E-10	13.462	2.5207E-09	2.3875	3.6593E-10	2001.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
6	1.3571E-04	3.6663E-15	22.094	9.5066E-10	18.630	2.8713E-09	3.6008	4.6529E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
7	1.3571E-04	4.4374E-15	18.243	9.5126E-10	13.451	2.5008E-09	2.3849	3.6331E-10	1959.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
8	1.3571E-04	4.4965E-15	18.237	9.6037E-10	13.443	2.5195E-09	2.3832	3.6556E-10	2001.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
9	1.3571E-04	3.6663E-15	22.094	9.5066E-10	18.630	2.8713E-09	3.6008	4.6529E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
10	1.3571E-04	4.4331E-15	18.258	9.5110E-10	13.471	2.5021E-09	2.3892	3.6366E-10	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
11	1.3571E-04	4.4921E-15	18.253	9.6017E-10	13.462	2.5207E-09	2.3875	3.6593E-10	2001.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
12	1.3571E-04	3.6663E-15	22.094	9.5066E-10	18.630	2.8713E-09	3.6008	4.6529E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
13	1.3571E-04	4.1161E-15	19.469	9.3919E-10	15.049	2.6057E-09	2.7488	3.9351E-10	1970.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
14	1.3571E-04	4.1838E-15	19.396	9.4780E-10	14.954	2.6177E-09	2.7270	3.9410E-10	2011.4	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
15	1.3571E-04	3.5560E-15	22.731	9.5203E-10	19.552	2.9298E-09	3.8280	4.8281E-10	2082.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
Max. Pile N.	1.3571E-04	4.4965E-15	22.731	9.6037E-10	19.552	2.9298E-09	3.8280	4.8281E-10	2082.8	7.8500E+06	7.8500E+06
	1	8	3	8	3	3	3	3	3	1	1

LOAD CASE : 25  
CASE NAME : 25-5 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5715	1.0000
3	0.8426	1.0000
4	0.5005	1.0000
5	0.4920	1.0000
6	0.7835	1.0000
7	0.4996	1.0000
8	0.4910	1.0000
9	0.7835	1.0000
10	0.5044	1.0000
11	0.4952	1.0000
12	0.7859	1.0000
13	0.6179	1.0000
14	0.6051	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
58572.7	2468.36	940.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.70600E-10	15755.6	-27928.1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 148 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.37453E-03	HORIZONTAL Y, M 1.43424E-03	HORIZONTAL Z, M 4.73722E-04
ANGLE ROT. X,RAD -1.51544E-06	ANGLE ROT. Y,RAD 1.98452E-05	ANGLE ROT. Z,RAD -1.06725E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7157E-03	1.4206E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
2	2.1959E-03	1.4206E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
3	2.6762E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
4	1.8050E-03	1.4274E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
5	2.2852E-03	1.4274E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
6	2.7655E-03	1.4274E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
7	1.8943E-03	1.4342E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
8	2.3745E-03	1.4342E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
9	2.8548E-03	1.4342E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
10	1.9836E-03	1.4410E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
11	2.4638E-03	1.4410E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
12	2.9441E-03	1.4410E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
13	2.0729E-03	1.4479E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
14	2.5531E-03	1.4479E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
15	3.0334E-03	1.4479E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
MINIMUM	1.7157E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0334E-03	1.4479E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2834.8	155.76	61.358	-2.2019	-195.44	430.52
2	3622.9	153.30	59.442	-2.2019	-189.83	425.28
3	4411.0	198.69	74.700	-2.2019	-222.67	524.84
4	2981.3	141.22	55.603	-2.2019	-181.93	398.51
5	3769.4	139.48	54.042	-2.2019	-177.10	394.78
6	4557.6	190.48	71.334	-2.2019	-215.38	508.95
7	3127.9	141.95	55.530	-2.2019	-181.78	401.52
8	3916.0	140.19	53.968	-2.2019	-176.95	397.76
9	4684.3	191.68	71.327	-2.2019	-215.39	513.05
10	3274.4	143.77	55.858	-2.2019	-182.58	407.08
11	4062.5	141.90	54.252	-2.2019	-177.64	403.05
12	4794.9	193.28	71.462	-2.2019	-215.69	518.01
13	3421.0	165.82	63.528	-2.2019	-200.51	458.78
14	4209.1	163.39	61.608	-2.2019	-194.91	453.65
15	4905.6	207.46	75.988	-2.2019	-225.50	549.63
MINIMUM	2834.8	139.48	53.968	-2.2019	-225.50	394.78
Pile N.	1	5	8	1	15	5
MAXIMUM	4905.6	207.46	75.988	-2.2019	-176.95	549.63
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7157E-03	1.4206E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
2	2.1959E-03	1.4206E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
3	2.6762E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
4	1.8050E-03	1.4274E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
5	2.2852E-03	1.4274E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
6	2.7655E-03	1.4274E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
7	1.8943E-03	1.4342E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
8	2.3745E-03	1.4342E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
9	2.8548E-03	1.4342E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
10	1.9836E-03	1.4410E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
11	2.4638E-03	1.4410E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
12	2.9441E-03	1.4410E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
13	2.0729E-03	1.4479E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
14	2.5531E-03	1.4479E-03	4.7372E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
15	3.0334E-03	1.4479E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF3A	02	E ZZ CL	VI0103 003	A	149 di 294

MINIMUM	1.7157E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0334E-03	1.4479E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2834.8	155.76	61.358	-2.2019	-195.44	430.52
2	3622.9	153.30	59.442	-2.2019	-189.83	425.28
3	4411.0	198.69	74.700	-2.2019	-222.67	524.84
4	2981.3	141.22	55.603	-2.2019	-181.93	398.51
5	3769.4	139.48	54.042	-2.2019	-177.10	394.78
6	4557.6	190.48	71.334	-2.2019	-215.38	508.95
7	3127.9	141.95	55.530	-2.2019	-181.78	401.52
8	3916.0	140.19	53.968	-2.2019	-176.95	397.76
9	4684.3	191.68	71.327	-2.2019	-215.39	513.05
10	3274.4	143.77	55.858	-2.2019	-182.58	407.08
11	4062.5	141.90	54.252	-2.2019	-177.64	403.05
12	4794.9	193.28	71.462	-2.2019	-215.69	518.01
13	3421.0	165.82	63.528	-2.2019	-200.51	458.78
14	4209.1	163.39	61.608	-2.2019	-194.91	453.65
15	4905.6	207.46	75.988	-2.2019	-225.50	549.63
MINIMUM	2834.8	139.48	53.968	-2.2019	-225.50	394.78
Pile N.	1	5	8	1	15	5
MAXIMUM	4905.6	207.46	75.988	-2.2019	-176.95	549.63
Pile N.	15	15	15	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	3022.6
2	3447.3
3	4206.5
4	3001.3
5	3431.1
6	4237.0
7	3092.3
8	3522.0
9	4320.0
10	3191.4
11	3620.3
12	4396.7
13	3437.9
14	3863.1
15	4558.3
MINIMUM	3001.3
Pile N.	4
MAXIMUM	4558.3
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.5626E-05	-1.1755E-05	-430.52	-195.44	-30.885	-10.587	-8.7889	-3.3401	1604.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5577E-05	-1.1550E-05	-425.28	-189.83	-30.506	-10.307	-8.8417	-3.3006	2050.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
3	-3.6994E-05	-1.2038E-05	-524.84	-222.67	-38.623	-12.858	-7.1972	-2.7301	2496.1	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
4	-3.4840E-05	-1.1341E-05	-398.51	-181.93	-28.273	-9.6497	-9.0710	-3.3850	1687.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.4769E-05	-1.1155E-05	-394.78	-177.10	-28.018	-9.4229	-9.0856	-3.3323	2133.1	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-3.7030E-05	-1.1972E-05	-508.95	-215.38	-37.124	-12.311	-7.6801	-2.8749	2579.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-3.4985E-05	-1.1340E-05	-401.52	-181.78	-28.383	-9.6411	-9.1269	-3.3853	1770.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.4911E-05	-1.1153E-05	-397.76	-176.95	-28.130	-9.4142	-9.1413	-3.3326	2216.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-3.7208E-05	-1.1975E-05	-513.05	-215.39	-37.313	-12.313	-7.7290	-2.8749	2650.8	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-3.5222E-05	-1.1371E-05	-407.08	-182.58	-28.692	-9.6992	-9.1755	-3.3859	1852.9	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-3.5144E-05	-1.1183E-05	-403.05	-177.64	-28.411	-9.4655	-9.1920	-3.3337	2298.9	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-3.7392E-05	-1.1982E-05	-518.01	-215.69	-37.569	-12.338	-7.7602	-2.8692	2713.4	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-3.6575E-05	-1.1898E-05	-458.78	-200.51	-32.573	-10.959	-8.8583	-3.3001	1935.9	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>			
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>				
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 150 di 294

14	-3.6515E-05	-1.1710E-05	-453.65	-194.91	-32.215	-10.674	-8.9213	-3.2650	2381.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
15	-3.7776E-05	-1.2082E-05	-549.63	-225.50	-40.062	-13.090	-7.2013	-2.6696	2776.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.7776E-05	-1.2082E-05	-549.63	-225.50	-40.062	-13.090	-9.1920	-3.3859	1604.1	7.8500E+06	7.8500E+06
	15	15	15	15	15	15	11	10	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4206E-03	4.8054E-04	203.90	69.249	155.78	61.366	28.568	10.679	3022.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4206E-03	4.7372E-04	202.14	67.656	153.33	59.452	28.024	10.315	3447.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	1.4206E-03	4.6690E-04	235.49	77.833	198.73	74.715	38.890	13.966	4206.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
4	1.4274E-03	4.8054E-04	192.89	65.147	141.23	55.612	25.183	9.3942	3001.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4274E-03	4.7372E-04	191.67	63.791	139.50	54.052	24.815	9.1123	3431.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
6	1.4274E-03	4.6690E-04	230.03	75.567	190.52	71.349	36.791	13.160	4237.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	1.4342E-03	4.8054E-04	193.67	65.102	141.97	55.539	25.290	9.3794	3092.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.4342E-03	4.7372E-04	192.43	63.746	140.22	53.979	24.921	9.0975	3522.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
9	1.4342E-03	4.6690E-04	231.14	75.570	191.71	71.343	37.003	13.160	4320.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	1.4411E-03	4.8054E-04	195.30	65.353	143.79	55.867	25.643	9.4532	3191.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.4411E-03	4.7372E-04	193.98	63.966	141.92	54.263	25.246	9.1615	3620.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
12	1.4411E-03	4.6690E-04	232.53	75.671	193.31	71.478	37.313	13.194	4396.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	1.4479E-03	4.8054E-04	212.42	70.816	165.85	63.538	30.644	11.175	3437.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	1.4479E-03	4.7372E-04	210.73	69.241	163.42	61.621	30.102	10.809	3863.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	1.4479E-03	4.6690E-04	242.69	78.704	207.50	76.005	40.723	14.281	4558.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4479E-03	4.8054E-04	242.69	78.704	207.50	76.005	40.723	14.281	4558.3	7.8500E+06	7.8500E+06
	13	1	15	15	15	15	15	15	15	1	1

LOAD CASE : 26  
CASE NAME : 26-6 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5009	1.0000
3	0.6014	1.0000
4	0.5422	1.0000
5	0.4642	1.0000
6	0.5600	1.0000
7	0.5421	1.0000
8	0.4641	1.0000
9	0.5600	1.0000
10	0.5753	1.0000
11	0.4961	1.0000
12	0.5921	1.0000
13	0.8545	1.0000
14	0.7957	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1216.67
MOMENT X, KN- M 1.53100E-11	MOMENT Y, KN- M 18223.7	MOMENT Z, KN- M -2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 151 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.39331E-04	HORIZONTAL Z, M 6.14959E-04
ANGLE ROT. X,RAD 6.72741E-07	ANGLE ROT. Y,RAD 2.22149E-05	ANGLE ROT. Z,RAD -9.90195E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 152 di 294

MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	2446.2
2	2438.7
3	2548.8
4	2511.8
5	2505.6
6	2615.2
7	2603.8
8	2597.6
9	2707.2
10	2716.6
11	2711.7
12	2819.2
13	2960.9
14	2978.4
15	3060.5
MINIMUM	2438.7
Pile N.	2
MAXIMUM	3060.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6220E-06	-1.4932E-05	-47.187	-258.25	-3.1640	-13.532	-0.9225	-4.3226	1658.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5182E-06	-1.4469E-05	-43.482	-242.35	-2.8851	-12.393	-0.9438	-4.3975	1700.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-3.6391E-06	-1.5185E-05	-47.898	-264.84	-3.2206	-13.904	-0.9157	-4.3469	1741.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-3.5075E-06	-1.4698E-05	-43.784	-249.62	-2.9621	-12.934	-0.9124	-4.3640	1751.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.3939E-06	-1.4148E-05	-40.275	-234.13	-2.6989	-11.856	-0.9210	-4.3766	1792.9	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-3.5255E-06	-1.4966E-05	-44.549	-256.48	-3.0202	-13.322	-0.9074	-4.3985	1834.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
7	-3.4393E-06	-1.4704E-05	-42.217	-249.61	-2.8988	-12.937	-0.8885	-4.3646	1844.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.3311E-06	-1.4154E-05	-38.801	-234.12	-2.6418	-11.858	-0.8975	-4.3772	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-3.4585E-06	-1.4971E-05	-42.963	-256.48	-2.9554	-13.326	-0.8835	-4.3990	1927.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-3.4063E-06	-1.4908E-05	-41.984	-256.40	-2.9383	-13.413	-0.8545	-4.3352	1937.2	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-3.3132E-06	-1.4445E-05	-38.727	-241.30	-2.6885	-12.335	-0.8729	-4.3983	1978.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-3.4216E-06	-1.5148E-05	-42.647	-263.01	-2.9912	-13.789	-0.8483	-4.3617	2019.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-3.4670E-06	-1.5777E-05	-49.967	-306.25	-3.6506	-17.037	-0.6695	-3.6290	2030.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000



APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 153 di 294

14	-3.4537E-06	-1.5755E-05	-48.113	-298.47	-3.4941	-16.412	-0.7104	-3.8423	2071.4	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-3.4708E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.6612	-3.6304	2112.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	9	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4539E-04	6.1193E-04	20.849	88.331	16.486	79.770	2.9861	13.795	2446.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4539E-04	6.1496E-04	19.622	83.540	14.878	72.795	2.6214	12.211	2438.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	1.4539E-04	6.1799E-04	21.079	90.261	16.797	82.119	3.0583	14.273	2548.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	1.4236E-04	6.1193E-04	19.830	85.807	15.247	76.073	2.7314	12.967	2511.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4236E-04	6.1496E-04	18.664	81.130	13.744	69.376	2.3967	11.474	2505.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	1.4236E-04	6.1799E-04	20.083	87.780	15.578	78.515	2.8075	13.463	2615.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	1.3933E-04	6.1193E-04	19.412	85.810	14.811	76.060	2.6609	12.965	2603.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.3933E-04	6.1496E-04	18.271	81.133	13.346	69.362	2.3341	11.473	2597.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	1.3933E-04	6.1799E-04	19.659	87.787	15.134	78.505	2.7353	13.462	2707.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	1.3630E-04	6.1193E-04	19.431	87.814	14.959	78.945	2.7245	13.614	2716.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.3630E-04	6.1496E-04	18.348	83.250	13.544	72.326	2.4026	12.113	2711.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	1.3630E-04	6.1799E-04	19.658	89.712	15.249	81.296	2.7917	14.093	2819.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.3328E-04	6.1193E-04	22.209	102.80	18.899	101.20	3.7009	18.827	2960.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.3328E-04	6.1496E-04	21.600	100.40	18.023	97.322	3.4854	17.861	2978.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.3328E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 27  
CASE NAME : 27-7 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4945	1.0000
8	0.4941	1.0000
9	0.8053	1.0000
10	0.4955	1.0000
11	0.4951	1.0000
12	0.8053	1.0000
13	0.5845	1.0000
14	0.5791	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN -2.10400E-16
MOMENT X, KN- M 1.52900E-11	MOMENT Y, KN- M -1.79506E-05	MOMENT Z, KN- M -2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 154 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.35710E-04	HORIZONTAL Z, M -6.21630E-14
ANGLE ROT. X,RAD 1.45425E-16	ANGLE ROT. Y,RAD -1.76918E-14	ANGLE ROT. Z,RAD -9.87136E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
2	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
3	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
4	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
5	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
6	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
7	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
8	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
9	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
10	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
11	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
12	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
13	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
14	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
15	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
MINIMUM	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3259.4	15.047	3.2411E-11	2.1130E-10	-2.0702E-08	42.125
2	3332.3	14.952	1.4772E-10	2.1130E-10	-2.1072E-08	41.912
3	3405.2	19.549	-6.1549E-10	2.1130E-10	-2.0257E-08	51.942
4	3259.4	13.469	3.1696E-10	2.1130E-10	-2.1077E-08	38.494
5	3332.3	13.460	4.0737E-10	2.1130E-10	-2.1404E-08	38.477
6	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
7	3259.4	13.450	3.2031E-10	2.1130E-10	-2.1081E-08	38.449
8	3332.3	13.441	4.1061E-10	2.1130E-10	-2.1408E-08	38.432
9	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
10	3259.4	13.469	3.1696E-10	2.1130E-10	-2.1077E-08	38.494
11	3332.3	13.460	4.0737E-10	2.1130E-10	-2.1404E-08	38.477
12	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
13	3259.4	15.047	3.2411E-11	2.1130E-10	-2.0702E-08	42.125
14	3332.3	14.952	1.4772E-10	2.1130E-10	-2.1072E-08	41.912
15	3405.2	19.549	-6.1549E-10	2.1130E-10	-2.0257E-08	51.942
MINIMUM	3259.4	13.441	-6.1549E-10	2.1130E-10	-2.1408E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1061E-10	2.1130E-10	-2.0257E-08	51.942
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
2	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
3	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
4	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
5	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
6	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
7	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
8	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
9	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
10	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
11	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
12	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
13	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
14	2.0189E-03	1.3571E-04	-6.2163E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
15	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 155 di 294

MINIMUM	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
PILE N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
PILE N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3259.4	15.047	3.2411E-11	2.1130E-10	-2.0702E-08	42.125
2	3332.3	14.952	1.4772E-10	2.1130E-10	-2.1072E-08	41.912
3	3405.2	19.549	-6.1549E-10	2.1130E-10	-2.0257E-08	51.942
4	3259.4	13.469	3.1696E-10	2.1130E-10	-2.1077E-08	38.494
5	3332.3	13.460	4.0737E-10	2.1130E-10	-2.1404E-08	38.477
6	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
7	3259.4	13.450	3.2031E-10	2.1130E-10	-2.1081E-08	38.449
8	3332.3	13.441	4.1061E-10	2.1130E-10	-2.1408E-08	38.432
9	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
10	3259.4	13.469	3.1696E-10	2.1130E-10	-2.1077E-08	38.494
11	3332.3	13.460	4.0737E-10	2.1130E-10	-2.1404E-08	38.477
12	3405.2	18.628	-4.3385E-10	2.1130E-10	-2.0508E-08	49.992
13	3259.4	15.047	3.2411E-11	2.1130E-10	-2.0702E-08	42.125
14	3332.3	14.952	1.4772E-10	2.1130E-10	-2.1072E-08	41.912
15	3405.2	19.549	-6.1549E-10	2.1130E-10	-2.0257E-08	51.942
MINIMUM	3259.4	13.441	-6.1549E-10	2.1130E-10	-2.1408E-08	38.432
PILE N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1061E-10	2.1130E-10	-2.0257E-08	51.942
PILE N.	3	3	8	1	3	3

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	1970.8
2	2011.4
3	2082.8
4	1959.9
5	2001.1
6	2076.9
7	1959.8
8	2001.0
9	2076.9
10	1959.9
11	2001.1
12	2076.9
13	1970.8
14	2011.4
15	2082.8
MINIMUM	1959.8
PILE N.	7
MAXIMUM	2082.8
PILE N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.3987E-06	-6.2817E-14	-42.125	-2.0708E-08	-2.9534	-2.1585E-10	-0.8471	-6.3454E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.2400	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
2	-3.3946E-06	-6.2163E-14	-41.912	-2.1072E-08	-2.9369	-2.1624E-10	-0.8491	-6.1620E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
3	-3.5291E-06	-6.1509E-14	-51.942	-2.0884E-08	-3.7480	-6.1443E-10	-0.6784	-8.9637E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
4	-3.2964E-06	-6.2817E-14	-38.494	-2.1077E-08	-2.6738	-2.3111E-10	-0.8688	-5.3908E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
5	-3.2966E-06	-6.2163E-14	-38.477	-2.1404E-08	-2.6728	-2.3048E-10	-0.8689	-5.2784E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
6	-3.5144E-06	-6.1509E-14	-49.992	-2.0909E-08	-3.5837	-4.3278E-10	-0.7218	-8.3483E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
7	-3.2953E-06	-6.2817E-14	-38.449	-2.1081E-08	-2.6705	-2.3133E-10	-0.8689	-5.3795E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
8	-3.2954E-06	-6.2163E-14	-38.432	-2.1408E-08	-2.6696	-2.3071E-10	-0.8690	-5.2673E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
9	-3.5144E-06	-6.1509E-14	-49.992	-2.0909E-08	-3.5837	-4.3278E-10	-0.7218	-8.3483E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
10	-3.2964E-06	-6.2817E-14	-38.494	-2.1077E-08	-2.6738	-2.3111E-10	-0.8688	-5.3908E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
11	-3.2966E-06	-6.2163E-14	-38.477	-2.1404E-08	-2.6728	-2.3048E-10	-0.8689	-5.2784E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	0.0000	11.520	20.160	18.720	2.4000	24.000	0.0000	0.0000
12	-3.5144E-06	-6.1509E-14	-49.992	-2.0909E-08	-3.5837	-4.3278E-10	-0.7218	-8.3483E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	1.2000	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
13	-3.3987E-06	-6.2817E-14	-42.125	-2.0708E-08	-2.9534	-2.1585E-10	-0.8471	-6.3454E-10	1844.5	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.2400	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000

APPALDATORE: <u>Consorzio</u> HIRPINIA - ORSARA AV	<u>Soci</u> WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.						
<u>Mandanti</u> NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 156 di 294

14	-3.3946E-06	-6.2163E-14	-41.912	-2.1072E-08	-2.9369	-2.1624E-10	-0.8491	-6.1620E-10	1885.7	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	0.0000	11.040	19.680	18.720	2.4000	24.000	0.0000	0.0000
15	-3.5291E-06	-6.1509E-14	-51.942	-2.0884E-08	-3.7480	-6.1443E-10	-0.6784	-8.9637E-10	1927.0	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	1.4400	10.320	0.0000	18.720	2.4000	24.000	0.0000	0.0000
Min. Pile N.	-3.5291E-06 3	-6.2817E-14 1	-51.942 3	-2.1408E-08 8	-3.7480 3	-6.1443E-10 3	-0.8690 8	-8.9637E-10 3	1844.5 1	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.3571E-04	4.1110E-15	19.469	9.3841E-10	15.049	2.6039E-09	2.7488	3.9327E-10	1970.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
2	1.3571E-04	4.1833E-15	19.396	9.4773E-10	14.954	2.6175E-09	2.7270	3.9408E-10	2011.4	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
3	1.3571E-04	3.5589E-15	22.731	9.5264E-10	19.552	2.9313E-09	3.8280	4.8300E-10	2082.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
4	1.3571E-04	4.4277E-15	18.258	9.5019E-10	13.471	2.5002E-09	2.3892	3.6344E-10	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
5	1.3571E-04	4.4916E-15	18.253	9.6009E-10	13.462	2.5205E-09	2.3875	3.6590E-10	2001.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
6	1.3571E-04	3.6695E-15	22.094	9.5141E-10	18.630	2.8729E-09	3.6008	4.6550E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
7	1.3571E-04	4.4321E-15	18.243	9.5035E-10	13.451	2.4989E-09	2.3849	3.6308E-10	1959.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
8	1.3571E-04	4.4960E-15	18.237	9.6029E-10	13.443	2.5193E-09	2.3832	3.6554E-10	2001.0	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
9	1.3571E-04	3.6695E-15	22.094	9.5141E-10	18.630	2.8729E-09	3.6008	4.6550E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
10	1.3571E-04	4.4277E-15	18.258	9.5019E-10	13.471	2.5002E-09	2.3892	3.6344E-10	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.8400	7.4400	16.320	0.0000	6.4800	4.3200	10.800	0.0000	0.0000	0.0000
11	1.3571E-04	4.4916E-15	18.253	9.6009E-10	13.462	2.5205E-09	2.3875	3.6590E-10	2001.1	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.4400	16.320	0.0000	6.2400	4.3200	10.560	0.0000	0.0000	0.0000
12	1.3571E-04	3.6695E-15	22.094	9.5141E-10	18.630	2.8729E-09	3.6008	4.6550E-10	2076.9	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.9600	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
13	1.3571E-04	4.1110E-15	19.469	9.3841E-10	15.049	2.6039E-09	2.7488	3.9327E-10	1970.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
14	1.3571E-04	4.1833E-15	19.396	9.4773E-10	14.954	2.6175E-09	2.7270	3.9408E-10	2011.4	7.8500E+06	7.8500E+06
x( M)	0.0000	9.6000	7.2000	16.080	0.0000	6.4800	4.0800	10.560	0.0000	0.0000	0.0000
15	1.3571E-04	3.5589E-15	22.731	9.5264E-10	19.552	2.9313E-09	3.8280	4.8300E-10	2082.8	7.8500E+06	7.8500E+06
x( M)	0.0000	9.3600	6.7200	15.120	0.0000	6.2400	3.8400	10.080	0.0000	0.0000	0.0000
Max. Pile N.	1.3571E-04 1	4.4960E-15 8	22.731 3	9.6029E-10 8	19.552 3	2.9313E-09 3	3.8280 3	4.8300E-10 3	2082.8 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 28  
CASE NAME : 28-8 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.7119	1.0000
2	0.6797	1.0000
3	0.8661	1.0000
4	0.5309	1.0000
5	0.4955	1.0000
6	0.7224	1.0000
7	0.5153	1.0000
8	0.4815	1.0000
9	0.7114	1.0000
10	0.5159	1.0000
11	0.4822	1.0000
12	0.7114	1.0000
13	0.5845	1.0000
14	0.5472	1.0000
15	0.7648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 54562.1	HOR. LOAD Y, KN 949.411	HOR. LOAD Z, KN -830.000
MOMENT X, KN- M 6.40100E-11	MOMENT Y, KN- M -24616.3	MOMENT Z, KN- M -10666.3

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 157 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.20481E-03	HORIZONTAL Y, M 5.50448E-04	HORIZONTAL Z, M -4.53602E-04
ANGLE ROT. X,RAD 6.25315E-08	ANGLE ROT. Y,RAD -2.71423E-05	ANGLE ROT. Z,RAD -4.00289E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.2690E-03	5.5101E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
2	2.4491E-03	5.5101E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
3	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
4	2.1468E-03	5.5073E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
5	2.3269E-03	5.5073E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
6	2.5071E-03	5.5073E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
7	2.0247E-03	5.5045E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
8	2.2048E-03	5.5045E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
9	2.3849E-03	5.5045E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
10	1.9025E-03	5.5017E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
11	2.0827E-03	5.5017E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
12	2.2628E-03	5.5017E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
13	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
14	1.9605E-03	5.4988E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
15	2.1407E-03	5.4988E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
MINIMUM	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3742.7	69.692	-60.771	0.090857	175.35	190.32
2	4038.4	67.555	-58.903	0.090857	171.20	185.68
3	4334.0	79.350	-68.894	0.090857	192.85	211.10
4	3542.3	57.250	-50.183	0.090857	151.36	162.33
5	3837.9	54.643	-47.915	0.090857	146.03	156.33
6	4133.5	70.301	-61.236	0.090857	176.30	191.65
7	3341.9	56.084	-49.219	0.090857	149.08	159.55
8	3637.5	53.575	-47.033	0.090857	143.91	153.74
9	3933.1	69.552	-60.638	0.090857	174.96	189.93
10	3141.4	56.100	-49.266	0.090857	149.16	159.50
11	3437.0	53.596	-47.083	0.090857	144.00	153.71
12	3732.6	69.516	-60.647	0.090857	174.96	189.76
13	2941.0	60.970	-53.471	0.090857	158.87	170.58
14	3236.6	58.318	-51.160	0.090857	153.54	164.58
15	3532.2	72.908	-63.582	0.090857	181.35	197.02
MINIMUM	2941.0	53.575	-68.894	0.090857	143.91	153.71
Pile N.	13	8	3	1	8	11
MAXIMUM	4334.0	79.350	-47.033	0.090857	192.85	211.10
Pile N.	3	3	8	1	3	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.2690E-03	5.5101E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
2	2.4491E-03	5.5101E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
3	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
4	2.1468E-03	5.5073E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
5	2.3269E-03	5.5073E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
6	2.5071E-03	5.5073E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
7	2.0247E-03	5.5045E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
8	2.2048E-03	5.5045E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
9	2.3849E-03	5.5045E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
10	1.9025E-03	5.5017E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
11	2.0827E-03	5.5017E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
12	2.2628E-03	5.5017E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
13	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
14	1.9605E-03	5.4988E-04	-4.5360E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
15	2.1407E-03	5.4988E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandantia ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 158 di 294

MINIMUM	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3742.7	69.692	-60.771	0.090857	175.35	190.32
2	4038.4	67.555	-58.903	0.090857	171.20	185.68
3	4334.0	79.350	-68.894	0.090857	192.85	211.10
4	3542.3	57.250	-50.183	0.090857	151.36	162.33
5	3837.9	54.643	-47.915	0.090857	146.03	156.33
6	4133.5	70.301	-61.236	0.090857	176.30	191.65
7	3341.9	56.084	-49.219	0.090857	149.08	159.55
8	3637.5	53.575	-47.033	0.090857	143.91	153.74
9	3933.1	69.552	-60.638	0.090857	174.96	189.93
10	3141.4	56.100	-49.266	0.090857	149.16	159.50
11	3437.0	53.596	-47.083	0.090857	144.00	153.71
12	3732.6	69.516	-60.647	0.090857	174.96	189.76
13	2941.0	60.970	-53.471	0.090857	158.87	170.58
14	3236.6	58.318	-51.160	0.090857	153.54	164.58
15	3532.2	72.908	-63.582	0.090857	181.35	197.02
MINIMUM	2941.0	53.575	-68.894	0.090857	143.91	153.71
Pile N.	13	8	3	1	8	11
MAXIMUM	4334.0	79.350	-47.033	0.090857	192.85	211.10
Pile N.	3	3	8	1	3	3

PILE GROUP	STRESS, KN/ M**2
1	2894.3
2	3042.9
3	3310.3
4	2670.4
5	2813.6
6	3120.3
7	2546.2
8	2690.1
9	3000.4
10	2432.8
11	2576.8
12	2886.6
13	2363.6
14	2506.8
15	2802.1
MINIMUM	2363.6
Pile N.	13
MAXIMUM	3310.3
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-1.4144E-05	-4.5388E-04	-190.32	-70.417	-13.511	-60.781	-3.1808	-11.265	2118.0	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-1.4074E-05	-4.5360E-04	-185.68	-69.076	-13.151	-58.914	-3.2576	-10.831	2285.2	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
3	-1.4353E-05	-4.5332E-04	-211.10	-76.048	-15.238	-68.906	-2.7550	-13.245	2452.5	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	6.9600	10.320	0.0000	18.720	3.8400	24.000	0.0000	0.0000
4	-1.3581E-05	-4.5388E-04	-162.33	-62.705	-11.318	-50.191	-3.5041	-8.8152	2004.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
5	-1.3396E-05	-4.5360E-04	-156.33	-61.007	-10.862	-47.924	-3.5277	-8.3165	2171.8	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-1.4166E-05	-4.5332E-04	-191.65	-70.750	-13.636	-61.247	-3.1528	-11.385	2339.1	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
7	-1.3493E-05	-4.5388E-04	-159.55	-61.976	-11.106	-49.227	-3.5137	-8.5990	1891.1	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-1.3314E-05	-4.5360E-04	-153.74	-60.310	-10.673	-47.041	-3.5288	-8.1200	2058.4	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-1.4135E-05	-4.5332E-04	-189.93	-70.314	-13.495	-60.648	-3.1779	-11.241	2225.7	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
10	-1.3483E-05	-4.5388E-04	-159.50	-61.999	-11.104	-49.273	-3.5106	-8.6076	1777.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
11	-1.3304E-05	-4.5360E-04	-153.71	-60.337	-10.672	-47.091	-3.5259	-8.1293	1945.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-1.4122E-05	-4.5332E-04	-189.76	-70.308	-13.484	-60.657	-3.1757	-11.242	2112.2	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
13	-1.3762E-05	-4.5388E-04	-170.58	-65.109	-11.960	-53.478	-3.4311	-9.5532	1664.3	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 159 di 294

14	-1.3613E-05	-4.5360E-04	-164.58	-63.390	-11.499	-51.167	-3.4806	-9.0331	1831.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.280	0.0000	18.720	4.3200	24.000	0.0000	0.0000
15	-1.4188E-05	-4.5332E-04	-197.02	-72.341	-14.085	-63.591	-3.0359	-11.935	1998.8	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.2000	10.560	0.0000	18.720	4.0800	24.000	0.0000	0.0000
Min. Pile N.	-1.4353E-05	-4.5388E-04	-211.10	-76.048	-15.238	-68.906	-3.5288	-13.245	1664.3	7.8500E+06	7.8500E+06
	3	1	3	3	3	3	8	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	5.5101E-04	1.1554E-05	85.427	175.35	69.703	11.179	13.173	2.7597	2894.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
2	5.5101E-04	1.1503E-05	83.905	171.20	67.567	10.860	12.671	2.8198	3042.9	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
3	5.5101E-04	1.1745E-05	92.321	192.85	79.364	12.581	15.545	2.4045	3310.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.7200	0.0000	0.0000	10.320	3.8400	18.720	0.0000	0.0000	0.0000
4	5.5073E-04	1.1031E-05	76.135	151.36	57.258	9.3579	10.281	3.0135	2670.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
5	5.5073E-04	1.0875E-05	74.113	146.03	54.653	8.9781	9.6967	3.0249	2813.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
6	5.5073E-04	1.1567E-05	85.902	176.30	70.313	11.271	13.329	2.7344	3120.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
7	5.5045E-04	1.0964E-05	75.208	149.08	56.092	9.1909	10.017	3.0207	2546.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
8	5.5045E-04	1.0786E-05	73.231	143.91	53.583	8.8224	9.4609	3.0248	2690.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
9	5.5045E-04	1.1544E-05	85.322	174.96	69.563	11.163	13.149	2.7566	3000.4	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
10	5.5017E-04	1.0961E-05	75.197	149.16	56.107	9.1941	10.021	3.0201	2432.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.520	4.0800	18.720	0.0000	0.0000	0.0000
11	5.5017E-04	1.0784E-05	73.226	144.00	53.604	8.8261	9.4658	3.0244	2576.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.4400	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
12	5.5017E-04	1.1539E-05	85.272	174.96	69.527	11.160	13.141	2.7565	2886.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	10.800	3.8400	18.720	0.0000	0.0000	0.0000
13	5.4989E-04	1.1219E-05	78.875	158.87	60.978	9.9075	11.136	2.9653	2363.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
14	5.4989E-04	1.1095E-05	76.902	153.54	58.326	9.5158	10.530	2.9995	2506.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.280	4.0800	18.720	0.0000	0.0000	0.0000
15	5.4989E-04	1.1627E-05	87.731	181.35	72.919	11.650	13.965	2.6436	2802.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	6.9600	0.0000	0.0000	10.560	3.8400	18.720	0.0000	0.0000	0.0000
Max. Pile N.	5.5101E-04	1.1745E-05	92.321	192.85	79.364	12.581	15.545	3.0249	3310.3	7.8500E+06	7.8500E+06
	1	3	3	3	3	3	3	5	3	1	1

LOAD CASE : 29  
CASE NAME : 29-9 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5009	1.0000
3	0.6014	1.0000
4	0.5422	1.0000
5	0.4642	1.0000
6	0.5600	1.0000
7	0.5421	1.0000
8	0.4641	1.0000
9	0.5600	1.0000
10	0.5753	1.0000
11	0.4961	1.0000
12	0.5921	1.0000
13	0.8545	1.0000
14	0.7957	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1216.67
MOMENT X, KN- M 1.53100E-11	MOMENT Y, KN- M 18223.7	MOMENT Z, KN- M -2627.62

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 160 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.01886E-03	HORIZONTAL Y, M 1.39331E-04	HORIZONTAL Z, M 6.14959E-04
ANGLE ROT. X,RAD 6.72741E-07	ANGLE ROT. Y,RAD 2.22149E-05	ANGLE ROT. Z,RAD -9.90195E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
-----

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.7744E-03	1.4538E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
2	1.8189E-03	1.4538E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
3	1.8635E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
4	1.8743E-03	1.4236E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
5	1.9189E-03	1.4236E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
6	1.9635E-03	1.4236E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
7	1.9743E-03	1.3933E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
8	2.0189E-03	1.3933E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
9	2.0634E-03	1.3933E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
10	2.0743E-03	1.3630E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
11	2.1188E-03	1.3630E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
12	2.1634E-03	1.3630E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
13	2.1742E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
14	2.2188E-03	1.3328E-04	6.1496E-04	6.7274E-07	2.2215E-05	-9.9019E-06
15	2.2634E-03	1.3328E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 161 di 294

MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2931.1	16.484	79.758	0.9775	-258.25	47.187
2	3004.2	14.876	72.784	0.9775	-242.35	43.482
3	3077.3	16.794	82.106	0.9775	-264.84	47.898
4	3095.1	15.245	76.061	0.9775	-249.62	43.784
5	3168.3	13.742	69.365	0.9775	-234.13	40.275
6	3241.4	15.575	78.502	0.9775	-256.48	44.549
7	3259.2	14.809	76.047	0.9775	-249.61	42.217
8	3332.3	13.344	69.350	0.9775	-234.12	38.801
9	3405.4	15.132	78.492	0.9775	-256.48	42.963
10	3423.3	14.957	78.931	0.9775	-256.40	41.984
11	3496.4	13.542	72.313	0.9775	-241.30	38.727
12	3569.5	15.247	81.282	0.9775	-263.01	42.647
13	3587.3	18.896	101.19	0.9775	-306.25	49.967
14	3660.4	18.020	97.306	0.9775	-298.47	48.113
15	3733.5	19.064	103.18	0.9775	-311.88	50.326
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

1	2446.2
2	2438.7
3	2548.8
4	2511.8
5	2505.6
6	2615.2
7	2603.8
8	2597.6
9	2707.2
10	2716.6
11	2711.7
12	2819.2
13	2960.9
14	2978.4
15	3060.5
MINIMUM	2438.7
Pile N.	2
MAXIMUM	3060.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6220E-06	-1.4932E-05	-47.187	-258.25	-3.1640	-13.532	-0.9225	-4.3226	1658.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.5182E-06	-1.4469E-05	-43.482	-242.35	-2.8851	-12.393	-0.9438	-4.3975	1700.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
3	-3.6391E-06	-1.5185E-05	-47.898	-264.84	-3.2206	-13.904	-0.9157	-4.3469	1741.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
4	-3.5075E-06	-1.4698E-05	-43.784	-249.62	-2.9621	-12.934	-0.9124	-4.3640	1751.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.3939E-06	-1.4148E-05	-40.275	-234.13	-2.6989	-11.856	-0.9210	-4.3766	1792.9	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-3.5255E-06	-1.4966E-05	-44.549	-256.48	-3.0202	-13.322	-0.9074	-4.3985	1834.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
7	-3.4393E-06	-1.4704E-05	-42.217	-249.61	-2.8988	-12.937	-0.8885	-4.3646	1844.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.3311E-06	-1.4154E-05	-38.801	-234.12	-2.6418	-11.858	-0.8975	-4.3772	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	14.880	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-3.4585E-06	-1.4971E-05	-42.963	-256.48	-2.9554	-13.326	-0.8835	-4.3990	1927.1	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-3.4063E-06	-1.4908E-05	-41.984	-256.40	-2.9383	-13.413	-0.8545	-4.3352	1937.2	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-3.3132E-06	-1.4445E-05	-38.727	-241.30	-2.6885	-12.335	-0.8729	-4.3983	1978.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.520	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-3.4216E-06	-1.5148E-05	-42.647	-263.01	-2.9912	-13.789	-0.8483	-4.3617	2019.9	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
13	-3.4670E-06	-1.5777E-05	-49.967	-306.25	-3.6506	-17.037	-0.6695	-3.6290	2030.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 162 di 294

14	-3.4537E-06	-1.5755E-05	-48.113	-298.47	-3.4941	-16.412	-0.7104	-3.8423	2071.4	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-3.4708E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.6612	-3.6304	2112.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7	7.8500E+06	7.8500E+06
	3	15	15	15	15	15	2	9	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4539E-04	6.1193E-04	20.849	88.331	16.486	79.770	2.9861	13.795	2446.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.4539E-04	6.1496E-04	19.622	83.540	14.878	72.795	2.6214	12.211	2438.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.9200	0.0000	0.0000	4.3200	4.3200	0.0000	0.0000	0.0000
3	1.4539E-04	6.1799E-04	21.079	90.261	16.797	82.119	3.0583	14.273	2548.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
4	1.4236E-04	6.1193E-04	19.830	85.807	15.247	76.073	2.7314	12.967	2511.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.4236E-04	6.1496E-04	18.664	81.130	13.744	69.376	2.3967	11.474	2505.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
6	1.4236E-04	6.1799E-04	20.083	87.780	15.578	78.515	2.8075	13.463	2615.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
7	1.3933E-04	6.1193E-04	19.412	85.810	14.811	76.060	2.6609	12.965	2603.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.3933E-04	6.1496E-04	18.271	81.133	13.346	69.362	2.3341	11.473	2597.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
9	1.3933E-04	6.1799E-04	19.659	87.787	15.134	78.505	2.7353	13.462	2707.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
10	1.3630E-04	6.1193E-04	19.431	87.814	14.959	78.945	2.7245	13.614	2716.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.3630E-04	6.1496E-04	18.348	83.250	13.544	72.326	2.4026	12.113	2711.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	8.1600	0.0000	0.0000	4.3200	4.5600	0.0000	0.0000	0.0000
12	1.3630E-04	6.1799E-04	19.658	89.712	15.249	81.296	2.7917	14.093	2819.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
13	1.3328E-04	6.1193E-04	22.209	102.80	18.899	101.20	3.7009	18.827	2960.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	1.3328E-04	6.1496E-04	21.600	100.40	18.023	97.322	3.4854	17.861	2978.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	1.3328E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5	7.8500E+06	7.8500E+06
	1	3	15	15	15	15	15	15	15	1	1

LOAD CASE : 30  
CASE NAME : 30-10 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5845	1.0000
2	0.5740	1.0000
3	0.8504	1.0000
4	0.4989	1.0000
5	0.4930	1.0000
6	0.7908	1.0000
7	0.4979	1.0000
8	0.4920	1.0000
9	0.7908	1.0000
10	0.5014	1.0000
11	0.4952	1.0000
12	0.7924	1.0000
13	0.6070	1.0000
14	0.5966	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
55282.1	2642.52	835.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
2.67100E-10	13677.2	-34749.8

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 163 di 294

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 2.23804E-03	HORIZONTAL Y, M 1.57984E-03	HORIZONTAL Z, M 4.18816E-04
ANGLE ROT. X,RAD -1.57462E-06	ANGLE ROT. Y,RAD 1.70809E-05	ANGLE ROT. Z,RAD -1.27063E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.5125E-03	1.5657E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
2	2.0843E-03	1.5657E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
3	2.6561E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
4	1.5894E-03	1.5727E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
5	2.1612E-03	1.5727E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
6	2.7330E-03	1.5727E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
7	1.6663E-03	1.5798E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
8	2.2380E-03	1.5798E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
9	2.8098E-03	1.5798E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
10	1.7431E-03	1.5869E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
11	2.3149E-03	1.5869E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
12	2.8867E-03	1.5869E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
13	1.8200E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
14	2.3918E-03	1.5940E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
15	2.9636E-03	1.5940E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
MINIMUM	1.5125E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9636E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2501.4	166.69	54.666	-2.2879	-174.77	445.52
2	3439.7	164.49	52.953	-2.2879	-169.58	441.02
3	4378.1	214.51	66.524	-2.2879	-198.58	550.15
4	2627.5	150.56	49.446	-2.2879	-162.50	410.11
5	3565.9	149.21	48.081	-2.2879	-158.10	407.42
6	4504.2	205.49	63.530	-2.2879	-192.11	532.75
7	2753.7	151.30	49.379	-2.2879	-162.36	413.20
8	3692.0	149.94	48.015	-2.2879	-157.96	410.49
9	4628.5	206.74	63.525	-2.2879	-192.11	537.03
10	2879.8	152.98	49.595	-2.2879	-162.89	418.47
11	3818.1	151.53	48.204	-2.2879	-158.42	415.55
12	4723.8	208.28	63.602	-2.2879	-192.29	541.91
13	3006.0	175.28	55.966	-2.2879	-177.83	470.65
14	3944.3	173.08	54.240	-2.2879	-172.62	466.16
15	4819.1	222.44	67.274	-2.2879	-200.24	573.42
MINIMUM	2501.4	149.21	48.015	-2.2879	-200.24	407.42
Pile N.	1	5	8	1	15	5
MAXIMUM	4819.1	222.44	67.274	-2.2879	-157.96	573.42
Pile N.	15	15	15	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.5125E-03	1.5657E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
2	2.0843E-03	1.5657E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
3	2.6561E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
4	1.5894E-03	1.5727E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
5	2.1612E-03	1.5727E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
6	2.7330E-03	1.5727E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
7	1.6663E-03	1.5798E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
8	2.2380E-03	1.5798E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
9	2.8098E-03	1.5798E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
10	1.7431E-03	1.5869E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
11	2.3149E-03	1.5869E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
12	2.8867E-03	1.5869E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
13	1.8200E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
14	2.3918E-03	1.5940E-03	4.1882E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
15	2.9636E-03	1.5940E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 164 di 294

MINIMUM	1.5125E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9636E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2501.4	166.69	54.666	-2.2879	-174.77	445.52
2	3439.7	164.49	52.953	-2.2879	-169.58	441.02
3	4378.1	214.51	66.524	-2.2879	-198.58	550.15
4	2627.5	150.56	49.446	-2.2879	-162.50	410.11
5	3565.9	149.21	48.081	-2.2879	-158.10	407.42
6	4504.2	205.49	63.530	-2.2879	-192.11	532.75
7	2753.7	151.30	49.379	-2.2879	-162.36	413.20
8	3692.0	149.94	48.015	-2.2879	-157.96	410.49
9	4628.5	206.74	63.525	-2.2879	-192.11	537.03
10	2879.8	152.98	49.595	-2.2879	-162.89	418.47
11	3818.1	151.53	48.204	-2.2879	-158.42	415.55
12	4723.8	208.28	63.602	-2.2879	-192.29	541.91
13	3006.0	175.28	55.966	-2.2879	-177.83	470.65
14	3944.3	173.08	54.240	-2.2879	-172.62	466.16
15	4819.1	222.44	67.274	-2.2879	-200.24	573.42
MINIMUM	2501.4	149.21	48.015	-2.2879	-200.24	407.42
Pile N.	1	5	8	1	15	5
MAXIMUM	4819.1	222.44	67.274	-2.2879	-157.96	573.42
Pile N.	15	15	15	1	8	15

PILE GROUP STRESS, KN/ M\*\*2

PILE GROUP	STRESS, KN/ M**2
1	2851.2
2	3364.0
3	4232.2
4	2810.3
5	3328.9
6	4247.8
7	2890.1
8	3408.7
9	4330.3
10	2976.8
11	3494.8
12	4398.2
13	3210.4
14	3723.3
15	4549.1
MINIMUM	2810.3
Pile N.	4
MAXIMUM	4549.1
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.9464E-05	-1.0404E-05	-445.52	-174.77	-33.996	-9.3860	-9.4719	-2.9712	1415.5	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
2	-3.9474E-05	-1.0211E-05	-441.02	-169.58	-33.688	-9.1405	-9.5219	-2.9261	1946.5	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
3	-4.0951E-05	-1.0620E-05	-550.15	-198.58	-42.746	-11.411	-7.6409	-2.3998	2477.5	7.8500E+06	7.8500E+06
x( M)	12.960	13.440	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
4	-3.8683E-05	-1.0026E-05	-410.11	-162.50	-31.076	-8.5357	-9.7998	-3.0095	1486.9	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
5	-3.8686E-05	-9.8547E-06	-407.42	-158.10	-30.909	-8.3436	-9.8150	-2.9552	2017.9	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-4.0958E-05	-1.0566E-05	-532.75	-192.11	-41.119	-10.923	-8.1761	-2.5300	2548.9	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-3.8833E-05	-1.0024E-05	-413.20	-162.36	-31.186	-8.5273	-9.8581	-3.0097	1558.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-3.8835E-05	-9.8523E-06	-410.49	-157.96	-31.018	-8.3352	-9.8731	-2.9554	2089.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-4.1144E-05	-1.0568E-05	-537.03	-192.11	-41.313	-10.925	-8.2265	-2.5300	2619.2	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-3.9051E-05	-1.0046E-05	-418.47	-162.89	-31.465	-8.5663	-9.9092	-3.0104	1629.6	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-3.9049E-05	-9.8730E-06	-415.55	-158.42	-31.282	-8.3697	-9.9256	-2.9562	2160.6	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-4.1330E-05	-1.0573E-05	-541.91	-192.29	-41.556	-10.940	-8.2641	-2.5266	2673.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-4.0394E-05	-1.0500E-05	-470.65	-177.83	-35.431	-9.6059	-9.5877	-2.9489	1701.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	10.800	11.280	18.720	18.720	24.000	0.0000	0.0000

APPALTATORE: Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>						
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 165 di 294	

14	-4.0374E-05	-1.0315E-05	-466.16	-172.62	-35.114	-9.3573	-9.6440	-2.9060	2232.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
15	-4.1715E-05	-1.0651E-05	-573.42	-200.24	-44.026	-11.548	-7.7002	-2.3642	2727.0	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
Min.	-4.1715E-05	-1.0651E-05	-573.42	-200.24	-44.026	-11.548	-9.9256	-3.0104	1415.5	7.8500E+06	7.8500E+06
Pile N.	15	15	15	15	15	15	11	10	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.5657E-03	4.2590E-04	225.08	61.390	166.70	54.673	30.909	9.4975	2851.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
2	1.5657E-03	4.1882E-04	223.60	59.936	164.52	52.962	30.433	9.1823	3364.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
3	1.5657E-03	4.1173E-04	260.86	68.917	214.54	66.537	42.466	12.444	4232.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
4	1.5728E-03	4.2590E-04	212.58	57.676	150.57	49.452	27.157	8.3322	2810.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	1.5728E-03	4.1882E-04	211.73	56.459	149.23	48.090	26.880	8.0967	3328.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	1.5728E-03	4.1173E-04	254.52	66.910	205.53	63.543	40.161	11.726	4247.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	1.5798E-03	4.2590E-04	213.37	57.634	151.32	49.386	27.264	8.3185	2890.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.5798E-03	4.1882E-04	212.51	56.417	149.96	48.024	26.985	8.0831	3408.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	1.5798E-03	4.1173E-04	255.64	66.913	206.78	63.538	40.384	11.726	4330.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	1.5869E-03	4.2590E-04	214.89	57.801	153.00	49.602	27.583	8.3674	2976.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.5869E-03	4.1882E-04	213.97	56.564	151.56	48.213	27.284	8.1257	3494.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	1.5869E-03	4.1173E-04	256.98	66.972	208.32	63.616	40.676	11.746	4398.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	1.5940E-03	4.2590E-04	232.47	62.342	175.31	55.974	32.633	9.7954	3210.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	1.5940E-03	4.1882E-04	231.02	60.889	173.11	54.250	32.152	9.4766	3723.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	1.5940E-03	4.1173E-04	267.47	69.430	222.48	67.289	44.080	12.629	4549.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max.	1.5940E-03	4.2590E-04	267.47	69.430	222.48	67.289	44.080	12.629	4549.1	7.8500E+06	7.8500E+06
Pile N.	13	1	15	15	15	15	15	15	15	1	1

\*\*\*\*\* SUMMARY FOR LOAD CASES AND COMBINATIONS \*\*\*\*\*

\*\*\*\*\* LOAD CASES RESULTS \*\*\*\*\*

LOAD CASE : 1

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
56801.9	-235.727	1825.00	1.53200E-11	27335.6	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.29580E-03	-1.39617E-04	9.24058E-04	-7.63360E-07	3.33281E-05	9.90491E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.6403E-03	-1.3275E-04	9.2749E-04	-7.6336E-07	3.3328E-05	9.9049E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3221.4	-18.953	104.07	-1.1092	-468.12	-49.991
Pile N.	3	13	8	1	13	13
MAXIMUM	4352.2	-13.358	154.80	-1.1092	-351.66	-38.664
Pile N.	13	8	13	1	8	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9513E-03	-1.4649E-04	9.2062E-04	-7.6336E-07	3.3328E-05	9.9049E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 166 di 294

Pile N. 3 1 3 1 1 1  
MAXIMUM 2.6403E-03 -1.3275E-04 9.2749E-04 -7.6336E-07 3.3328E-05 9.9049E-06  
Pile N. 13 13 1 1 1 1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3221.4	-18.953	104.07	-1.1092	-468.12	-49.991
Pile N.	3	13	8	1	13	13
MAXIMUM	4352.2	-13.358	154.80	-1.1092	-351.66	-38.664
Pile N.	13	8	13	1	8	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.4649E-04	-2.3957E-05	-22.250	-468.12	-18.957	-26.079	-3.7244	-6.6154	1822.9
Pile N.	1	13	13	13	13	13	7	7	3
Max.	3.6594E-06	9.2749E-04	49.991	156.73	3.6692	154.84	0.9529	28.875	3875.2
Pile N.	1	1	13	13	13	13	2	13	13

LOAD CASE : 2

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
81231.3	-3954.86	1248.30	-2.90400E-10	18929.6	45738.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.47569E-03	-2.44541E-03	6.33317E-04	2.41660E-06	2.73782E-05	2.12460E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.2732E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	4.6782E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3749.7	-333.88	71.736	3.5113	-297.60	-835.61
Pile N.	3	13	8	1	13	13
MAXIMUM	6943.8	-222.73	100.59	3.5113	-234.33	-584.41
Pile N.	13	5	13	1	8	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.2732E-03	-2.4672E-03	6.2244E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	4.6782E-03	-2.4237E-03	6.4419E-04	2.4166E-06	2.7378E-05	2.1246E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3749.7	-333.88	71.736	3.5113	-297.60	-835.61
Pile N.	3	13	8	1	13	13
MAXIMUM	6943.8	-222.73	100.59	3.5113	-234.33	-584.41
Pile N.	13	5	13	1	8	5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-2.4672E-03	-1.6170E-05	-414.81	-297.60	-333.96	-17.487	-66.965	-4.5270	2121.9
Pile N.	13	13	13	13	13	13	12	12	3
Max.	6.5028E-05	6.4419E-04	835.61	104.94	68.365	100.62	15.058	18.961	6590.5
Pile N.	13	3	13	13	13	13	11	13	13

LOAD CASE : 3

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	1825.00	2.17900E-11	27336.7	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 167 di 294

2.84236E-03 2.06103E-04 9.41986E-04 9.85414E-07 3.85641E-05 -1.61859E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.4225E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	3.2623E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3994.6	18.962	103.89	1.4318	-462.61	52.770
Pile N.	1	8	8	1	15	11
MAXIMUM	5189.2	27.227	155.04	1.4318	-345.36	69.421
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.4225E-03	1.9723E-04	9.3755E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	3.2623E-03	2.1497E-04	9.4642E-04	9.8541E-07	3.8564E-05	-1.6186E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3994.6	18.962	103.89	1.4318	-462.61	52.770
Pile N.	1	8	8	1	15	11
MAXIMUM	5189.2	27.227	155.04	1.4318	-345.36	69.421
Pile N.	15	15	15	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.4245E-06	-2.4497E-05	-69.421	-462.61	-5.4501	-26.571	-1.3649	-6.6522	2260.5
Pile N.	3	15	15	15	15	15	2	11	1
Max.	2.1497E-04	9.4642E-04	33.115	159.66	27.232	155.07	5.4175	29.085	4339.9
Pile N.	1	3	15	15	15	15	15	15	15

LOAD CASE : 4

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	-2.99900E-16	2.17700E-11	-3.62069E-05	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.81908E-03	2.01441E-04	-1.49456E-13	3.11366E-16	-4.25044E-14	-1.63191E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	4525.0	19.095	-1.5120E-09	4.5241E-10	-5.1309E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8925E-10	4.5241E-10	-4.8429E-08	71.597
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.7456E-03	2.0144E-04	-1.5086E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4805E-13	3.1137E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	4525.0	19.095	-1.5120E-09	4.5241E-10	-5.1309E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8925E-10	4.5241E-10	-4.8429E-08	71.597
Pile N.	3	3	8	1	3	3

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 168 di 294

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.2744E-06	-1.5086E-13	-71.597	-5.1309E-08	-5.5622	-1.5085E-09	-1.2570	-2.1609E-09	2560.6
Pile N.	3	1	3	8	3	3	8	3	1
Max.	2.0144E-04	1.0820E-14	33.808	2.3122E-09	27.955	7.0476E-09	5.5501	1.1617E-09	2892.0
Pile N.	1	8	3	8	3	3	3	3	3

LOAD CASE : 5

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
81932.4	3573.18	1399.50	2.46900E-10	23393.5	-40423.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.50307E-03	2.20630E-03	7.21172E-04	-2.33525E-06	3.38520E-05	-1.90908E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.3393E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.6668E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3858.2	200.94	80.244	-3.3931	-331.20	528.53
Pile N.	1	5	8	1	15	5
MAXIMUM	6929.7	301.98	113.23	-3.3931	-258.66	757.34
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.3393E-03	2.1853E-03	7.1066E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	4.6668E-03	2.2273E-03	7.3168E-04	-2.3352E-06	3.3852E-05	-1.9091E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3858.2	200.94	80.244	-3.3931	-331.20	528.53
Pile N.	1	5	8	1	15	5
MAXIMUM	6929.7	301.98	113.23	-3.3931	-258.66	757.34
Pile N.	15	15	15	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.8693E-05	-1.8469E-05	-757.34	-331.20	-61.717	-19.923	-13.608	-5.0856	2183.3
Pile N.	15	15	15	15	15	15	11	10	1
Max.	2.2273E-03	7.3168E-04	374.45	119.63	302.06	113.26	60.526	21.444	6401.2
Pile N.	13	1	15	15	15	15	15	15	15

LOAD CASE : 6

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1825.00	1.53200E-11	27335.6	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.39571E-04	9.23771E-04	7.62975E-07	3.33258E-05	-9.90377E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6744E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.3634E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 169 di 294

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2767.0	13.358	104.07	1.1086	-467.95	38.641
Pile N.	1	8	8	1	15	11
MAXIMUM	3897.7	18.953	154.80	1.1086	-351.52	49.964
Pile N.	15	15	15	1	5	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.6744E-03	1.3270E-04	9.2034E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.3634E-03	1.4644E-04	9.2720E-04	7.6297E-07	3.3326E-05	-9.9038E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2767.0	13.358	104.07	1.1086	-467.95	38.641
Pile N.	1	8	8	1	15	11
MAXIMUM	3897.7	18.953	154.80	1.1086	-351.52	49.964
Pile N.	15	15	15	1	5	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-3.6544E-06	-2.3931E-05	-49.964	-467.95	-3.6657	-26.053	-0.9522	-6.6111	1565.8
Pile N.	3	15	15	15	15	15	2	9	1
Max.	1.4644E-04	9.2720E-04	22.239	156.66	18.956	154.82	3.7233	28.867	3617.4
Pile N.	1	3	15	15	15	15	15	15	15

LOAD CASE : 7

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	-2.99900E-16	2.17700E-11	-3.62069E-05	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.81908E-03	2.01441E-04	-1.49465E-13	3.32728E-16	-4.25043E-14	-1.63191E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	4525.0	19.095	-1.4955E-09	4.8345E-10	-5.1304E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8804E-10	4.8345E-10	-4.8484E-08	71.597
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.7456E-03	2.0144E-04	-1.5096E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	1	1	1	1	1	1
MAXIMUM	2.8925E-03	2.0144E-04	-1.4797E-13	3.3273E-16	-4.2504E-14	-1.6319E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	4525.0	19.095	-1.4955E-09	4.8345E-10	-5.1304E-08	52.132
Pile N.	1	8	3	1	8	8
MAXIMUM	4731.0	27.950	9.8804E-10	4.8345E-10	-4.8484E-08	71.597
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.2744E-06	-1.5096E-13	-71.597	-5.1304E-08	-5.5622	-1.4920E-09	-1.2570	-2.1585E-09	2560.6
Pile N.	3	1	3	8	3	3	8	3	1
Max.	2.0144E-04	1.0819E-14	33.808	2.3121E-09	27.955	7.0502E-09	5.5501	1.1620E-09	2892.0
Pile N.	1	8	3	8	3	3	3	3	3

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 170 di 294

LOAD CASE : 8

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
76117.4	1376.48	-1240.00	9.28000E-11	-36241.7	-15463.2

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.18352E-03	8.47568E-04	-7.12130E-04	7.12641E-08	-5.01116E-05	-7.18293E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
	*****	*****	*****	*****	*****	*****
MINIMUM	3973.0	77.312	-103.37	0.1036	203.84	206.71
Pile N.	13	8	3	1	8	11
MAXIMUM	6051.1	115.62	-70.011	0.1036	278.07	291.24
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	2.4093E-03	8.4693E-04	-7.1245E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	3.9578E-03	8.4821E-04	-7.1181E-04	7.1264E-08	-5.0112E-05	-7.1829E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
	*****	*****	*****	*****	*****	*****
MINIMUM	3973.0	77.312	-103.37	0.1036	203.84	206.71
Pile N.	13	8	3	1	8	11
MAXIMUM	6051.1	115.62	-70.011	0.1036	278.07	291.24
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT y-DIR	MOMENT z-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-2.2305E-05	-7.1245E-04	-291.24	-119.33	-23.471	-103.40	-5.2353	-20.204	2248.3
Pile N.	3	1	3	3	3	3	8	3	13
Max.	8.4821E-04	1.8578E-05	142.52	278.07	115.65	19.746	23.121	4.6041	4632.2
Pile N.	1	3	3	3	3	3	3	8	3

LOAD CASE : 9

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
56801.9	235.727	1825.00	1.53200E-11	27335.6	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.29580E-03	1.39617E-04	9.24058E-04	7.63360E-07	3.33281E-05	-9.90491E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	1.9513E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.6403E-03	1.4649E-04	9.2749E-04	7.6336E-07	3.3328E-05	-9.9049E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
	*****	*****	*****	*****	*****	*****
MINIMUM	3221.4	13.358	104.07	1.1092	-468.12	38.664
Pile N.	1	8	8	1	15	11
MAXIMUM	4352.2	18.953	154.80	1.1092	-351.66	49.991
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	1.9513E-03	1.3275E-04	9.2062E-04	7.6336E-07	3.3328E-05	-9.9049E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 171 di 294

Pile N. 1 13 1 1 1 1  
MAXIMUM 2.6403E-03 1.4649E-04 9.2749E-04 7.6336E-07 3.3328E-05 -9.9049E-06  
Pile N. 15 1 3 1 1 1

\* PILE TOP REACTIONS, LOCAL \*  
AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M  
\*\*\*\*\*  
MINIMUM 3221.4 13.358 104.07 1.1092 -468.12 38.664  
Pile N. 1 8 8 1 15 11  
MAXIMUM 4352.2 18.953 154.80 1.1092 -351.66 49.991  
Pile N. 15 15 15 1 8 15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.6594E-06	-2.3957E-05	-49.991	-468.12	-3.6692	-26.079	-0.9529	-6.6154	1822.9
Pile N.	3	15	15	15	15	15	2	9	1
Max.	1.4649E-04	9.2749E-04	22.250	156.73	18.957	154.84	3.7244	28.875	3875.2
Pile N.	1	3	15	15	15	15	15	15	15

LOAD CASE : 10

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
77161.1	3825.72	1248.30	3.86900E-10	20395.5	-50313.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.28144E-03	2.41642E-03	6.39256E-04	-2.40354E-06	2.90979E-05	-2.20095E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	2.0291E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05
Pile N.	1	1	3	1	1
MAXIMUM	4.5337E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05
Pile N.	15	13	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****
MINIMUM	3349.2	215.05	71.688	-3.4923	-295.65
Pile N.	1	5	8	1	15
MAXIMUM	6764.8	323.66	100.66	-3.4923	-232.17
Pile N.	15	15	15	1	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	2.0291E-03	2.3948E-03	6.2844E-04	-2.4035E-06	2.9098E-05
Pile N.	1	1	3	1	1
MAXIMUM	4.5337E-03	2.4381E-03	6.5007E-04	-2.4035E-06	2.9098E-05
Pile N.	15	13	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****
MINIMUM	3349.2	215.05	71.688	-3.4923	-295.65
Pile N.	1	5	8	1	15
MAXIMUM	6764.8	323.66	100.66	-3.4923	-232.17
Pile N.	15	15	15	1	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-6.4498E-05	-1.6325E-05	-792.14	-295.65	-67.552	-17.627	-14.669	-4.5366	1895.2
Pile N.	15	15	15	15	15	15	15	10	1
Max.	2.4380E-03	6.5007E-04	410.31	105.84	323.74	100.69	65.377	19.029	6364.7
Pile N.	13	1	15	15	15	15	15	15	15

LOAD CASE : 11

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	13267.6	3851.50	5196.70	51545.5	-1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 172 di 294

2.38133E-03 8.20654E-03 2.00898E-03 3.32127E-05 8.05835E-05 -6.21783E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.1420E-03	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9046E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1749.7	736.57	199.73	48.258	-1064.9	2093.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.6	1138.8	346.16	48.258	-662.87	3116.0
Pile N.	15	3	15	1	4	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.1420E-03	7.9076E-03	1.8595E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9046E-03	8.5055E-03	2.1584E-03	3.3213E-05	8.0584E-05	-6.2178E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1749.7	736.57	199.73	48.258	-1064.9	2093.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.6	1138.8	346.16	48.258	-662.87	3116.0
Pile N.	15	3	15	1	4	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-2.1727E-04	-5.5557E-05	-3116.0	-1064.9	-229.97	-60.498	-54.197	-14.376	47.324
Pile N.	3	15	3	15	3	15	2	5	10
Max.	8.5055E-03	2.1584E-03	1392.4	361.98	1139.1	346.29	237.69	67.196	1.3630E+04
Pile N.	1	3	3	15	3	15	3	15	3

LOAD CASE : 12

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
48530.9	-14238.2	3830.50	-5196.70	51784.8	1.53466E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.19119E-03	-9.06816E-03	2.06367E-03	-3.55005E-05	8.10794E-05	6.69303E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	3	1	3	1	1	1
MAXIMUM	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-2371.1	-1217.8	197.60	-51.582	-1083.7	-3393.5
Pile N.	3	1	6	1	13	1
MAXIMUM	7846.4	-790.70	347.59	-51.582	-665.64	-2295.4
Pile N.	13	11	13	1	6	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.5504E-03	-9.3877E-03	1.9039E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	3	1	3	1	1	1
MAXIMUM	5.9328E-03	-8.7487E-03	2.2234E-03	-3.5500E-05	8.1079E-05	6.6930E-04
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-2371.1	-1217.8	197.60	-51.582	-1083.7	-3393.5
Pile N.	3	1	6	1	13	1
MAXIMUM	7846.4	-790.70	347.59	-51.582	-665.64	-2295.4
Pile N.	13	11	13	1	6	11

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 173 di 294

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-9.3877E-03	-5.6576E-05	-1513.8	-1083.7	-1218.1	-61.895	-248.67	-14.897	79.606
Pile N.	1	13	1	13	1	13	1	5	15
Max.	2.3530E-04	2.2234E-03	3393.5	369.51	251.05	347.72	60.796	68.862	1.4447E+04
Pile N.	1	1	1	13	1	13	2	13	1

LOAD CASE : 13

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
54777.3	3567.66	12875.8	1559.54	1.71305E+05	-38094.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.33531E-03	2.20070E-03	6.64305E-03	1.99158E-05	2.36851E-04	-1.63485E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-5.3203E-04	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.2026E-03	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-821.88	197.89	728.29	28.937	-3386.9	555.98
Pile N.	1	11	8	1	15	11
MAXIMUM	7462.3	274.27	1103.9	28.937	-2484.8	775.44
Pile N.	15	15	15	1	5	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-5.3203E-04	2.0215E-03	6.5534E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.2026E-03	2.3799E-03	6.7327E-03	1.9916E-05	2.3685E-04	-1.6348E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-821.88	197.89	728.29	28.937	-3386.9	555.98
Pile N.	1	11	8	1	15	11
MAXIMUM	7462.3	274.27	1103.9	28.937	-2484.8	775.44
Pile N.	15	15	15	1	5	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.8220E-05	-1.7329E-04	-775.44	-3386.9	-55.608	-188.87	-15.496	-48.367	193.06
Pile N.	3	15	3	15	15	15	2	9	2
Max.	2.3799E-03	6.7327E-03	342.48	1130.0	274.35	1104.3	55.845	210.62	1.4606E+04
Pile N.	1	3	3	15	15	15	15	15	15

LOAD CASE : 14

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
48515.8	4336.25	-12833.8	1559.54	-1.71778E+05	-46842.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.04800E-03	2.64867E-03	-6.60790E-03	1.61292E-06	-2.31933E-04	-1.94849E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 174 di 294

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1406.3	241.72	-1081.1	2.3436	2481.8	695.90
Pile N.	13	11	3	1	8	11
MAXIMUM	7357.8	373.55	-725.42	2.3436	3319.3	1005.3
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-9.1622E-04	2.6342E-03	-6.6152E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0122E-03	2.6632E-03	-6.6006E-03	1.6129E-06	-2.3193E-04	-1.9485E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1406.3	241.72	-1081.1	2.3436	2481.8	695.90
Pile N.	13	11	3	1	8	11
MAXIMUM	7357.8	373.55	-725.42	2.3436	3319.3	1005.3
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-6.8998E-05	-6.6152E-03	-1005.3	-1107.3	-73.367	-1081.5	-17.112	-206.56	34.477
Pile N.	3	1	3	3	3	3	5	3	14
Max.	2.6632E-03	1.6978E-04	442.67	3319.3	373.66	185.09	75.211	47.816	1.4568E+04
Pile N.	1	3	3	3	3	3	3	5	3

LOAD CASE : 15

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
61951.9	3566.55	3892.45	1559.13	50994.3	-38092.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.55230E-03	2.09835E-03	1.92702E-03	1.01388E-05	7.02406E-05	-1.57464E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.2115E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	3.8930E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2007.5	199.39	221.46	14.732	-997.82	558.36
Pile N.	1	11	8	1	15	11
MAXIMUM	5970.9	287.64	329.30	14.732	-743.02	783.00
Pile N.	15	3	15	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.2115E-03	2.0071E-03	1.8814E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	3.8930E-03	2.1896E-03	1.9726E-03	1.0139E-05	7.0241E-05	-1.5746E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2007.5	199.39	221.46	14.732	-997.82	558.36
Pile N.	1	11	8	1	15	11
MAXIMUM	5970.9	287.64	329.30	14.732	-743.02	783.00
Pile N.	15	3	15	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.6439E-05	-5.1101E-05	-783.00	-997.82	-55.545	-55.607	-13.919	-13.783	1136.0
Pile N.	3	15	3	15	15	15	2	11	1
Max.	2.1896E-03	1.9726E-03	346.80	333.58	287.69	329.39	55.696	61.457	7088.8
Pile N.	1	3	3	15	3	15	15	15	15

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 175 di 294

LOAD CASE : 16

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
39735.4	4287.03	3850.45	1559.13	51525.2	-46135.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
1.60581E-03	2.46603E-03	1.88333E-03	9.06153E-06	6.46319E-05	-1.75638E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.3375E-04	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	2.9779E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	391.59	241.10	219.50	13.166	-986.08	690.16
Pile N.	1	11	8	1	15	11
MAXIMUM	4836.8	346.58	323.86	13.166	-739.87	950.51
Pile N.	15	3	15	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.3375E-04	2.3845E-03	1.8426E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	2.9779E-03	2.5476E-03	1.9241E-03	9.0615E-06	6.4632E-05	-1.7564E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	391.59	241.10	219.50	13.166	-986.08	690.16
Pile N.	1	11	8	1	15	11
MAXIMUM	4836.8	346.58	323.86	13.166	-739.87	950.51
Pile N.	15	3	15	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-6.5568E-05	-4.9767E-05	-950.51	-986.08	-65.971	-54.211	-16.311	-13.535	221.60
Pile N.	3	15	3	15	15	15	2	11	1
Max.	2.5476E-03	1.9241E-03	408.26	325.51	346.62	323.93	67.076	60.273	6753.5
Pile N.	1	3	3	15	3	15	15	15	15

LOAD CASE : 17

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	3816.62	12833.8	1559.54	1.71757E+05	-40908.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.25739E-03	2.34957E-03	6.61808E-03	2.00833E-05	2.35834E-04	-1.73981E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-6.4803E-04	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.1628E-03	2.5303E-03	6.7085E-03	2.0083E-05	2.3583E-04	-1.7398E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-998.35	212.17	725.77	29.181	-3374.8	597.63
Pile N.	1	11	8	1	15	11
MAXIMUM	7441.3	295.06	1099.8	29.181	-2476.1	826.74
Pile N.	15	15	15	1	5	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-6.4803E-04	2.1688E-03	6.5277E-03	2.0083E-05	2.3583E-04	-1.7398E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 176 di 294

Pile N. 1 13 1 1 1 1  
MAXIMUM 5.1628E-03 2.5303E-03 6.7085E-03 2.0083E-05 2.3583E-04 -1.7398E-04  
Pile N. 15 1 3 1 1 1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-998.35	212.17	725.77	29.181	-3374.8	597.63
Pile N.	1	11	8	1	15	11
MAXIMUM	7441.3	295.06	1099.8	29.181	-2476.1	826.74
Pile N.	15	15	15	1	5	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-6.1952E-05	-1.7265E-04	-826.74	-3374.8	-59.666	-188.18	-16.470	-48.152	127.87
Pile N.	3	15	3	15	15	15	15	9	2
Max.	2.5303E-03	6.7085E-03	365.07	1125.8	295.14	1100.2	60.031	209.89	1.4595E+04
Pile N.	1	3	3	15	15	15	15	15	15

LOAD CASE : 18

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
47825.5	4430.81	-12813.8	1559.54	-1.74385E+05	-47762.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01885E-03	2.70514E-03	-6.60829E-03	1.60254E-06	-2.34477E-04	-1.98695E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-9.8557E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1511.8	247.01	-1079.3	2.3285	2474.4	711.67
Pile N.	13	11	3	1	8	11
MAXIMUM	7367.9	381.49	-724.15	2.3285	3310.7	1027.3
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-9.8557E-04	2.6907E-03	-6.6155E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	13	13	1	1	1	1
MAXIMUM	5.0233E-03	2.7196E-03	-6.6011E-03	1.6025E-06	-2.3448E-04	-1.9870E-04
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1511.8	247.01	-1079.3	2.3285	2474.4	711.67
Pile N.	13	11	3	1	8	11
MAXIMUM	7367.9	381.49	-724.15	2.3285	3310.7	1027.3
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-7.0449E-05	-6.6155E-03	-1027.3	-1107.2	-74.918	-1079.7	-17.482	-206.37	65.958
Pile N.	3	1	3	3	3	3	5	3	10
Max.	2.7196E-03	1.6977E-04	452.01	3310.7	381.61	185.04	76.828	47.768	1.4569E+04
Pile N.	1	3	3	3	3	3	3	5	3

LOAD CASE : 19

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	-13267.6	3851.50	5196.70	51545.5	1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 177 di 294

2.38155E-03 -8.21826E-03 2.04838E-03 5.34203E-05 8.07187E-05 6.21946E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.1437E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	5.9068E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1752.4	-1178.5	220.22	77.619	-953.76	-3248.6
Pile N.	3	13	11	1	3	13
MAXIMUM	7832.7	-727.90	289.85	77.619	-748.09	-2054.6
Pile N.	13	5	3	1	11	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.1437E-03	-8.6990E-03	1.8080E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	5.9068E-03	-7.7375E-03	2.2888E-03	5.3420E-05	8.0719E-05	6.2195E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1752.4	-1178.5	220.22	77.619	-953.76	-3248.6
Pile N.	3	13	11	1	3	13
MAXIMUM	7832.7	-727.90	289.85	77.619	-748.09	-2054.6
Pile N.	13	5	3	1	11	5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-8.6990E-03	-5.4130E-05	-1431.4	-953.76	-1178.9	-50.292	-245.71	-16.600	47.241
Pile N.	13	3	13	3	13	15	13	12	12
Max.	2.2223E-04	2.2888E-03	3248.6	325.80	237.66	289.82	55.539	54.944	1.4494E+04
Pile N.	13	3	13	15	13	3	14	13	13

LOAD CASE : 20

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
47969.5	14220.4	3830.50	5196.70	51986.8	-1.54095E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.16254E-03	9.05642E-03	2.06183E-03	3.54818E-05	8.08835E-05	-6.69600E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.5786E-03	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9037E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-2414.0	789.67	197.61	51.555	-1083.6	2290.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.1	1216.3	347.59	51.555	-665.65	3387.1
Pile N.	15	3	15	1	4	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.5786E-03	8.7371E-03	1.9022E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	1	13	1	1	1	1
MAXIMUM	5.9037E-03	9.3758E-03	2.2215E-03	3.5482E-05	8.0883E-05	-6.6960E-04
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-2414.0	789.67	197.61	51.555	-1083.6	2290.1
Pile N.	1	11	4	1	15	11
MAXIMUM	7831.1	1216.3	347.59	51.555	-665.65	3387.1
Pile N.	15	3	15	1	4	3

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 178 di 294

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-2.3507E-04	-5.6542E-05	-3387.1	-1083.6	-250.76	-61.854	-60.681	-14.884	107.39
Pile N.	3	15	3	15	3	15	2	5	13
Max.	9.3758E-03	2.2215E-03	1512.3	369.28	1216.7	347.72	248.50	68.879	1.4410E+04
Pile N.	1	3	3	15	3	15	3	15	3

LOAD CASE : 21

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	-235.727	1216.67	1.53100E-11	18223.7	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	-1.39331E-04	6.14959E-04	-6.72744E-07	2.22149E-05	9.90195E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2931.1	-19.064	69.350	-0.9775	-311.88	-50.326
Pile N.	3	13	8	1	13	13
MAXIMUM	3733.5	-13.344	103.18	-0.9775	-234.12	-38.727
Pile N.	13	8	13	1	8	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7744E-03	-1.4538E-04	6.1193E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	3	1	3	1	1	1
MAXIMUM	2.2634E-03	-1.3328E-04	6.1799E-04	-6.7274E-07	2.2215E-05	9.9019E-06
Pile N.	13	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2931.1	-19.064	69.350	-0.9775	-311.88	-50.326
Pile N.	3	13	8	1	13	13
MAXIMUM	3733.5	-13.344	103.18	-0.9775	-234.12	-38.727
Pile N.	13	8	13	1	8	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.4539E-04	-1.5946E-05	-22.332	-311.88	-19.067	-17.360	-3.7429	-4.3990	1658.7
Pile N.	1	13	13	13	13	13	13	7	3
Max.	3.6391E-06	6.1799E-04	50.326	104.41	3.6809	103.20	0.9438	19.240	3060.5
Pile N.	1	1	13	13	13	13	2	13	13

LOAD CASE : 22

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
58089.1	-2731.59	835.000	-2.00600E-10	12666.2	31593.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.35658E-03	-1.59472E-03	4.16827E-04	1.57655E-06	1.65014E-05	1.20372E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6664E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	3.0468E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 179 di 294

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2753.9	-229.42	48.031	2.2907	-200.92	-604.88
Pile N.	3	13	8	1	13	13
MAXIMUM	4922.2	-154.53	67.253	2.2907	-158.69	-434.69
Pile N.	13	5	13	1	8	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.6664E-03	-1.6089E-03	4.0973E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	3	13	1	1	1	1
MAXIMUM	3.0468E-03	-1.5805E-03	4.2392E-04	1.5765E-06	1.6501E-05	1.2037E-04
Pile N.	13	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2753.9	-229.42	48.031	2.2907	-200.92	-604.88
Pile N.	3	13	8	1	13	13
MAXIMUM	4922.2	-154.53	67.253	2.2907	-158.69	-434.69
Pile N.	13	5	13	1	8	5

\* EFFECTS FOR Laterally Loaded Pile \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.6089E-03	-1.0600E-05	-269.74	-200.92	-229.46	-11.502	-45.112	-3.0073	1558.4
Pile N.	13	13	13	13	13	13	13	12	3
Max.	4.2003E-05	4.2392E-04	604.88	69.130	44.505	67.268	10.181	12.608	4697.5
Pile N.	13	3	13	13	13	13	11	13	13

LOAD CASE : 23

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.39331E-04	6.14959E-04	6.72741E-07	2.22149E-05	-9.90195E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

\* EFFECTS FOR Laterally Loaded Pile \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7
Pile N.	3	15	15	15	15	15	2	9	1
Max.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5
Pile N.	1	3	15	15	15	15	15	15	15

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 180 di 294

LOAD CASE : 24

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	-2.10400E-16	1.52900E-11	-1.79506E-05	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.35710E-04	-6.21577E-14	1.32984E-16	-1.76918E-14	-9.87136E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3259.4	13.441	-6.2508E-10	1.9322E-10	-2.1410E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1133E-10	1.9322E-10	-2.0225E-08	51.942
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9744E-03	1.3571E-04	-6.2756E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1559E-14	1.3298E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3259.4	13.441	-6.2508E-10	1.9322E-10	-2.1410E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1133E-10	1.9322E-10	-2.0225E-08	51.942
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.5291E-06	-6.2756E-14	-51.942	-2.1410E-08	-3.7480	-6.2403E-10	-0.8690	-8.9778E-10	1844.5
Pile N.	3	1	3	8	3	3	8	3	1
Max.	1.3571E-04	4.4965E-15	22.731	9.6037E-10	19.552	2.9298E-09	3.8280	4.8281E-10	2082.8
Pile N.	1	8	3	8	3	3	3	3	3

LOAD CASE : 25

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
58572.7	2468.36	940.000	1.70600E-10	15755.6	-27928.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.37453E-03	1.43424E-03	4.73722E-04	-1.51544E-06	1.98452E-05	-1.06725E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7157E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0334E-03	1.4479E-03	4.8054E-04	-1.5154E-06	1.9845E-05	-1.0673E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2834.8	139.48	53.968	-2.2019	-225.50	394.78
Pile N.	1	5	8	1	15	5
MAXIMUM	4905.6	207.46	75.988	-2.2019	-176.95	549.63
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7157E-03	1.4206E-03	4.6690E-04	-1.5154E-06	1.9845E-05	-1.0673E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 181 di 294

Pile N. 1 1 3 1 1 1  
MAXIMUM 3.0334E-03 1.4479E-03 4.8054E-04 -1.5154E-06 1.9845E-05 -1.0673E-04  
Pile N. 15 13 1 1 1 1

\* PILE TOP REACTIONS, LOCAL \*  
AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M  
\*\*\*\*\*  
MINIMUM 2834.8 139.48 53.968 -2.2019 -225.50 394.78  
Pile N. 1 5 8 1 15 5  
MAXIMUM 4905.6 207.46 75.988 -2.2019 -176.95 549.63  
Pile N. 15 15 15 1 8 15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.7776E-05	-1.2082E-05	-549.63	-225.50	-40.062	-13.090	-9.1920	-3.3859	1604.1
Pile N.	15	15	15	15	15	15	15	15	1
Max.	1.4479E-03	4.8054E-04	242.69	78.704	207.50	76.005	40.723	14.281	4558.3
Pile N.	13	1	15	15	15	15	15	15	15

LOAD CASE : 26

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.39331E-04	6.14959E-04	6.72741E-07	2.22149E-05	-9.90195E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05
Pile N.	1	13	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05
Pile N.	15	1	3	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88
Pile N.	1	8	8	1	15
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12
Pile N.	15	15	15	1	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05
Pile N.	1	13	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05
Pile N.	15	1	3	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88
Pile N.	1	8	8	1	15
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12
Pile N.	15	15	15	1	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7
Pile N.	3	15	15	15	15	15	15	15	9
Max.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5
Pile N.	1	3	15	15	15	15	15	15	15

LOAD CASE : 27

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	-2.10400E-16	1.52900E-11	-1.79506E-05	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 182 di 294

2.01886E-03 1.35710E-04 -6.21630E-14 1.45425E-16 -1.76918E-14 -9.87136E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3259.4	13.441	-6.1549E-10	2.1130E-10	-2.1408E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1061E-10	2.1130E-10	-2.0257E-08	51.942
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9744E-03	1.3571E-04	-6.2817E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	1	1	1	1	1	1
MAXIMUM	2.0633E-03	1.3571E-04	-6.1509E-14	1.4542E-16	-1.7692E-14	-9.8714E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3259.4	13.441	-6.1549E-10	2.1130E-10	-2.1408E-08	38.432
Pile N.	1	8	3	1	8	8
MAXIMUM	3405.2	19.549	4.1061E-10	2.1130E-10	-2.0257E-08	51.942
Pile N.	3	3	8	1	3	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-3.5291E-06	-6.2817E-14	-51.942	-2.1408E-08	-3.7480	-6.1443E-10	-0.8690	-8.9637E-10	1844.5
Pile N.	3	1	3	8	3	3	8	3	1
Max.	1.3571E-04	4.4960E-15	22.731	9.6029E-10	19.552	2.9313E-09	3.8280	4.8300E-10	2082.8
Pile N.	1	8	3	8	3	3	3	3	3

LOAD CASE : 28

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
54562.1	949.411	-830.000	6.40100E-11	-24616.3	-10666.3

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.20481E-03	5.50448E-04	-4.53602E-04	6.25315E-08	-2.71423E-05	-4.00289E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2941.0	53.575	-68.894	0.090857	143.91	153.71
Pile N.	13	8	3	1	8	11
MAXIMUM	4334.0	79.350	-47.033	0.090857	192.85	211.10
Pile N.	3	3	8	1	3	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7804E-03	5.4988E-04	-4.5388E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	2.6292E-03	5.5101E-04	-4.5332E-04	6.2532E-08	-2.7142E-05	-4.0029E-05
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2941.0	53.575	-68.894	0.090857	143.91	153.71
Pile N.	13	8	3	1	8	11
MAXIMUM	4334.0	79.350	-47.033	0.090857	192.85	211.10
Pile N.	3	3	8	1	3	3

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 183 di 294

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.4353E-05	-4.5388E-04	-211.10	-76.048	-15.238	-68.906	-3.5288	-13.245	1664.3
Pile N.	3	1	3	3	3	3	8	3	13
Max.	5.5101E-04	1.1745E-05	92.321	192.85	79.364	12.581	15.545	3.0249	3310.3
Pile N.	1	3	3	3	3	3	3	5	3

LOAD CASE : 29

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.39331E-04	6.14959E-04	6.72741E-07	2.22149E-05	-9.90195E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7744E-03	1.3328E-04	6.1193E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	1	13	1	1	1	1
MAXIMUM	2.2634E-03	1.4538E-04	6.1799E-04	6.7274E-07	2.2215E-05	-9.9019E-06
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. Y, KN	LAT. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2931.1	13.344	69.350	0.9775	-311.88	38.727
Pile N.	1	8	8	1	15	11
MAXIMUM	3733.5	19.064	103.18	0.9775	-234.12	50.326
Pile N.	15	15	15	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.6391E-06	-1.5946E-05	-50.326	-311.88	-3.6809	-17.360	-0.9438	-4.3990	1658.7
Pile N.	3	15	15	15	15	15	2	9	1
Max.	1.4539E-04	6.1799E-04	22.332	104.41	19.067	103.20	3.7429	19.240	3060.5
Pile N.	1	3	15	15	15	15	15	15	15

LOAD CASE : 30

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
55282.1	2642.52	835.000	2.67100E-10	13677.2	-34749.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.23804E-03	1.57984E-03	4.18816E-04	-1.57462E-06	1.70809E-05	-1.27063E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.5125E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9636E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 184 di 294

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2501.4	149.21	48.015	-2.2879	-200.24	407.42
Pile N.	1	5	8	1	15	5
MAXIMUM	4819.1	222.44	67.274	-2.2879	-157.96	573.42
Pile N.	15	15	15	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.5125E-03	1.5657E-03	4.1173E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9636E-03	1.5940E-03	4.2590E-04	-1.5746E-06	1.7081E-05	-1.2706E-04
Pile N.	15	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2501.4	149.21	48.015	-2.2879	-200.24	407.42
Pile N.	1	5	8	1	15	5
MAXIMUM	4819.1	222.44	67.274	-2.2879	-157.96	573.42
Pile N.	15	15	15	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-4.1715E-05	-1.0651E-05	-573.42	-200.24	-44.026	-11.548	-9.9256	-3.0104	1415.5
Pile N.	15	15	15	15	15	15	11	10	1
Max.	1.5940E-03	4.2590E-04	267.47	69.430	222.48	67.289	44.080	12.629	4549.1
Pile N.	13	1	15	15	15	15	15	15	15



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 185 di 294

## 16.2 PILA 6 SLU/SLV/SLE

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GROUP for Windows, Version 2016.10.13

Serial Number : 228330872

Analysis of A Group of Piles
Subjected to Axial and Lateral Loading

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Time and Date of Analysis
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Date: May 31, 2022 Time: 14:33:01

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\*\*\*\*\* COMPUTATION RESULTS \*\*\*\*\*

21-22\_VI01\_Pila 4

\*\*\*\*\* LOAD CASES RESULTS \*\*\*\*\*

LOAD CASE : 1  
CASE NAME : 1-1 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8621	1.0000
2	0.7910	1.0000
3	0.8649	1.0000
4	0.5627	1.0000
5	0.4965	1.0000
6	0.6176	1.0000
7	0.5268	1.0000
8	0.4680	1.0000
9	0.5849	1.0000
10	0.5233	1.0000
11	0.4663	1.0000
12	0.5908	1.0000
13	0.5625	1.0000
14	0.5011	1.0000
15	0.6395	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
56801.9	-235.727	1825.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53200E-11	27335.6	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>			<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 186 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.29580E-03      -8.01228E-05      9.27793E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 -6.54388E-08      3.56588E-05      -6.61929E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.5269E-03	-7.9618E-05	9.2823E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
2	2.5903E-03	-7.9554E-05	9.2795E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
3	2.6608E-03	-7.9478E-05	9.2766E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
4	2.3727E-03	-7.9915E-05	9.2815E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
5	2.4432E-03	-7.9838E-05	9.2787E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
6	2.5133E-03	-7.9762E-05	9.2758E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
7	2.2257E-03	-8.0199E-05	9.2808E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
8	2.2958E-03	-8.0123E-05	9.2779E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
9	2.3660E-03	-8.0047E-05	9.2751E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
10	2.0783E-03	-8.0483E-05	9.2800E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
11	2.1484E-03	-8.0407E-05	9.2772E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
12	2.2189E-03	-8.0331E-05	9.2743E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
13	1.9308E-03	-8.0768E-05	9.2793E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
14	2.0013E-03	-8.0691E-05	9.2764E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
15	2.0647E-03	-8.0628E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
MINIMUM	1.9308E-03	-8.0768E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.6608E-03	-7.9478E-05	9.2823E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4166.0	-19.154	153.07	-0.095082	-459.91	-71.479
2	4270.0	-18.247	144.93	-0.095082	-442.24	-69.392
3	4385.7	-19.161	153.25	-0.095082	-460.24	-71.469
4	3913.0	-15.161	116.98	-0.095082	-379.06	-62.087
5	4028.7	-14.137	108.05	-0.095082	-357.88	-59.509
6	4143.8	-15.938	123.96	-0.095082	-395.17	-63.969
7	3671.7	-14.661	112.23	-0.095082	-367.80	-60.885
8	3786.8	-13.722	104.09	-0.095082	-348.28	-58.491
9	3901.9	-15.510	119.79	-0.095082	-385.48	-62.970
10	3429.8	-14.648	111.77	-0.095082	-366.63	-60.897
11	3544.8	-13.733	103.86	-0.095082	-347.66	-58.561
12	3660.6	-15.640	120.55	-0.095082	-387.17	-63.333
13	3187.9	-15.289	116.99	-0.095082	-378.86	-62.536
14	3303.6	-14.332	108.72	-0.095082	-359.28	-60.130
15	3407.6	-16.392	126.75	-0.095082	-401.33	-65.207
MINIMUM	3187.9	-19.161	103.86	-0.095082	-460.24	-71.479
Pile N.	13	3	11	1	3	1
MAXIMUM	4385.7	-13.722	153.25	-0.095082	-347.66	-58.491
Pile N.	3	8	3	1	11	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.5269E-03	-7.9618E-05	9.2823E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
2	2.5903E-03	-7.9554E-05	9.2795E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
3	2.6608E-03	-7.9478E-05	9.2766E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
4	2.3727E-03	-7.9915E-05	9.2815E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
5	2.4432E-03	-7.9838E-05	9.2787E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
6	2.5133E-03	-7.9762E-05	9.2758E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
7	2.2257E-03	-8.0199E-05	9.2808E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
8	2.2958E-03	-8.0123E-05	9.2779E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
9	2.3660E-03	-8.0047E-05	9.2751E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
10	2.0783E-03	-8.0483E-05	9.2800E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
11	2.1484E-03	-8.0407E-05	9.2772E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
12	2.2189E-03	-8.0331E-05	9.2743E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
13	1.9308E-03	-8.0768E-05	9.2793E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
14	2.0013E-03	-8.0691E-05	9.2764E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
15	2.0647E-03	-8.0628E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
MINIMUM	1.9308E-03	-8.0768E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	13	13	15	1	1	1

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 187 di 294

MAXIMUM 2.6608E-03 -7.9478E-05 9.2823E-04 -6.5439E-08 3.5659E-05 -6.6193E-06  
Pile N. 3 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4166.0	-19.154	153.07	-0.095082	-459.91	-71.479
2	4270.0	-18.247	144.93	-0.095082	-442.24	-69.392
3	4385.7	-19.161	153.25	-0.095082	-460.24	-71.469
4	3913.0	-15.161	116.98	-0.095082	-379.06	-62.087
5	4028.7	-14.137	108.05	-0.095082	-357.88	-59.509
6	4143.8	-15.938	123.96	-0.095082	-395.17	-63.969
7	3671.7	-14.661	112.23	-0.095082	-367.80	-60.885
8	3786.8	-13.722	104.09	-0.095082	-348.28	-58.491
9	3901.9	-15.510	119.79	-0.095082	-385.48	-62.970
10	3429.8	-14.648	111.77	-0.095082	-366.63	-60.897
11	3544.8	-13.733	103.86	-0.095082	-347.66	-58.561
12	3660.6	-15.640	120.55	-0.095082	-387.17	-63.333
13	3187.9	-15.289	116.99	-0.095082	-378.86	-62.536
14	3303.6	-14.332	108.72	-0.095082	-359.28	-60.130
15	3407.6	-16.392	126.75	-0.095082	-401.33	-65.207
MINIMUM	3187.9	-19.161	103.86	-0.095082	-460.24	-71.479
Pile N.	13	3	11	1	3	1
MAXIMUM	4385.7	-13.722	153.25	-0.095082	-347.66	-58.491
Pile N.	3	8	3	1	11	8

PILE GROUP	STRESS, KN/ M**2
1	3753.8
2	3759.3
3	3879.1
4	3366.6
5	3368.2
6	3545.8
7	3196.2
8	3202.4
9	3379.8
10	3055.9
11	3063.6
12	3248.4
13	2955.9
14	2962.3
15	3148.1
MINIMUM	2955.9
Pile N.	13
MAXIMUM	3879.1
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-8.2158E-05	-2.3960E-05	-14.873	-459.91	-19.159	-25.981	-3.2699	-5.4187	2357.5	7.8500E+06	7.8500E+06
x( M)	0.7200	13.200	8.1600	0.0000	0.0000	10.560	4.3200	18.720	24.000	0.0000	0.0000
2	-8.2157E-05	-2.3791E-05	-14.381	-442.24	-18.251	-24.661	-3.0609	-5.7692	2416.3	7.8500E+06	7.8500E+06
x( M)	0.7200	13.440	8.1600	0.0000	0.0000	10.800	4.5600	18.720	24.000	0.0000	0.0000
3	-8.2018E-05	-2.3965E-05	-14.869	-460.24	-19.166	-26.027	-3.2735	-5.4001	2481.8	7.8500E+06	7.8500E+06
x( M)	0.7200	13.200	8.1600	0.0000	0.0000	10.560	4.3200	18.720	24.000	0.0000	0.0000
4	-8.2891E-05	-2.2555E-05	-12.735	-379.06	-15.165	-20.059	-2.3688	-6.5544	2214.3	7.8500E+06	7.8500E+06
x( M)	0.9600	14.400	8.8800	0.0000	0.0000	11.520	4.8000	18.720	24.000	0.0000	0.0000
5	-8.2948E-05	-2.1865E-05	-12.156	-357.88	-14.140	-18.605	-2.1513	-6.5956	2279.8	7.8500E+06	7.8500E+06
x( M)	0.9600	14.640	9.1200	0.0000	0.0000	11.760	5.0400	18.720	24.000	0.0000	0.0000
6	-8.2642E-05	-2.2984E-05	-13.154	-395.17	-15.942	-21.208	-2.5392	-6.4346	2344.9	7.8500E+06	7.8500E+06
x( M)	0.9600	14.160	8.6400	0.0000	0.0000	11.280	4.8000	18.720	24.000	0.0000	0.0000
7	-8.3237E-05	-2.2172E-05	-12.465	-367.80	-14.664	-19.276	-2.2584	-6.5909	2077.7	7.8500E+06	7.8500E+06
x( M)	0.9600	14.400	9.1200	0.0000	0.0000	11.760	4.8000	18.720	24.000	0.0000	0.0000
8	-8.3285E-05	-2.1465E-05	-11.928	-348.28	-13.725	-17.966	-2.0630	-6.5707	2142.9	7.8500E+06	7.8500E+06
x( M)	0.9600	14.880	9.3600	0.0000	0.0000	12.000	5.0400	18.720	24.000	0.0000	0.0000
9	-8.2977E-05	-2.2714E-05	-12.936	-385.48	-15.514	-20.519	-2.4435	-6.5098	2208.0	7.8500E+06	7.8500E+06
x( M)	0.9600	14.160	8.8800	0.0000	0.0000	11.520	4.8000	18.720	24.000	0.0000	0.0000
10	-8.3521E-05	-2.2122E-05	-12.474	-366.63	-14.652	-19.190	-2.2532	-6.5910	1940.9	7.8500E+06	7.8500E+06
x( M)	0.9600	14.640	9.1200	0.0000	0.0000	11.760	4.8000	18.720	24.000	0.0000	0.0000
11	-8.3566E-05	-2.1428E-05	-11.950	-347.66	-13.737	-17.918	-2.0631	-6.5663	2006.0	7.8500E+06	7.8500E+06
x( M)	0.9600	14.880	9.3600	0.0000	0.0000	12.000	5.0400	18.720	24.000	0.0000	0.0000
12	-8.3242E-05	-2.2753E-05	-13.022	-387.17	-15.644	-20.630	-2.4691	-6.4962	2071.5	7.8500E+06	7.8500E+06
x( M)	0.9600	14.160	8.8800	0.0000	0.0000	11.520	4.8000	18.720	24.000	0.0000	0.0000
13	-8.3720E-05	-2.2511E-05	-12.852	-378.86	-15.292	-20.025	-2.3888	-6.5498	1804.0	7.8500E+06	7.8500E+06
x( M)	0.9600	14.400	8.8800	0.0000	0.0000	11.520	4.8000	18.720	24.000	0.0000	0.0000
14	-8.3768E-05	-2.1877E-05	-12.310	-359.28	-14.335	-18.684	-2.1852	-6.5909	1869.4	7.8500E+06	7.8500E+06
x( M)	0.9600	14.640	9.1200	0.0000	0.0000	11.760	5.0400	18.720	24.000	0.0000	0.0000
15	-8.3443E-05	-2.3057E-05	-13.456	-401.33	-16.396	-21.635	-2.6301	-6.3683	1928.3	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 188 di 294

x( M)	0.9600	14.160	8.6400	0.0000	0.0000	11.280	4.8000	18.720	24.000	0.0000	0.0000
Min. Pile N.	-8.3768E-05	-2.3965E-05	-14.873	-460.24	-19.166	-26.027	-3.2735	-6.5956	1804.0	7.8500E+06	7.8500E+06
	14	3	1	3	3	3	3	5	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1846E-06	9.2823E-04	71.479	156.40	2.5160	153.09	0.6956	28.601	3753.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.2000	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	2.1567E-06	9.2795E-04	69.392	151.00	2.3911	144.96	0.7275	26.654	3759.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
3	2.1832E-06	9.2766E-04	71.469	156.52	2.5174	153.28	0.6933	28.658	3879.1	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.2000	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
4	1.9852E-06	9.2815E-04	62.087	131.94	1.9769	117.01	0.7795	20.153	3366.6	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.9200	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	1.8858E-06	9.2787E-04	59.509	125.56	1.8441	108.07	0.7662	18.165	3368.2	7.8500E+06	7.8500E+06
x( M)	15.600	0.0000	0.0000	7.9200	12.960	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
6	2.0444E-06	9.2759E-04	63.969	136.87	2.0895	123.99	0.7774	21.737	3545.8	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	7.6800	12.240	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	1.9419E-06	9.2808E-04	60.885	128.58	1.9117	112.25	0.7768	19.086	3196.2	7.8500E+06	7.8500E+06
x( M)	15.360	0.0000	0.0000	7.9200	12.720	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	1.8400E-06	9.2779E-04	58.491	122.69	1.7903	104.11	0.7569	17.305	3202.4	7.8500E+06	7.8500E+06
x( M)	15.600	0.0000	0.0000	8.1600	12.960	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	2.0149E-06	9.2751E-04	62.970	133.88	2.0235	119.81	0.7812	20.790	3379.8	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.6800	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	1.9421E-06	9.2800E-04	60.897	128.22	1.9099	111.79	0.7781	18.979	3055.9	7.8500E+06	7.8500E+06
x( M)	15.360	0.0000	0.0000	7.9200	12.720	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	1.8415E-06	9.2772E-04	58.561	122.49	1.7917	103.88	0.7580	17.252	3063.6	7.8500E+06	7.8500E+06
x( M)	15.600	0.0000	0.0000	8.1600	13.200	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	2.0264E-06	9.2743E-04	63.333	134.40	2.0401	120.58	0.7832	20.958	3248.4	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.6800	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	2.0018E-06	9.2793E-04	62.536	131.85	1.9930	117.01	0.7857	20.143	2955.9	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.9200	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
14	1.9084E-06	9.2764E-04	60.130	125.96	1.8684	108.74	0.7738	18.303	2962.3	7.8500E+06	7.8500E+06
x( M)	15.600	0.0000	0.0000	7.9200	12.960	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
15	2.0824E-06	9.2736E-04	65.207	138.69	2.1402	126.77	0.7809	22.359	3148.1	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	7.6800	12.240	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
Max. Pile N.	2.1846E-06	9.2823E-04	71.479	156.52	2.5174	153.28	0.7857	28.658	3879.1	7.8500E+06	7.8500E+06
	1	1	1	3	3	3	13	3	3	1	1

LOAD CASE : 2  
CASE NAME : 2-2 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8752	1.0000
2	0.6221	1.0000
3	0.6406	1.0000
4	0.7968	1.0000
5	0.5013	1.0000
6	0.5070	1.0000
7	0.7822	1.0000
8	0.4938	1.0000
9	0.5008	1.0000
10	0.7816	1.0000
11	0.4924	1.0000
12	0.5078	1.0000
13	0.8410	1.0000
14	0.5491	1.0000
15	0.5718	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
81231.3	-3954.86	1248.30
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2.90400E-10	18929.6	45738.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 189 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 3.46890E-03      -2.36360E-03      5.20298E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 2.92402E-06      -4.49115E-06      1.90361E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.7058E-03	-2.3862E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
2	3.8734E-03	-2.3890E-03	5.1349E-04	2.9240E-06	-4.4912E-06	1.9036E-04
3	3.0401E-03	-2.3924E-03	5.2620E-04	2.9240E-06	-4.4912E-06	1.9036E-04
4	4.5035E-03	-2.3729E-03	5.0419E-04	2.9240E-06	-4.4912E-06	1.9036E-04
5	3.6702E-03	-2.3763E-03	5.1691E-04	2.9240E-06	-4.4912E-06	1.9036E-04
6	2.8388E-03	-2.3797E-03	5.2960E-04	2.9240E-06	-4.4912E-06	1.9036E-04
7	4.3022E-03	-2.3602E-03	5.0758E-04	2.9240E-06	-4.4912E-06	1.9036E-04
8	3.4689E-03	-2.3636E-03	5.2030E-04	2.9240E-06	-4.4912E-06	1.9036E-04
9	2.6356E-03	-2.3670E-03	5.3302E-04	2.9240E-06	-4.4912E-06	1.9036E-04
10	4.0990E-03	-2.3475E-03	5.1100E-04	2.9240E-06	-4.4912E-06	1.9036E-04
11	3.2676E-03	-2.3509E-03	5.2369E-04	2.9240E-06	-4.4912E-06	1.9036E-04
12	2.4343E-03	-2.3543E-03	5.3641E-04	2.9240E-06	-4.4912E-06	1.9036E-04
13	3.8977E-03	-2.3348E-03	5.1439E-04	2.9240E-06	-4.4912E-06	1.9036E-04
14	3.0644E-03	-2.3382E-03	5.2711E-04	2.9240E-06	-4.4912E-06	1.9036E-04
15	2.2319E-03	-2.3410E-03	5.3983E-04	2.9240E-06	-4.4912E-06	1.9036E-04
MINIMUM	2.2319E-03	-2.3924E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	4.7058E-03	-2.3348E-03	5.3983E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	6978.1	-334.69	98.072	4.2486	-328.53	-863.16
2	5946.5	-266.43	82.083	4.2486	-294.57	-715.93
3	4913.9	-272.57	85.590	4.2486	-305.01	-729.53
4	6727.4	-311.89	93.380	4.2486	-318.79	-811.94
5	5694.7	-228.34	72.688	4.2486	-272.55	-626.78
6	4664.4	-230.82	74.973	4.2486	-280.17	-632.40
7	6477.9	-305.80	92.971	4.2486	-318.53	-796.02
8	5445.3	-224.34	72.512	4.2486	-272.66	-614.96
9	4344.4	-227.25	74.916	4.2486	-280.56	-621.53
10	6226.1	-303.46	93.554	4.2486	-320.49	-788.06
11	5195.8	-222.26	72.865	4.2486	-274.06	-607.60
12	4014.1	-227.72	76.012	4.2486	-283.78	-620.03
13	5976.7	-316.54	98.362	4.2486	-331.88	-812.74
14	4944.0	-237.69	78.238	4.2486	-287.71	-640.51
15	3682.0	-245.05	82.084	4.2486	-299.03	-656.87
MINIMUM	3682.0	-334.69	72.512	4.2486	-331.88	-863.16
Pile N.	15	1	8	1	13	1
MAXIMUM	6978.1	-222.26	98.362	4.2486	-272.55	-607.60
Pile N.	1	11	13	1	5	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	4.7058E-03	-2.3862E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
2	3.8734E-03	-2.3890E-03	5.1349E-04	2.9240E-06	-4.4912E-06	1.9036E-04
3	3.0401E-03	-2.3924E-03	5.2620E-04	2.9240E-06	-4.4912E-06	1.9036E-04
4	4.5035E-03	-2.3729E-03	5.0419E-04	2.9240E-06	-4.4912E-06	1.9036E-04
5	3.6702E-03	-2.3763E-03	5.1691E-04	2.9240E-06	-4.4912E-06	1.9036E-04
6	2.8388E-03	-2.3797E-03	5.2960E-04	2.9240E-06	-4.4912E-06	1.9036E-04
7	4.3022E-03	-2.3602E-03	5.0758E-04	2.9240E-06	-4.4912E-06	1.9036E-04
8	3.4689E-03	-2.3636E-03	5.2030E-04	2.9240E-06	-4.4912E-06	1.9036E-04
9	2.6356E-03	-2.3670E-03	5.3302E-04	2.9240E-06	-4.4912E-06	1.9036E-04
10	4.0990E-03	-2.3475E-03	5.1100E-04	2.9240E-06	-4.4912E-06	1.9036E-04
11	3.2676E-03	-2.3509E-03	5.2369E-04	2.9240E-06	-4.4912E-06	1.9036E-04
12	2.4343E-03	-2.3543E-03	5.3641E-04	2.9240E-06	-4.4912E-06	1.9036E-04
13	3.8977E-03	-2.3348E-03	5.1439E-04	2.9240E-06	-4.4912E-06	1.9036E-04
14	3.0644E-03	-2.3382E-03	5.2711E-04	2.9240E-06	-4.4912E-06	1.9036E-04
15	2.2319E-03	-2.3410E-03	5.3983E-04	2.9240E-06	-4.4912E-06	1.9036E-04
MINIMUM	2.2319E-03	-2.3924E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	15	3	1	1	1	1

APPALTATORE:			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
Consorzio		Soci						
HIRPINIA - ORSARA AV		WEBUILD ITALIA PIZZAROTTI						
PROGETTAZIONE:								
Mandatario		Mandanti						
ROCKSOIL S.P.A.		NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			IF3A	02	E ZZ CL	VI0103 003	A	190 di 294

MAXIMUM 4.7058E-03 -2.3348E-03 5.3983E-04 2.9240E-06 -4.4912E-06 1.9036E-04  
Pile N. 1 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	6978.1	-334.69	98.072	4.2486	-328.53	-863.16
2	5946.5	-266.43	82.083	4.2486	-294.57	-715.93
3	4913.9	-272.57	85.590	4.2486	-305.01	-729.53
4	6727.4	-311.89	93.380	4.2486	-318.79	-811.94
5	5694.7	-228.34	72.688	4.2486	-272.55	-626.78
6	4664.4	-230.82	74.973	4.2486	-280.17	-632.40
7	6477.9	-305.80	92.971	4.2486	-318.53	-796.02
8	5445.3	-224.34	72.512	4.2486	-272.66	-614.96
9	4344.4	-227.25	74.916	4.2486	-280.56	-621.53
10	6226.1	-303.46	93.554	4.2486	-320.49	-788.06
11	5195.8	-222.26	72.865	4.2486	-274.06	-607.60
12	4014.1	-227.72	76.012	4.2486	-283.78	-620.03
13	5976.7	-316.54	98.362	4.2486	-331.88	-812.74
14	4944.0	-237.69	78.238	4.2486	-287.71	-640.51
15	3682.0	-245.05	82.084	4.2486	-299.03	-656.87
MINIMUM	3682.0	-334.69	72.512	4.2486	-331.88	-863.16
Pile N.	15	1	8	1	13	1
MAXIMUM	6978.1	-222.26	98.362	4.2486	-272.55	-607.60
Pile N.	1	11	13	1	5	11

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	6719.5
2	5687.5
3	5152.9
4	6423.7
5	5273.0
6	4714.6
7	6237.9
8	5099.5
9	4504.2
10	6075.4
11	4939.9
12	4317.1
13	6015.8
14	4904.2
15	4248.8
MINIMUM	4248.8
Pile N.	15
MAXIMUM	6719.5
Pile N.	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.3862E-03	-1.3180E-05	-402.39	-328.53	-334.79	-14.766	-66.542	-3.4515	3948.8	7.8500E+06	7.8500E+06
x(M)	0.0000	13.680	6.7200	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
2	-2.3890E-03	-1.2778E-05	-352.14	-294.57	-266.49	-12.331	-49.913	-4.1221	3365.1	7.8500E+06	7.8500E+06
M	0.0000	14.400	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
x(M)	-2.3924E-03	-1.3158E-05	-356.43	-305.01	-272.63	-12.832	-51.259	-4.1937	2780.7	7.8500E+06	7.8500E+06
x(M)	0.0000	14.400	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
4	-2.3729E-03	-1.3126E-05	-385.44	-318.79	-311.97	-14.044	-61.068	-3.6957	3806.9	7.8500E+06	7.8500E+06
x(M)	0.0000	13.920	6.7200	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
5	-2.3763E-03	-1.2078E-05	-322.19	-272.55	-228.40	-10.931	-41.272	-4.1849	3222.5	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
6	-2.3797E-03	-1.2385E-05	-323.87	-280.17	-230.86	-11.252	-41.754	-4.2855	2639.5	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
7	-2.3602E-03	-1.3182E-05	-380.53	-318.53	-305.88	-13.982	-59.721	-3.7582	3665.7	7.8500E+06	7.8500E+06
x(M)	0.0000	13.920	6.7200	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
8	-2.3636E-03	-1.2092E-05	-318.64	-272.66	-224.39	-10.898	-40.471	-4.2040	3081.4	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
9	-2.3670E-03	-1.2410E-05	-320.64	-280.56	-227.29	-11.236	-41.047	-4.3065	2458.5	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
10	-2.3475E-03	-1.3263E-05	-378.40	-320.49	-303.54	-14.064	-59.291	-3.7840	3523.2	7.8500E+06	7.8500E+06
x(M)	0.0000	13.920	6.7200	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
11	-2.3509E-03	-1.2152E-05	-316.60	-274.06	-222.31	-10.947	-40.105	-4.2284	2940.2	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
12	-2.3543E-03	-1.2530E-05	-320.56	-283.78	-227.75	-11.394	-41.255	-4.3373	2271.5	7.8500E+06	7.8500E+06
x(M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
13	-2.3348E-03	-1.3464E-05	-387.56	-331.88	-316.62	-14.789	-62.655	-3.6438	3382.1	7.8500E+06	7.8500E+06
x(M)	0.0000	13.680	6.7200	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
14	-2.3382E-03	-1.2662E-05	-328.46	-287.71	-237.74	-11.736	-43.724	-4.2786	2797.7	7.8500E+06	7.8500E+06
x(M)	0.0000	14.800	7.2000	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
15	-2.3410E-03	-1.3085E-05	-333.88	-299.03	-245.09	-12.285	-45.330	-4.3676	2083.6	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>								
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA											
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6											
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO						
IF3A	02	E ZZ CL	VI0103 003	A	191 di 294						

x( M)	0.0000	14.640	7.2000	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-2.3924E-03	-1.3464E-05	-402.39	-331.88	-334.79	-14.789	-66.542	-4.3676	2083.6	7.8500E+06	7.8500E+06
	3	13	1	13	1	13	1	15	15	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	6.2700E-05	5.0077E-04	863.16	87.562	66.544	98.108	11.662	17.595	6719.5	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.6800	10.080	0.0000	13.440	4.0800	0.0000	0.0000	0.0000
2	6.1126E-05	5.1348E-04	715.93	78.522	54.177	82.110	14.264	13.742	5687.5	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	8.1600	10.800	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
3	6.1240E-05	5.2620E-04	729.53	81.337	55.130	85.612	14.126	14.405	5152.9	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	8.1600	10.800	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	6.2042E-05	5.0419E-04	811.94	84.936	62.540	93.412	12.292	16.441	6423.7	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	5.8892E-05	5.1698E-04	626.78	72.659	47.348	72.712	14.865	11.648	5273.0	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.6400	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
6	5.8930E-05	5.2965E-04	632.40	74.708	47.646	74.993	14.866	12.037	4714.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.4000	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
7	6.1671E-05	5.0758E-04	796.02	84.847	61.478	93.002	12.378	16.308	6237.9	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	5.8414E-05	5.2038E-04	614.96	72.714	46.653	72.535	14.781	11.581	5099.5	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.6400	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	5.8480E-05	5.3307E-04	621.53	74.835	47.024	74.935	14.779	11.995	4504.2	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.6400	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
10	6.1324E-05	5.1100E-04	788.06	85.383	61.096	93.584	12.293	16.407	6075.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	5.8073E-05	5.2376E-04	607.60	73.102	46.307	72.887	14.680	11.630	4939.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.6400	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	5.8293E-05	5.3645E-04	620.03	75.688	47.125	76.029	14.656	12.204	4317.1	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.4000	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
13	6.1236E-05	5.1439E-04	812.74	88.513	63.469	98.393	11.485	17.495	6015.8	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
14	5.8833E-05	5.2713E-04	640.51	76.747	49.123	78.259	14.362	12.772	4904.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.2400	0.0000	8.4000	11.040	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
15	5.9040E-05	5.3983E-04	656.87	79.756	50.276	82.101	14.245	13.503	4248.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	8.4000	11.040	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
Max. Pile N.	6.2700E-05	5.3983E-04	863.16	88.513	66.544	98.393	14.866	17.595	6719.5	7.8500E+06	7.8500E+06
	1	15	1	13	1	13	6	1	1	1	1

LOAD CASE : 3  
CASE NAME : 3-3 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8442	1.0000
2	0.7773	1.0000
3	0.8655	1.0000
4	0.5565	1.0000
5	0.4963	1.0000
6	0.6325	1.0000
7	0.5223	1.0000
8	0.4698	1.0000
9	0.6029	1.0000
10	0.5194	1.0000
11	0.4687	1.0000
12	0.6094	1.0000
13	0.5649	1.0000
14	0.5096	1.0000
15	0.6599	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
69480.1	335.863	1825.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
2.17900E-11	27336.7	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>						
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>	<b>COMMESSA</b> IF3A	<b>LOTTO</b> 02	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0103 003	<b>REV.</b> A	<b>FOGLIO</b> 192 di 294

VERTICAL , M                      HORIZONTAL Y, M                      HORIZONTAL Z, M  
2.84408E-03                      2.68217E-04                      9.61518E-04  
  
ANGLE ROT. X,RAD                      ANGLE ROT. Y,RAD                      ANGLE ROT. Z,RAD  
1.48211E-06                      4.57382E-05                      -3.40064E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.9700E-03	2.5677E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
2	3.1623E-03	2.5534E-04	9.5807E-04	1.4821E-06	4.5738E-05	-3.4006E-05
3	3.3638E-03	2.5360E-04	9.6451E-04	1.4821E-06	4.5738E-05	-3.4006E-05
4	2.8022E-03	2.6350E-04	9.5335E-04	1.4821E-06	4.5738E-05	-3.4006E-05
5	3.0036E-03	2.6177E-04	9.5980E-04	1.4821E-06	4.5738E-05	-3.4006E-05
6	3.2042E-03	2.6005E-04	9.6623E-04	1.4821E-06	4.5738E-05	-3.4006E-05
7	2.6431E-03	2.6994E-04	9.5507E-04	1.4821E-06	4.5738E-05	-3.4006E-05
8	2.8441E-03	2.6822E-04	9.6152E-04	1.4821E-06	4.5738E-05	-3.4006E-05
9	3.0451E-03	2.6650E-04	9.6796E-04	1.4821E-06	4.5738E-05	-3.4006E-05
10	2.4839E-03	2.7638E-04	9.5681E-04	1.4821E-06	4.5738E-05	-3.4006E-05
11	2.6846E-03	2.7466E-04	9.6324E-04	1.4821E-06	4.5738E-05	-3.4006E-05
12	2.8860E-03	2.7293E-04	9.6968E-04	1.4821E-06	4.5738E-05	-3.4006E-05
13	2.3244E-03	2.8283E-04	9.5852E-04	1.4821E-06	4.5738E-05	-3.4006E-05
14	2.5259E-03	2.8110E-04	9.6497E-04	1.4821E-06	4.5738E-05	-3.4006E-05
15	2.7181E-03	2.7966E-04	9.7142E-04	1.4821E-06	4.5738E-05	-3.4006E-05
MINIMUM	2.3244E-03	2.5360E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	3.3638E-03	2.8283E-04	9.7142E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4827.1	26.864	149.13	2.1535	-436.83	46.481
2	5065.3	24.969	142.59	2.1535	-424.11	42.327
3	5315.0	26.760	153.90	2.1535	-449.99	45.542
4	4617.7	20.477	114.50	2.1535	-359.80	34.674
5	4868.7	18.490	107.23	2.1535	-343.91	30.002
6	5117.3	22.044	126.26	2.1535	-389.42	37.335
7	4356.7	20.400	110.20	2.1535	-349.98	35.806
8	4671.0	18.561	103.77	2.1535	-335.87	31.419
9	4920.1	22.228	122.72	2.1535	-381.62	39.105
10	4095.5	21.215	110.06	2.1535	-349.90	38.878
11	4424.8	19.379	103.86	2.1535	-336.32	34.483
12	4723.0	23.405	123.86	2.1535	-384.50	42.981
13	3833.7	23.568	116.44	2.1535	-365.06	45.327
14	4164.3	21.559	109.86	2.1535	-350.89	40.589
15	4479.9	25.943	130.62	2.1535	-400.14	49.822
MINIMUM	3833.7	18.490	103.77	2.1535	-449.99	30.002
Pile N.	13	5	8	1	3	5
MAXIMUM	5315.0	26.864	153.90	2.1535	-335.87	49.822
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)  
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\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.9700E-03	2.5677E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
2	3.1623E-03	2.5534E-04	9.5807E-04	1.4821E-06	4.5738E-05	-3.4006E-05
3	3.3638E-03	2.5360E-04	9.6451E-04	1.4821E-06	4.5738E-05	-3.4006E-05
4	2.8022E-03	2.6350E-04	9.5335E-04	1.4821E-06	4.5738E-05	-3.4006E-05
5	3.0036E-03	2.6177E-04	9.5980E-04	1.4821E-06	4.5738E-05	-3.4006E-05
6	3.2042E-03	2.6005E-04	9.6623E-04	1.4821E-06	4.5738E-05	-3.4006E-05
7	2.6431E-03	2.6994E-04	9.5507E-04	1.4821E-06	4.5738E-05	-3.4006E-05
8	2.8441E-03	2.6822E-04	9.6152E-04	1.4821E-06	4.5738E-05	-3.4006E-05
9	3.0451E-03	2.6650E-04	9.6796E-04	1.4821E-06	4.5738E-05	-3.4006E-05
10	2.4839E-03	2.7638E-04	9.5681E-04	1.4821E-06	4.5738E-05	-3.4006E-05
11	2.6846E-03	2.7466E-04	9.6324E-04	1.4821E-06	4.5738E-05	-3.4006E-05
12	2.8860E-03	2.7293E-04	9.6968E-04	1.4821E-06	4.5738E-05	-3.4006E-05
13	2.3244E-03	2.8283E-04	9.5852E-04	1.4821E-06	4.5738E-05	-3.4006E-05
14	2.5259E-03	2.8110E-04	9.6497E-04	1.4821E-06	4.5738E-05	-3.4006E-05
15	2.7181E-03	2.7966E-04	9.7142E-04	1.4821E-06	4.5738E-05	-3.4006E-05
MINIMUM	2.3244E-03	2.5360E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	13	3	1	1	1	1



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	193 di 294	

MAXIMUM 3.3638E-03 2.8283E-04 9.7142E-04 1.4821E-06 4.5738E-05 -3.4006E-05  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4827.1	26.864	149.13	2.1535	-436.83	46.481
2	5065.3	24.969	142.59	2.1535	-424.11	42.327
3	5315.0	26.760	153.90	2.1535	-449.99	45.542
4	4617.7	20.477	114.50	2.1535	-359.80	34.674
5	4868.7	18.490	107.23	2.1535	-343.91	30.002
6	5117.3	22.044	126.26	2.1535	-389.42	37.335
7	4356.7	20.400	110.20	2.1535	-349.98	35.806
8	4671.0	18.561	103.77	2.1535	-335.87	31.419
9	4920.1	22.228	122.72	2.1535	-381.62	39.105
10	4095.5	21.215	110.06	2.1535	-349.90	38.878
11	4424.8	19.379	103.86	2.1535	-336.32	34.483
12	4723.0	23.405	123.86	2.1535	-384.50	42.981
13	3833.7	23.568	116.44	2.1535	-365.06	45.327
14	4164.3	21.559	109.86	2.1535	-350.89	40.589
15	4479.9	25.943	130.62	2.1535	-400.14	49.822
MINIMUM	3833.7	18.490	103.77	2.1535	-449.99	30.002
Pile N.	13	5	8	1	3	5
MAXIMUM	5315.0	26.864	153.90	2.1535	-335.87	49.822
Pile N.	3	1	3	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	4049.4
2	4145.0
3	4364.5
4	3697.5
5	3790.8
6	4069.4
7	3520.8
8	3655.2
9	3935.0
10	3373.7
11	3518.2
12	3833.3
13	3273.0
14	3416.2
15	3744.8
MINIMUM	3273.0
Pile N.	13
MAXIMUM	4364.5
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-7.1634E-06	-2.4581E-05	-46.481	-436.83	-7.1307	-26.182	-1.2313	-5.4289	2731.6	7.8500E+06	7.8500E+06
x( M)	12.240	13.200	0.0000	0.0000	9.6000	10.560	12.960	18.720	24.000	0.0000	0.0000
2	-7.1534E-06	-2.4596E-05	-42.327	-424.11	-6.7704	-25.081	-1.1463	-5.8083	2866.4	7.8500E+06	7.8500E+06
x( M)	12.480	13.440	0.0000	0.0000	9.6000	10.800	12.960	18.720	24.000	0.0000	0.0000
3	-7.1032E-06	-2.4991E-05	-45.542	-449.99	-7.1564	-26.970	-1.2445	-5.4047	3007.7	7.8500E+06	7.8500E+06
x( M)	12.240	13.200	0.0000	0.0000	9.6000	10.560	12.720	18.720	24.000	0.0000	0.0000
4	-7.2942E-06	-2.3245E-05	-34.674	-359.80	-5.7408	-20.373	-1.3363	-6.5432	2613.1	7.8500E+06	7.8500E+06
x( M)	13.200	14.400	0.0000	0.0000	10.320	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-7.2362E-06	-2.2807E-05	-30.002	-343.91	-5.3544	-19.166	-1.3702	-6.6456	2755.1	7.8500E+06	7.8500E+06
x( M)	13.440	14.640	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-7.2550E-06	-2.4165E-05	-37.335	-389.42	-6.1124	-22.326	-1.2322	-6.4615	2895.8	7.8500E+06	7.8500E+06
x( M)	12.960	13.920	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-7.3823E-06	-2.2970E-05	-35.806	-349.98	-5.6477	-19.631	-1.4159	-6.5962	2465.4	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	0.0000	10.320	11.520	18.720	18.720	24.000	0.0000	0.0000
8	-7.3090E-06	-2.2503E-05	-31.419	-335.87	-5.2956	-18.569	-1.4365	-6.6452	2643.2	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-7.3646E-06	-2.3998E-05	-39.105	-381.62	-6.0699	-21.726	-1.3147	-6.5606	2784.2	7.8500E+06	7.8500E+06
x( M)	12.960	14.160	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
10	-7.4926E-06	-2.2961E-05	-38.878	-349.90	-5.7400	-19.592	-1.4691	-6.6107	2317.6	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-7.4147E-06	-2.2510E-05	-34.483	-336.32	-5.3903	-18.571	-1.4874	-6.6562	2503.9	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-7.4840E-06	-2.4067E-05	-42.981	-384.50	-6.2299	-21.903	-1.3582	-6.5557	2672.6	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
13	-7.6368E-06	-2.3410E-05	-45.327	-365.06	-6.1436	-20.642	-1.4813	-6.5666	2169.5	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	0.0000	10.320	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-7.5673E-06	-2.3032E-05	-40.589	-350.89	-5.7641	-19.552	-1.5135	-6.6806	2356.5	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-7.6369E-06	-2.4420E-05	-49.822	-400.14	-6.6640	-23.007	-1.3525	-6.4078	2535.1	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 194 di 294

x( M)	12.960	13.920	0.0000	0.0000	10.080	11.040	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-7.6369E-06 15	-2.4991E-05 3	-49.822 15	-449.99 3	-7.1564 3	-26.970 3	-1.5135 14	-6.6806 14	2169.5 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.5678E-04	9.5162E-04	44.373	158.46	26.867	149.16	5.9489	28.082	4049.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	3.8400	0.0000	0.0000	0.0000
2	2.5534E-04	9.5806E-04	42.899	154.39	24.973	142.62	5.4903	26.446	4145.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	2.5360E-04	9.6451E-04	44.314	162.24	26.764	153.94	5.9768	29.107	4364.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	3.8400	0.0000	0.0000	0.0000
4	2.6350E-04	9.5335E-04	39.070	134.55	20.479	114.52	4.2712	19.948	3697.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	2.6177E-04	9.5980E-04	37.359	129.52	18.492	107.26	3.8234	18.279	3790.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	2.6005E-04	9.6623E-04	40.450	143.43	22.047	126.29	4.6975	22.510	4069.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
7	2.6994E-04	9.5507E-04	38.921	131.41	20.403	110.23	4.1820	18.969	3520.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.2000	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	2.6822E-04	9.6152E-04	37.345	126.97	18.564	103.79	3.7725	17.498	3655.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
9	2.6650E-04	9.6797E-04	40.546	141.03	22.231	122.75	4.6597	21.677	3935.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
10	2.7638E-04	9.5680E-04	39.573	131.35	21.218	110.08	4.3032	18.918	3373.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	2.7466E-04	9.6324E-04	37.989	127.07	19.381	103.88	3.8951	17.500	3518.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
12	2.7293E-04	9.6968E-04	41.470	141.87	23.408	123.89	4.8645	21.915	3833.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
13	2.8283E-04	9.5852E-04	41.540	136.05	23.570	116.46	4.7862	20.323	3273.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	2.8110E-04	9.6497E-04	39.840	131.54	21.562	109.88	4.3343	18.805	3416.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	2.7966E-04	9.7142E-04	43.533	146.68	25.946	130.65	5.3987	23.462	3744.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.8283E-04 13	9.7142E-04 15	44.373 1	162.24 3	26.867 1	153.94 3	5.9768 3	29.107 3	4364.5 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 4  
CASE NAME : 4-4 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5691	1.0000
2	0.5520	1.0000
3	0.8523	1.0000
4	0.5035	1.0000
5	0.4937	1.0000
6	0.7917	1.0000
7	0.4964	1.0000
8	0.4950	1.0000
9	0.7921	1.0000
10	0.5010	1.0000
11	0.5014	1.0000
12	0.8061	1.0000
13	0.6274	1.0000
14	0.6124	1.0000
15	0.8754	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 69480.1	HOR. LOAD Y, KN 335.863	HOR. LOAD Z, KN -2.99900E-16
MOMENT X, KN- M 2.17700E-11	MOMENT Y, KN- M -3.62069E-05	MOMENT Z, KN- M -3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.81885E-03      1.98819E-04      9.41979E-06  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.85260E-08      2.68482E-06      -1.56575E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7350E-03	1.9868E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
2	2.8057E-03	1.9866E-04	9.3766E-06	1.8526E-08	2.6848E-06	-1.5658E-05
3	2.8770E-03	1.9864E-04	9.4572E-06	1.8526E-08	2.6848E-06	-1.5658E-05
4	2.7411E-03	1.9876E-04	9.3177E-06	1.8526E-08	2.6848E-06	-1.5658E-05
5	2.8124E-03	1.9874E-04	9.3983E-06	1.8526E-08	2.6848E-06	-1.5658E-05
6	2.8834E-03	1.9872E-04	9.4787E-06	1.8526E-08	2.6848E-06	-1.5658E-05
7	2.7476E-03	1.9884E-04	9.3392E-06	1.8526E-08	2.6848E-06	-1.5658E-05
8	2.8188E-03	1.9882E-04	9.4198E-06	1.8526E-08	2.6848E-06	-1.5658E-05
9	2.8901E-03	1.9880E-04	9.5004E-06	1.8526E-08	2.6848E-06	-1.5658E-05
10	2.7543E-03	1.9892E-04	9.3609E-06	1.8526E-08	2.6848E-06	-1.5658E-05
11	2.8253E-03	1.9890E-04	9.4413E-06	1.8526E-08	2.6848E-06	-1.5658E-05
12	2.8966E-03	1.9888E-04	9.5219E-06	1.8526E-08	2.6848E-06	-1.5658E-05
13	2.7608E-03	1.9900E-04	9.3824E-06	1.8526E-08	2.6848E-06	-1.5658E-05
14	2.8320E-03	1.9898E-04	9.4630E-06	1.8526E-08	2.6848E-06	-1.5658E-05
15	2.9027E-03	1.9896E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4507.5	20.977	-0.048380	0.026918	3.2727	57.126
2	4623.4	20.542	-0.044498	0.026918	3.2398	56.142
3	4711.7	27.535	0.10990	0.026918	3.0027	71.416
4	4517.6	19.312	-0.074755	0.026918	3.2976	53.327
5	4631.7	19.050	-0.068358	0.026918	3.2622	52.721
6	4719.8	26.219	0.084355	0.026918	3.0299	68.651
7	4528.3	19.138	-0.075013	0.026918	3.2906	52.938
8	4639.7	19.094	-0.064875	0.026918	3.2508	52.838
9	4728.0	26.242	0.088425	0.026918	3.0166	68.719
10	4539.2	19.269	-0.070007	0.026918	3.2772	53.257
11	4647.8	19.275	-0.058936	0.026918	3.2363	53.274
12	4736.1	26.567	0.098978	0.026918	2.9941	69.427
13	4549.8	22.460	-8.7331E-03	0.026918	3.1917	60.523
14	4656.0	22.089	-3.3981E-03	0.026918	3.1568	59.698
15	4743.7	28.094	0.1362	0.026918	2.9332	72.662
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7350E-03	1.9868E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
2	2.8057E-03	1.9866E-04	9.3766E-06	1.8526E-08	2.6848E-06	-1.5658E-05
3	2.8770E-03	1.9864E-04	9.4572E-06	1.8526E-08	2.6848E-06	-1.5658E-05
4	2.7411E-03	1.9876E-04	9.3177E-06	1.8526E-08	2.6848E-06	-1.5658E-05
5	2.8124E-03	1.9874E-04	9.3983E-06	1.8526E-08	2.6848E-06	-1.5658E-05
6	2.8834E-03	1.9872E-04	9.4787E-06	1.8526E-08	2.6848E-06	-1.5658E-05
7	2.7476E-03	1.9884E-04	9.3392E-06	1.8526E-08	2.6848E-06	-1.5658E-05
8	2.8188E-03	1.9882E-04	9.4198E-06	1.8526E-08	2.6848E-06	-1.5658E-05
9	2.8901E-03	1.9880E-04	9.5004E-06	1.8526E-08	2.6848E-06	-1.5658E-05
10	2.7543E-03	1.9892E-04	9.3609E-06	1.8526E-08	2.6848E-06	-1.5658E-05
11	2.8253E-03	1.9890E-04	9.4413E-06	1.8526E-08	2.6848E-06	-1.5658E-05
12	2.8966E-03	1.9888E-04	9.5219E-06	1.8526E-08	2.6848E-06	-1.5658E-05
13	2.7608E-03	1.9900E-04	9.3824E-06	1.8526E-08	2.6848E-06	-1.5658E-05
14	2.8320E-03	1.9898E-04	9.4630E-06	1.8526E-08	2.6848E-06	-1.5658E-05
15	2.9027E-03	1.9896E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 196 di 294

MAXIMUM 2.9027E-03 1.9900E-04 9.5435E-06 1.8526E-08 2.6848E-06 -1.5658E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4507.5	20.977	-0.048380	0.026918	3.2727	57.126
2	4623.4	20.542	-0.044498	0.026918	3.2398	56.142
3	4711.7	27.535	0.1090	0.026918	3.0027	71.416
4	4517.6	19.312	-0.074755	0.026918	3.2976	53.327
5	4631.7	19.050	-0.068358	0.026918	3.2622	52.721
6	4719.8	26.219	0.084355	0.026918	3.0299	68.651
7	4528.3	19.138	-0.075013	0.026918	3.2906	52.938
8	4639.7	19.094	-0.064875	0.026918	3.2508	52.838
9	4728.0	26.242	0.088425	0.026918	3.0166	68.719
10	4539.2	19.269	-0.070007	0.026918	3.2772	53.257
11	4647.8	19.275	-0.058936	0.026918	3.2363	53.274
12	4736.1	26.567	0.098978	0.026918	2.9941	69.427
13	4549.8	22.460	-8.7331E-03	0.026918	3.1917	60.523
14	4656.0	22.089	-3.3981E-03	0.026918	3.1568	59.698
15	4743.7	28.094	0.1362	0.026918	2.9332	72.662
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

PILE GROUP	STRESS, KN/ M**2
1	2722.4
2	2785.0
3	2880.7
4	2716.7
5	2779.5
6	2877.0
7	2721.6
8	2784.4
9	2881.8
10	2728.7
11	2790.2
12	2888.5
13	2756.5
14	2814.1
15	2902.5
MINIMUM	2716.7
Pile N.	4
MAXIMUM	2902.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
1	-5.0033E-06	-6.5309E-07	-57.126	-0.1465	-4.2614	-0.4010	-1.2219	-0.059975	2550.7	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.560	24.000	0.0000	0.0000
2	-4.9816E-06	-6.5545E-07	-56.142	-0.1456	-4.1840	-0.3953	-1.2301	-0.058827	2616.3	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	16.080	11.040	6.2400	18.720	10.560	24.000	0.0000	0.0000
3	-5.1917E-06	-5.3788E-07	-71.416	-0.1434	-5.4357	-0.4405	-0.9784	-0.072395	2666.3	7.8500E+06	7.8500E+06
x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.080	24.000	0.0000	0.0000
4	-4.9056E-06	-6.8952E-07	-53.327	-0.1475	-3.9623	-0.3889	-1.2474	-0.056601	2556.4	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
5	-4.8875E-06	-6.8796E-07	-52.721	-0.1467	-3.9161	-0.3843	-1.2492	-0.055741	2621.0	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
6	-5.1715E-06	-5.5289E-07	-68.651	-0.1429	-5.2011	-0.4309	-1.0416	-0.069672	2670.8	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
7	-4.8940E-06	-6.9196E-07	-52.938	-0.1474	-3.9305	-0.3869	-1.2495	-0.056139	2562.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
8	-4.8919E-06	-6.8500E-07	-52.838	-0.1463	-3.9238	-0.3838	-1.2497	-0.055713	2625.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
9	-5.1737E-06	-5.5138E-07	-68.719	-0.1426	-5.2049	-0.4304	-1.0418	-0.069623	2675.5	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
10	-4.9048E-06	-6.8688E-07	-53.257	-0.1470	-3.9539	-0.3869	-1.2492	-0.056283	2568.6	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
11	-4.9064E-06	-6.7879E-07	-53.274	-0.1458	-3.9563	-0.3842	-1.2490	-0.055962	2630.1	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
12	-5.1778E-06	-5.4616E-07	-69.427	-0.1424	-5.2635	-0.4320	-1.0282	-0.070171	2680.1	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
13	-5.0759E-06	-6.1777E-07	-60.523	-0.1445	-4.5260	-0.4077	-1.1885	-0.062456	2574.7	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	10.800	6.2400	18.720	10.320	24.000	0.0000	0.0000
14	-5.0615E-06	-6.1846E-07	-59.698	-0.1436	-4.4593	-0.4028	-1.1987	-0.061434	2634.8	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	10.800	6.4800	18.720	10.560	24.000	0.0000	0.0000
15	-5.2046E-06	-5.2737E-07	-72.662	-0.1425	-5.5306	-0.4418	-0.9695	-0.073107	2684.4	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 197 di 294

x( M)	12.960	9.3600	0.0000	15.120	10.080	6.4800	13.440	10.080	24.000	0.0000	0.0000
Min. Pile N.	-5.2046E-06 15	-6.9196E-07 7	-72.662 15	-0.1475 4	-5.5306 15	-0.4418 15	-1.2497 8	-0.073107 15	2550.7 1	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.9868E-04	9.2960E-06	28.270	3.2727	20.981	0.033032	3.8611	0.089324	2722.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
2	1.9866E-04	9.3766E-06	27.931	3.2398	20.546	0.033438	3.7619	0.088141	2785.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
3	1.9864E-04	9.4572E-06	33.112	3.1257	27.540	0.1088	5.4335	0.1373	2880.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
4	1.9876E-04	9.3177E-06	26.969	3.2976	19.316	0.034670	3.4801	0.079491	2716.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
5	1.9874E-04	9.3983E-06	26.765	3.2622	19.054	0.035064	3.4214	0.079278	2779.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
6	1.9872E-04	9.4787E-06	32.160	3.1202	26.224	0.084136	5.1084	0.1283	2877.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
7	1.9884E-04	9.3392E-06	26.835	3.2906	19.142	0.034897	3.4400	0.078742	2721.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
8	1.9882E-04	9.4198E-06	26.802	3.2508	19.098	0.035047	3.4306	0.079833	2784.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
9	1.9880E-04	9.5004E-06	32.179	3.1126	26.247	0.088207	5.1132	0.1289	2881.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
10	1.9892E-04	9.3609E-06	26.940	3.2772	19.272	0.034769	3.4688	0.079819	2728.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
11	1.9890E-04	9.4413E-06	26.947	3.2363	19.279	0.034860	3.4709	0.081226	2790.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
12	1.9888E-04	9.5219E-06	32.416	3.1043	26.572	0.098762	5.1919	0.1317	2888.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
13	1.9900E-04	9.3824E-06	29.407	3.1925	22.465	0.031979	4.2016	0.1001	2756.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.2400	0.0000	19.440	4.0800	2.4000	0.0000	0.0000	0.0000
14	1.9898E-04	9.4630E-06	29.133	3.1598	22.093	0.032277	4.1159	0.099381	2814.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.4800	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
15	1.9896E-04	9.5435E-06	33.520	3.0991	28.099	0.1360	5.5678	0.1433	2902.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
Max. Pile N.	1.9900E-04 13	9.5435E-06 15	33.520 15	3.2976 4	28.099 15	0.1360 15	5.5678 15	0.1433 15	2902.5 15	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 5  
CASE NAME : 5-5 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6130	1.0000
2	0.5871	1.0000
3	0.8541	1.0000
4	0.5109	1.0000
5	0.4940	1.0000
6	0.7724	1.0000
7	0.5000	1.0000
8	0.4917	1.0000
9	0.7696	1.0000
10	0.5035	1.0000
11	0.4972	1.0000
12	0.7827	1.0000
13	0.6195	1.0000
14	0.5997	1.0000
15	0.8498	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
81932.4	3573.18	1399.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
2.46900E-10	23393.5	-40423.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 198 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
3.50865E-03      2.23253E-03      8.46748E-04

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
-1.49244E-06      6.99897E-05      -1.99201E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7183E-03	2.2441E-03	8.5672E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
2	3.6527E-03	2.2455E-03	8.5023E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
3	4.6011E-03	2.2473E-03	8.4373E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
4	2.6336E-03	2.2373E-03	8.5497E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
5	3.5820E-03	2.2390E-03	8.4848E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
6	4.5277E-03	2.2408E-03	8.4200E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
7	2.5609E-03	2.2308E-03	8.5324E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
8	3.5086E-03	2.2325E-03	8.4675E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
9	4.4564E-03	2.2343E-03	8.4026E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
10	2.4895E-03	2.2243E-03	8.5149E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
11	3.4353E-03	2.2260E-03	8.4502E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
12	4.3837E-03	2.2278E-03	8.3853E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
13	2.4162E-03	2.2178E-03	8.4976E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
14	3.3646E-03	2.2196E-03	8.4327E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
15	4.2990E-03	2.2210E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
MINIMUM	2.4162E-03	2.2178E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.6011E-03	2.2473E-03	8.5672E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4480.1	237.03	93.786	-2.1685	-249.20	603.68
2	5673.1	230.01	89.993	-2.1685	-239.73	589.17
3	6848.3	297.75	114.77	-2.1685	-292.32	736.38
4	4341.2	207.99	82.582	-2.1685	-223.43	536.82
5	5585.5	203.15	79.725	-2.1685	-215.94	526.89
6	6757.4	276.80	106.91	-2.1685	-275.30	690.78
7	4221.9	204.03	81.143	-2.1685	-219.75	526.41
8	5494.5	201.62	79.237	-2.1685	-214.46	522.08
9	6668.9	274.98	106.34	-2.1685	-273.69	685.42
10	4104.7	204.16	81.304	-2.1685	-219.77	525.42
11	5403.6	202.34	79.621	-2.1685	-215.00	522.45
12	6578.9	277.07	107.28	-2.1685	-275.27	688.36
13	3984.3	234.80	93.422	-2.1685	-246.87	593.08
14	5316.0	229.56	90.282	-2.1685	-238.91	582.73
15	6473.9	291.90	113.11	-2.1685	-287.17	717.93
MINIMUM	3984.3	201.62	79.237	-2.1685	-292.32	522.08
Pile N.	13	8	8	1	3	8
MAXIMUM	6848.3	297.75	114.77	-2.1685	-214.46	736.38
Pile N.	3	3	3	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7183E-03	2.2441E-03	8.5672E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
2	3.6527E-03	2.2455E-03	8.5023E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
3	4.6011E-03	2.2473E-03	8.4373E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
4	2.6336E-03	2.2373E-03	8.5497E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
5	3.5820E-03	2.2390E-03	8.4848E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
6	4.5277E-03	2.2408E-03	8.4200E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
7	2.5609E-03	2.2308E-03	8.5324E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
8	3.5086E-03	2.2325E-03	8.4675E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
9	4.4564E-03	2.2343E-03	8.4026E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
10	2.4895E-03	2.2243E-03	8.5149E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
11	3.4353E-03	2.2260E-03	8.4502E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
12	4.3837E-03	2.2278E-03	8.3853E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
13	2.4162E-03	2.2178E-03	8.4976E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
14	3.3646E-03	2.2196E-03	8.4327E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
15	4.2990E-03	2.2210E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
MINIMUM	2.4162E-03	2.2178E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	13	13	15	1	1	1

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 199 di 294

MAXIMUM 4.6011E-03 2.2473E-03 8.5672E-04 -1.4924E-06 6.9990E-05 -1.9920E-04  
 Pile N. 3 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4480.1	237.03	93.786	-2.1685	-249.20	603.68
2	5673.1	230.01	89.993	-2.1685	-239.73	589.17
3	6848.3	297.75	114.77	-2.1685	-292.32	736.38
4	4341.2	207.99	82.582	-2.1685	-223.43	536.82
5	5585.5	203.15	79.725	-2.1685	-215.94	526.89
6	6757.4	276.80	106.91	-2.1685	-275.30	690.78
7	4221.9	204.03	81.143	-2.1685	-219.75	526.41
8	5494.5	201.62	79.237	-2.1685	-214.46	522.08
9	6668.9	274.98	106.34	-2.1685	-273.69	685.42
10	4104.7	204.16	81.304	-2.1685	-219.77	525.42
11	5403.6	202.34	79.621	-2.1685	-215.00	522.45
12	6578.9	277.07	107.28	-2.1685	-275.27	688.36
13	3984.3	234.80	93.422	-2.1685	-246.87	593.08
14	5316.0	229.56	90.282	-2.1685	-238.91	582.73
15	6473.9	291.90	113.11	-2.1685	-287.17	717.93
MINIMUM	3984.3	201.62	79.237	-2.1685	-292.32	522.08
Pile N.	13	8	8	1	3	8
MAXIMUM	6848.3	297.75	114.77	-2.1685	-214.46	736.38
Pile N.	3	3	3	1	8	3

PILE GROUP	STRESS, KN/ M**2
1	4494.5
2	5118.5
3	6252.2
4	4201.0
5	4869.0
6	6054.8
7	4100.4
8	4802.5
9	5988.0
10	4031.4
11	4752.7
12	5947.0
13	4181.9
14	4897.6
15	5983.2
MINIMUM	4031.4
Pile N.	10
MAXIMUM	6252.2
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.7712E-05	-2.1860E-05	-603.68	-249.20	-50.339	-19.209	-12.991	-5.0996	2535.2	7.8500E+06	7.8500E+06
x (M)	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	18.720	24.000	0.0000	0.0000
2	-5.7666E-05	-2.1642E-05	-589.17	-239.73	-49.193	-18.603	-13.200	-5.1216	3210.3	7.8500E+06	7.8500E+06
x (M)	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	18.720	24.000	0.0000	0.0000
3	-5.9314E-05	-2.2195E-05	-736.38	-292.32	-61.745	-23.171	-10.738	-4.0621	3875.4	7.8500E+06	7.8500E+06
x (M)	12.960	12.960	0.0000	0.0000	10.080	10.080	13.440	18.720	24.000	0.0000	0.0000
4	-5.6212E-05	-2.1236E-05	-536.82	-223.43	-45.011	-17.184	-13.538	-5.3020	2456.6	7.8500E+06	7.8500E+06
x (M)	13.920	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
5	-5.6102E-05	-2.1044E-05	-526.89	-215.94	-44.240	-16.759	-13.616	-5.2723	3160.7	7.8500E+06	7.8500E+06
x (M)	14.160	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
6	-5.8916E-05	-2.2039E-05	-690.78	-275.30	-57.956	-21.774	-11.415	-4.4066	3823.9	7.8500E+06	7.8500E+06
x (M)	12.960	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
7	-5.5826E-05	-2.1119E-05	-526.41	-219.75	-44.289	-16.930	-13.521	-5.2996	2389.1	7.8500E+06	7.8500E+06
x (M)	13.920	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
8	-5.5914E-05	-2.0984E-05	-522.08	-214.46	-43.984	-16.675	-13.570	-5.2603	3109.3	7.8500E+06	7.8500E+06
x (M)	14.160	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
9	-5.8733E-05	-2.1990E-05	-685.42	-273.69	-57.655	-21.677	-11.399	-4.4058	3773.9	7.8500E+06	7.8500E+06
x (M)	12.960	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
10	-5.5753E-05	-2.1099E-05	-525.42	-219.77	-44.344	-16.962	-13.458	-5.2819	2322.8	7.8500E+06	7.8500E+06
x (M)	13.920	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
11	-5.5841E-05	-2.0983E-05	-522.45	-215.00	-44.145	-16.748	-13.502	-5.2415	3057.8	7.8500E+06	7.8500E+06
x (M)	14.160	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
12	-5.8651E-05	-2.1952E-05	-688.36	-275.27	-58.062	-21.854	-11.206	-4.3381	3722.9	7.8500E+06	7.8500E+06
x (M)	12.960	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
13	-5.7090E-05	-2.1700E-05	-593.08	-246.87	-50.018	-19.159	-12.733	-5.0255	2254.7	7.8500E+06	7.8500E+06
x (M)	13.440	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
14	-5.7153E-05	-2.1532E-05	-582.73	-238.91	-49.223	-18.685	-12.903	-5.0328	3008.2	7.8500E+06	7.8500E+06
x (M)	13.680	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-5.8622E-05	-2.2004E-05	-717.93	-287.17	-60.809	-22.896	-10.561	-4.0344	3663.5	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 200 di 294

x( M)	12.960	12.960	0.0000	0.0000	10.080	10.080	13.440	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.9314E-05 3	-2.2195E-05 3	-736.38 3	-292.32 3	-61.745 3	-23.171 3	-13.616 5	-5.3020 4	2254.7 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.2441E-03	8.5672E-04	329.91	125.54	237.07	93.803	45.024	17.573	4494.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
2	2.2455E-03	8.5023E-04	324.76	122.65	230.06	90.014	43.433	16.779	5118.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	2.2472E-03	8.4373E-04	376.00	141.00	297.82	114.80	59.843	22.842	6252.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	2.2373E-03	8.5497E-04	306.72	116.73	208.02	82.597	38.400	15.013	4201.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	2.2390E-03	8.4848E-04	303.21	114.48	203.20	79.744	37.340	14.445	4869.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	2.2408E-03	8.4200E-04	360.67	135.21	276.87	106.94	54.764	20.929	6054.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	2.2308E-03	8.5324E-04	303.35	115.55	204.06	81.157	37.555	14.700	4100.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	2.2325E-03	8.4675E-04	301.82	114.04	201.66	79.255	37.048	14.349	4802.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	2.2343E-03	8.4026E-04	359.14	134.74	275.05	106.37	54.395	20.811	5988.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	2.2243E-03	8.5149E-04	303.31	115.62	204.19	81.318	37.641	14.751	4031.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	2.2260E-03	8.4502E-04	302.27	114.29	202.38	79.639	37.266	14.450	4752.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	2.2278E-03	8.3852E-04	360.50	135.38	277.14	107.30	54.982	21.058	5947.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	2.2178E-03	8.4976E-04	327.48	125.01	234.84	93.437	44.763	17.550	4181.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
14	2.2196E-03	8.4327E-04	323.84	122.63	229.61	90.302	43.569	16.909	4897.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	2.2210E-03	8.3678E-04	370.93	139.56	291.98	113.14	58.716	22.514	5983.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	2.2472E-03 3	8.5672E-04 1	376.00 3	141.00 3	297.82 3	114.80 3	59.843 3	22.842 3	6252.2 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 6  
CASE NAME : 6-6 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8519	1.0000
2	0.7837	1.0000
3	0.8659	1.0000
4	0.5582	1.0000
5	0.4963	1.0000
6	0.6265	1.0000
7	0.5232	1.0000
8	0.4689	1.0000
9	0.5955	1.0000
10	0.5200	1.0000
11	0.4676	1.0000
12	0.6018	1.0000
13	0.5627	1.0000
14	0.5058	1.0000
15	0.6514	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1825.00
MOMENT X, KN- M 1.53200E-11	MOMENT Y, KN- M 27335.6	MOMENT Z, KN- M -2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M                      HORIZONTAL Y, M                      HORIZONTAL Z, M  
 2.01886E-03                      1.94533E-04                      9.37915E-04  
  
 ANGLE ROT. X,RAD                      ANGLE ROT. Y,RAD                      ANGLE ROT. Z,RAD  
 1.32182E-06                      3.89528E-05                      -2.55933E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1486E-03	1.8433E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
2	2.2977E-03	1.8305E-04	9.3483E-04	1.3218E-06	3.8953E-05	-2.5593E-05
3	2.4546E-03	1.8150E-04	9.4058E-04	1.3218E-06	3.8953E-05	-2.5593E-05
4	2.0017E-03	1.9033E-04	9.3063E-04	1.3218E-06	3.8953E-05	-2.5593E-05
5	2.1586E-03	1.8878E-04	9.3638E-04	1.3218E-06	3.8953E-05	-2.5593E-05
6	2.3149E-03	1.8725E-04	9.4212E-04	1.3218E-06	3.8953E-05	-2.5593E-05
7	1.8624E-03	1.9607E-04	9.3216E-04	1.3218E-06	3.8953E-05	-2.5593E-05
8	2.0189E-03	1.9453E-04	9.3791E-04	1.3218E-06	3.8953E-05	-2.5593E-05
9	2.1754E-03	1.9300E-04	9.4366E-04	1.3218E-06	3.8953E-05	-2.5593E-05
10	1.7228E-03	2.0182E-04	9.3371E-04	1.3218E-06	3.8953E-05	-2.5593E-05
11	1.8791E-03	2.0028E-04	9.3945E-04	1.3218E-06	3.8953E-05	-2.5593E-05
12	2.0360E-03	1.9874E-04	9.4520E-04	1.3218E-06	3.8953E-05	-2.5593E-05
13	1.5831E-03	2.0757E-04	9.3525E-04	1.3218E-06	3.8953E-05	-2.5593E-05
14	1.7400E-03	2.0602E-04	9.4100E-04	1.3218E-06	3.8953E-05	-2.5593E-05
15	1.8891E-03	2.0474E-04	9.4674E-04	1.3218E-06	3.8953E-05	-2.5593E-05
MINIMUM	1.5831E-03	1.8150E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.4546E-03	2.0757E-04	9.4674E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3545.3	18.710	150.10	1.9206	-447.08	29.700
2	3790.0	17.309	143.39	1.9206	-433.82	26.596
3	4047.4	18.401	153.79	1.9206	-457.61	28.419
4	3304.2	14.310	115.09	1.9206	-368.97	21.958
5	3561.7	12.826	107.58	1.9206	-352.31	18.437
6	3818.1	15.173	125.58	1.9206	-395.48	23.165
7	3075.5	14.405	110.69	1.9206	-358.85	23.337
8	3332.3	13.014	103.98	1.9206	-343.88	19.984
9	3589.2	15.454	121.86	1.9206	-387.17	24.993
10	2846.5	15.142	110.49	1.9206	-358.60	26.105
11	3103.0	13.741	104.01	1.9206	-344.16	22.716
12	3360.5	16.458	122.92	1.9206	-389.86	28.350
13	2617.2	16.936	116.42	1.9206	-372.75	31.186
14	2874.7	15.400	109.58	1.9206	-357.72	27.521
15	3119.4	18.451	129.53	1.9206	-405.19	33.871
MINIMUM	2617.2	12.826	103.98	1.9206	-457.61	18.437
Pile N.	13	5	8	1	3	5
MAXIMUM	4047.4	18.710	153.79	1.9206	-343.88	33.871
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1486E-03	1.8433E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
2	2.2977E-03	1.8305E-04	9.3483E-04	1.3218E-06	3.8953E-05	-2.5593E-05
3	2.4546E-03	1.8150E-04	9.4058E-04	1.3218E-06	3.8953E-05	-2.5593E-05
4	2.0017E-03	1.9033E-04	9.3063E-04	1.3218E-06	3.8953E-05	-2.5593E-05
5	2.1586E-03	1.8878E-04	9.3638E-04	1.3218E-06	3.8953E-05	-2.5593E-05
6	2.3149E-03	1.8725E-04	9.4212E-04	1.3218E-06	3.8953E-05	-2.5593E-05
7	1.8624E-03	1.9607E-04	9.3216E-04	1.3218E-06	3.8953E-05	-2.5593E-05
8	2.0189E-03	1.9453E-04	9.3791E-04	1.3218E-06	3.8953E-05	-2.5593E-05
9	2.1754E-03	1.9300E-04	9.4366E-04	1.3218E-06	3.8953E-05	-2.5593E-05
10	1.7228E-03	2.0182E-04	9.3371E-04	1.3218E-06	3.8953E-05	-2.5593E-05
11	1.8791E-03	2.0028E-04	9.3945E-04	1.3218E-06	3.8953E-05	-2.5593E-05
12	2.0360E-03	1.9874E-04	9.4520E-04	1.3218E-06	3.8953E-05	-2.5593E-05
13	1.5831E-03	2.0757E-04	9.3525E-04	1.3218E-06	3.8953E-05	-2.5593E-05
14	1.7400E-03	2.0602E-04	9.4100E-04	1.3218E-06	3.8953E-05	-2.5593E-05
15	1.8891E-03	2.0474E-04	9.4674E-04	1.3218E-06	3.8953E-05	-2.5593E-05
MINIMUM	1.5831E-03	1.8150E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 202 di 294

MAXIMUM 2.4546E-03 2.0757E-04 9.4674E-04 1.3218E-06 3.8953E-05 -2.5593E-05  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3545.3	18.710	150.10	1.9206	-447.08	29.700
2	3790.0	17.309	143.39	1.9206	-433.82	26.596
3	4047.4	18.401	153.79	1.9206	-457.61	28.419
4	3304.2	14.310	115.09	1.9206	-368.97	21.958
5	3561.7	12.826	107.58	1.9206	-352.31	18.437
6	3818.1	15.173	125.58	1.9206	-395.48	23.165
7	3075.5	14.405	110.69	1.9206	-358.85	23.337
8	3332.3	13.014	103.98	1.9206	-343.88	19.984
9	3589.2	15.454	121.86	1.9206	-387.17	24.993
10	2846.5	15.142	110.49	1.9206	-358.60	26.105
11	3103.0	13.741	104.01	1.9206	-344.16	22.716
12	3360.5	16.458	122.92	1.9206	-389.86	28.350
13	2617.2	16.936	116.42	1.9206	-372.75	31.186
14	2874.7	15.400	109.58	1.9206	-357.72	27.521
15	3119.4	18.451	129.53	1.9206	-405.19	33.871

MINIMUM 2617.2 12.826 103.98 1.9206 -457.61 18.437  
Pile N. 13 5 8 1 3 5  
MAXIMUM 4047.4 18.710 153.79 1.9206 -343.88 33.871  
Pile N. 3 1 3 1 8 15

PILE GROUP	STRESS, KN/ M**2
1	3350.4
2	3448.6
3	3665.9
4	2978.7
5	3073.9
6	3349.1
7	2819.2
8	2919.1
9	3195.0
10	2689.5
11	2790.7
12	3074.3
13	2603.2
14	2703.1
15	2985.0

MINIMUM 2603.2  
Pile N. 13  
MAXIMUM 3665.9  
Pile N. 3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.1978E-06	-2.3933E-05	-29.700	-447.08	-5.1698	-25.739	-0.8945	-5.3984	2006.2	7.8500E+06	7.8500E+06
x(M)	12.240	13.200	0.0000	0.0000	9.3600	10.560	12.720	18.720	24.000	0.0000	0.0000
2	-5.1846E-06	-2.3930E-05	-26.596	-433.82	-4.9043	-24.638	-0.8312	-5.7735	2144.7	7.8500E+06	7.8500E+06
x(M)	12.240	13.440	0.0000	0.0000	9.6000	10.800	12.960	18.720	24.000	0.0000	0.0000
3	-5.1402E-06	-2.4296E-05	-28.419	-457.61	-5.1565	-26.351	-0.8950	-5.4039	2290.4	7.8500E+06	7.8500E+06
x(M)	12.240	13.200	0.0000	0.0000	9.3600	10.560	12.720	18.720	24.000	0.0000	0.0000
4	-5.3299E-06	-2.2578E-05	-21.958	-368.97	-4.1758	-19.953	-0.9410	-6.5051	1869.8	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.080	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-5.2947E-06	-2.2086E-05	-18.437	-352.31	-3.8878	-18.723	-0.9657	-6.5926	2015.5	7.8500E+06	7.8500E+06
x(M)	13.200	14.640	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-5.2852E-06	-2.3392E-05	-23.165	-395.48	-4.4017	-21.681	-0.8663	-6.4461	2160.6	7.8500E+06	7.8500E+06
x(M)	12.720	14.160	0.0000	0.0000	9.8400	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-5.4153E-06	-2.2249E-05	-23.337	-358.85	-4.1227	-19.217	-1.0085	-6.5522	1740.4	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.3702E-06	-2.1729E-05	-19.984	-343.88	-3.8531	-18.130	-1.0233	-6.5840	1885.7	7.8500E+06	7.8500E+06
x(M)	13.440	14.880	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-5.3886E-06	-2.3219E-05	-24.993	-387.17	-4.3833	-21.042	-0.9355	-6.5383	2031.1	7.8500E+06	7.8500E+06
x(M)	12.960	14.160	0.0000	0.0000	10.080	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-5.5106E-06	-2.2231E-05	-26.105	-358.60	-4.2042	-19.172	-1.0558	-6.5649	1610.8	7.8500E+06	7.8500E+06
x(M)	13.440	14.400	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.4510E-06	-2.1734E-05	-22.716	-344.16	-3.9374	-18.122	-1.0687	-6.5929	1755.9	7.8500E+06	7.8500E+06
x(M)	13.680	14.880	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-5.4891E-06	-2.3292E-05	-28.350	-389.86	-4.5159	-21.202	-0.9758	-6.5347	1901.6	7.8500E+06	7.8500E+06
x(M)	12.960	14.160	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
13	-5.6326E-06	-2.2687E-05	-31.186	-372.75	-4.5042	-20.129	-1.0742	-6.5319	1481.0	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.320	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-5.5771E-06	-2.2262E-05	-27.521	-357.72	-4.2120	-19.012	-1.0966	-6.6262	1626.7	7.8500E+06	7.8500E+06
x(M)	13.440	14.640	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-5.6137E-06	-2.3638E-05	-33.871	-405.19	-4.8474	-22.281	-0.9813	-6.4029	1765.2	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 203 di 294

x( M)	12.960	13.920	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.6326E-06 13	-2.4296E-05 3	-33.871 15	-457.61 3	-5.1698 1	-26.351 3	-1.0966 14	-6.6262 14	1481.0 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.8433E-04	9.2908E-04	32.260	155.55	18.711	150.13	4.2246	28.087	3350.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	5.7600	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
2	1.8305E-04	9.3483E-04	31.161	151.31	17.311	143.42	3.8829	26.418	3448.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	5.7600	7.2000	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
3	1.8150E-04	9.4058E-04	32.072	158.56	18.402	153.81	4.1931	28.853	3665.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	5.7600	7.2000	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
4	1.9033E-04	9.3063E-04	28.522	131.62	14.311	115.11	3.0396	19.878	2978.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
5	1.8878E-04	9.3638E-04	27.261	126.54	12.827	107.59	2.7042	18.160	3073.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	1.8725E-04	9.4212E-04	29.334	139.61	15.175	125.60	3.2910	22.153	3349.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
7	1.9607E-04	9.3216E-04	28.513	128.58	14.406	110.71	2.9953	18.877	2819.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	1.9453E-04	9.3791E-04	27.308	123.91	13.015	104.00	2.6873	17.359	2919.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
9	1.9300E-04	9.4366E-04	29.471	137.05	15.455	121.88	3.2854	21.292	3195.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
10	2.0182E-04	9.3371E-04	29.071	128.48	15.143	110.51	3.1060	18.816	2689.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	2.0028E-04	9.3945E-04	27.872	123.97	13.742	104.03	2.7963	17.350	2790.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
12	1.9874E-04	9.4520E-04	30.255	137.84	16.459	122.94	3.4570	21.514	3074.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
13	2.0757E-04	9.3524E-04	30.562	132.68	16.937	116.43	3.4655	20.122	2603.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	2.0602E-04	9.4099E-04	29.267	128.10	15.401	109.59	3.1220	18.552	2703.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	2.0474E-04	9.4674E-04	31.865	142.40	18.452	129.54	3.8672	23.000	2985.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.0757E-04 13	9.4674E-04 15	32.260 1	158.56 3	18.711 1	153.81 3	4.2246 1	28.853 3	3665.9 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 7  
CASE NAME : 7-7 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5691	1.0000
2	0.5520	1.0000
3	0.8523	1.0000
4	0.5035	1.0000
5	0.4937	1.0000
6	0.7917	1.0000
7	0.4964	1.0000
8	0.4950	1.0000
9	0.7921	1.0000
10	0.5010	1.0000
11	0.5014	1.0000
12	0.8061	1.0000
13	0.6274	1.0000
14	0.6124	1.0000
15	0.8754	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 69480.1	HOR. LOAD Y, KN 335.863	HOR. LOAD Z, KN -2.99900E-16
MOMENT X, KN- M 2.17700E-11	MOMENT Y, KN- M -3.62069E-05	MOMENT Z, KN- M -3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 204 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.81885E-03      1.98819E-04      9.41979E-06  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.85260E-08      2.68482E-06      -1.56575E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7350E-03	1.9868E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
2	2.8057E-03	1.9866E-04	9.3766E-06	1.8526E-08	2.6848E-06	-1.5658E-05
3	2.8770E-03	1.9864E-04	9.4572E-06	1.8526E-08	2.6848E-06	-1.5658E-05
4	2.7411E-03	1.9876E-04	9.3177E-06	1.8526E-08	2.6848E-06	-1.5658E-05
5	2.8124E-03	1.9874E-04	9.3983E-06	1.8526E-08	2.6848E-06	-1.5658E-05
6	2.8834E-03	1.9872E-04	9.4787E-06	1.8526E-08	2.6848E-06	-1.5658E-05
7	2.7476E-03	1.9884E-04	9.3392E-06	1.8526E-08	2.6848E-06	-1.5658E-05
8	2.8188E-03	1.9882E-04	9.4198E-06	1.8526E-08	2.6848E-06	-1.5658E-05
9	2.8901E-03	1.9880E-04	9.5004E-06	1.8526E-08	2.6848E-06	-1.5658E-05
10	2.7543E-03	1.9892E-04	9.3609E-06	1.8526E-08	2.6848E-06	-1.5658E-05
11	2.8253E-03	1.9890E-04	9.4413E-06	1.8526E-08	2.6848E-06	-1.5658E-05
12	2.8966E-03	1.9888E-04	9.5219E-06	1.8526E-08	2.6848E-06	-1.5658E-05
13	2.7608E-03	1.9900E-04	9.3824E-06	1.8526E-08	2.6848E-06	-1.5658E-05
14	2.8320E-03	1.9898E-04	9.4630E-06	1.8526E-08	2.6848E-06	-1.5658E-05
15	2.9027E-03	1.9896E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4507.5	20.977	-0.048380	0.026918	3.2727	57.126
2	4623.4	20.542	-0.044498	0.026918	3.2398	56.142
3	4711.7	27.535	0.10990	0.026918	3.0027	71.416
4	4517.6	19.312	-0.074755	0.026918	3.2976	53.327
5	4631.7	19.050	-0.068358	0.026918	3.2622	52.721
6	4719.8	26.219	0.084355	0.026918	3.0299	68.651
7	4528.3	19.138	-0.075013	0.026918	3.2906	52.938
8	4639.7	19.094	-0.064875	0.026918	3.2508	52.838
9	4728.0	26.242	0.088425	0.026918	3.0166	68.719
10	4539.2	19.269	-0.070007	0.026918	3.2772	53.257
11	4647.8	19.275	-0.058936	0.026918	3.2363	53.274
12	4736.1	26.567	0.098978	0.026918	2.9941	69.427
13	4549.8	22.460	-8.7331E-03	0.026918	3.1917	60.523
14	4656.0	22.089	-3.3981E-03	0.026918	3.1568	59.698
15	4743.7	28.094	0.1362	0.026918	2.9332	72.662
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7350E-03	1.9868E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
2	2.8057E-03	1.9866E-04	9.3766E-06	1.8526E-08	2.6848E-06	-1.5658E-05
3	2.8770E-03	1.9864E-04	9.4572E-06	1.8526E-08	2.6848E-06	-1.5658E-05
4	2.7411E-03	1.9876E-04	9.3177E-06	1.8526E-08	2.6848E-06	-1.5658E-05
5	2.8124E-03	1.9874E-04	9.3983E-06	1.8526E-08	2.6848E-06	-1.5658E-05
6	2.8834E-03	1.9872E-04	9.4787E-06	1.8526E-08	2.6848E-06	-1.5658E-05
7	2.7476E-03	1.9884E-04	9.3392E-06	1.8526E-08	2.6848E-06	-1.5658E-05
8	2.8188E-03	1.9882E-04	9.4198E-06	1.8526E-08	2.6848E-06	-1.5658E-05
9	2.8901E-03	1.9880E-04	9.5004E-06	1.8526E-08	2.6848E-06	-1.5658E-05
10	2.7543E-03	1.9892E-04	9.3609E-06	1.8526E-08	2.6848E-06	-1.5658E-05
11	2.8253E-03	1.9890E-04	9.4413E-06	1.8526E-08	2.6848E-06	-1.5658E-05
12	2.8966E-03	1.9888E-04	9.5219E-06	1.8526E-08	2.6848E-06	-1.5658E-05
13	2.7608E-03	1.9900E-04	9.3824E-06	1.8526E-08	2.6848E-06	-1.5658E-05
14	2.8320E-03	1.9898E-04	9.4630E-06	1.8526E-08	2.6848E-06	-1.5658E-05
15	2.9027E-03	1.9896E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 205 di 294

MAXIMUM 2.9027E-03 1.9900E-04 9.5435E-06 1.8526E-08 2.6848E-06 -1.5658E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4507.5	20.977	-0.048380	0.026918	3.2727	57.126
2	4623.4	20.542	-0.044498	0.026918	3.2398	56.142
3	4711.7	27.535	0.1090	0.026918	3.0027	71.416
4	4517.6	19.312	-0.074755	0.026918	3.2976	53.327
5	4631.7	19.050	-0.068358	0.026918	3.2622	52.721
6	4719.8	26.219	0.084355	0.026918	3.0299	68.651
7	4528.3	19.138	-0.075013	0.026918	3.2906	52.938
8	4639.7	19.094	-0.064875	0.026918	3.2508	52.838
9	4728.0	26.242	0.088425	0.026918	3.0166	68.719
10	4539.2	19.269	-0.070007	0.026918	3.2772	53.257
11	4647.8	19.275	-0.058936	0.026918	3.2363	53.274
12	4736.1	26.567	0.098978	0.026918	2.9941	69.427
13	4549.8	22.460	-8.7331E-03	0.026918	3.1917	60.523
14	4656.0	22.089	-3.3981E-03	0.026918	3.1568	59.698
15	4743.7	28.094	0.1362	0.026918	2.9332	72.662
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

PILE GROUP	STRESS, KN/ M**2
1	2722.4
2	2785.0
3	2880.7
4	2716.7
5	2779.5
6	2877.0
7	2721.6
8	2784.4
9	2881.8
10	2728.7
11	2790.2
12	2888.5
13	2756.5
14	2814.1
15	2902.5
MINIMUM	2716.7
Pile N.	4
MAXIMUM	2902.5
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
1	-5.0033E-06	-6.5309E-07	-57.126	-0.1465	-4.2614	-0.4010	-1.2219	-0.059975	2550.7	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.560	24.000	0.0000	0.0000
2	-4.9816E-06	-6.5545E-07	-56.142	-0.1456	-4.1840	-0.3953	-1.2301	-0.058827	2616.3	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	16.080	11.040	6.2400	18.720	10.560	24.000	0.0000	0.0000
3	-5.1917E-06	-5.3788E-07	-71.416	-0.1434	-5.4357	-0.4405	-0.9784	-0.072395	2666.3	7.8500E+06	7.8500E+06
x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.080	24.000	0.0000	0.0000
4	-4.9056E-06	-6.8952E-07	-53.327	-0.1475	-3.9623	-0.3889	-1.2474	-0.056601	2556.4	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
5	-4.8875E-06	-6.8796E-07	-52.721	-0.1467	-3.9161	-0.3843	-1.2492	-0.055741	2621.0	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
6	-5.1715E-06	-5.5289E-07	-68.651	-0.1429	-5.2011	-0.4309	-1.0416	-0.069672	2670.8	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
7	-4.8940E-06	-6.9196E-07	-52.938	-0.1474	-3.9305	-0.3869	-1.2495	-0.056139	2562.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
8	-4.8919E-06	-6.8500E-07	-52.838	-0.1463	-3.9238	-0.3838	-1.2497	-0.055713	2625.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
9	-5.1737E-06	-5.5138E-07	-68.719	-0.1426	-5.2049	-0.4304	-1.0418	-0.069623	2675.5	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
10	-4.9048E-06	-6.8688E-07	-53.257	-0.1470	-3.9539	-0.3869	-1.2492	-0.056283	2568.6	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
11	-4.9064E-06	-6.7879E-07	-53.274	-0.1458	-3.9563	-0.3842	-1.2490	-0.055962	2630.1	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.320	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
12	-5.1778E-06	-5.4616E-07	-69.427	-0.1424	-5.2635	-0.4320	-1.0282	-0.070171	2680.1	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
13	-5.0759E-06	-6.1777E-07	-60.523	-0.1445	-4.5260	-0.4077	-1.1885	-0.062456	2574.7	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	10.800	6.2400	18.720	10.320	24.000	0.0000	0.0000
14	-5.0615E-06	-6.1846E-07	-59.698	-0.1436	-4.4593	-0.4028	-1.1987	-0.061434	2634.8	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	10.800	6.4800	18.720	10.560	24.000	0.0000	0.0000
15	-5.2046E-06	-5.2737E-07	-72.662	-0.1425	-5.5306	-0.4418	-0.9695	-0.073107	2684.4	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 206 di 294

x( M)	12.960	9.3600	0.0000	15.120	10.080	6.4800	13.440	10.080	24.000	0.0000	0.0000
Min. Pile N.	-5.2046E-06	-6.9196E-07	-72.662	-0.1475	-5.5306	-0.4418	-1.2497	-0.073107	2550.7	7.8500E+06	7.8500E+06
	15	7	15	4	15	15	8	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.9868E-04	9.2960E-06	28.270	3.2727	20.981	0.033032	3.8611	0.089324	2722.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
2	1.9866E-04	9.3766E-06	27.931	3.2398	20.546	0.033438	3.7619	0.088141	2785.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
3	1.9864E-04	9.4572E-06	33.112	3.1257	27.540	0.10888	5.4335	0.1373	2880.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
4	1.9876E-04	9.3177E-06	26.969	3.2976	19.316	0.034670	3.4801	0.079491	2716.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
5	1.9874E-04	9.3983E-06	26.765	3.2622	19.054	0.035064	3.4214	0.079278	2779.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
6	1.9872E-04	9.4787E-06	32.160	3.1202	26.224	0.084136	5.1084	0.1283	2877.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
7	1.9884E-04	9.3392E-06	26.835	3.2906	19.142	0.034897	3.4400	0.078742	2721.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
8	1.9882E-04	9.4198E-06	26.802	3.2508	19.098	0.035047	3.4306	0.079833	2784.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
9	1.9880E-04	9.5004E-06	32.179	3.1126	26.247	0.088207	5.1132	0.1289	2881.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
10	1.9892E-04	9.3609E-06	26.940	3.2772	19.272	0.034769	3.4688	0.079819	2728.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
11	1.9890E-04	9.4413E-06	26.947	3.2363	19.279	0.034860	3.4709	0.081226	2790.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.0800	2.4000	0.0000	0.0000	0.0000
12	1.9888E-04	9.5219E-06	32.416	3.1043	26.572	0.098762	5.1919	0.1317	2888.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
13	1.9900E-04	9.3824E-06	29.407	3.1925	22.465	0.031979	4.2016	0.1001	2756.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.2400	0.0000	19.440	4.0800	2.4000	0.0000	0.0000	0.0000
14	1.9898E-04	9.4630E-06	29.133	3.1598	22.093	0.032277	4.1159	0.099381	2814.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.4800	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
15	1.9896E-04	9.5435E-06	33.520	3.0991	28.099	0.1360	5.5678	0.1433	2902.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
Max. Pile N.	1.9900E-04	9.5435E-06	33.520	3.2976	28.099	0.1360	5.5678	0.1433	2902.5	7.8500E+06	7.8500E+06
	13	15	15	4	15	15	15	15	15	1	1

LOAD CASE : 8  
CASE NAME : 8-8 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6023	1.0000
2	0.5287	1.0000
3	0.7326	1.0000
4	0.5456	1.0000
5	0.4812	1.0000
6	0.6810	1.0000
7	0.5392	1.0000
8	0.4827	1.0000
9	0.6825	1.0000
10	0.5580	1.0000
11	0.4992	1.0000
12	0.7042	1.0000
13	0.7469	1.0000
14	0.7008	1.0000
15	0.8695	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
76117.4	1376.48	-1240.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
9.28000E-11	-36241.7	-15463.2

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 207 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
3.17870E-03      7.51386E-04      -6.92614E-04

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
1.93431E-07      -4.50349E-05      -4.50596E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.5300E-03	7.4989E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
2	2.6824E-03	7.4971E-04	-6.9306E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
3	2.8257E-03	7.4948E-04	-6.9222E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
4	2.7872E-03	7.5077E-04	-6.9368E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
5	2.9305E-03	7.5054E-04	-6.9284E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
6	3.0738E-03	7.5032E-04	-6.9200E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
7	3.0349E-03	7.5161E-04	-6.9346E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
8	3.1787E-03	7.5139E-04	-6.9261E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
9	3.3225E-03	7.5116E-04	-6.9177E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
10	3.2836E-03	7.5245E-04	-6.9323E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
11	3.4269E-03	7.5223E-04	-6.9239E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
12	3.5702E-03	7.5200E-04	-6.9155E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
13	3.5317E-03	7.5329E-04	-6.9301E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
14	3.6750E-03	7.5307E-04	-6.9216E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
15	3.8274E-03	7.5288E-04	-6.9132E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
MINIMUM	2.5300E-03	7.4948E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	3.8274E-03	7.5329E-04	-6.9132E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4171.2	89.879	-81.366	0.2811	235.70	265.84
2	4421.1	82.485	-74.522	0.2811	219.89	248.84
3	4648.2	102.02	-92.232	0.2811	259.61	292.94
4	4593.2	84.338	-76.160	0.2811	223.84	253.38
5	4778.1	77.629	-69.964	0.2811	209.24	237.64
6	4955.7	97.393	-87.852	0.2811	250.00	282.97
7	4907.5	83.787	-75.517	0.2811	222.37	252.32
8	5085.7	77.878	-70.058	0.2811	209.48	238.44
9	5263.8	97.651	-87.924	0.2811	250.17	283.78
10	5215.6	85.790	-77.195	0.2811	226.26	257.18
11	5393.2	79.709	-71.586	0.2811	213.10	242.99
12	5570.8	99.782	-89.695	0.2811	254.09	288.73
13	5523.1	103.91	-93.484	0.2811	262.68	298.04
14	5700.7	99.635	-89.502	0.2811	253.82	288.65
15	5889.5	114.60	-102.94	0.2811	282.65	321.03
MINIMUM	4171.2	77.629	-102.94	0.2811	209.24	237.64
Pile N.	1	5	15	1	5	5
MAXIMUM	5889.5	114.60	-69.964	0.2811	282.65	321.03
Pile N.	15	15	5	1	15	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.5300E-03	7.4989E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
2	2.6824E-03	7.4971E-04	-6.9306E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
3	2.8257E-03	7.4948E-04	-6.9222E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
4	2.7872E-03	7.5077E-04	-6.9368E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
5	2.9305E-03	7.5054E-04	-6.9284E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
6	3.0738E-03	7.5032E-04	-6.9200E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
7	3.0349E-03	7.5161E-04	-6.9346E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
8	3.1787E-03	7.5139E-04	-6.9261E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
9	3.3225E-03	7.5116E-04	-6.9177E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
10	3.2836E-03	7.5245E-04	-6.9323E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
11	3.4269E-03	7.5223E-04	-6.9239E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
12	3.5702E-03	7.5200E-04	-6.9155E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
13	3.5317E-03	7.5329E-04	-6.9301E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
14	3.6750E-03	7.5307E-04	-6.9216E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
15	3.8274E-03	7.5288E-04	-6.9132E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
MINIMUM	2.5300E-03	7.4948E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	1	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 208 di 294

MAXIMUM 3.8274E-03 7.5329E-04 -6.9132E-04 1.9343E-07 -4.5035E-05 -4.5060E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4171.2	89.879	-81.366	0.2811	235.70	265.84
2	4421.1	82.485	-74.522	0.2811	219.89	248.84
3	4648.2	102.02	-92.232	0.2811	259.61	292.94
4	4593.2	84.338	-76.160	0.2811	223.84	253.38
5	4778.1	77.629	-69.964	0.2811	209.24	237.64
6	4955.7	97.393	-87.852	0.2811	250.00	282.97
7	4907.5	83.787	-75.517	0.2811	222.37	252.32
8	5085.7	77.878	-70.058	0.2811	209.48	238.44
9	5263.8	97.651	-87.924	0.2811	250.17	283.78
10	5215.6	85.790	-77.195	0.2811	226.26	257.18
11	5393.2	79.709	-71.586	0.2811	213.10	242.99
12	5570.8	99.782	-89.695	0.2811	254.09	288.73
13	5523.1	103.91	-93.484	0.2811	262.68	298.04
14	5700.7	99.635	-89.502	0.2811	253.82	288.65
15	5889.5	114.60	-102.94	0.2811	282.65	321.03
MINIMUM	4171.2	77.629	-102.94	0.2811	209.24	237.64
Pile N.	1	5	15	1	5	5
MAXIMUM	5889.5	114.60	-69.964	0.2811	282.65	321.03
Pile N.	15	15	5	1	15	15

PILE GROUP	STRESS, KN/ M**2
1	3426.3
2	3498.1
3	3804.6
4	3613.5
5	3653.7
6	3937.1
7	3786.0
8	3830.1
9	4113.6
10	3979.0
11	4021.5
12	4306.3
13	4317.3
14	4379.1
15	4615.9
MINIMUM	3426.3
Pile N.	1
MAXIMUM	4615.9
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.8702E-05	-6.9391E-04	-265.84	-100.74	-16.690	-81.382	-4.8612	-14.754	2360.4	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-1.8248E-05	-6.9307E-04	-248.84	-95.576	-15.440	-74.537	-4.9776	-13.199	2501.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
3	-1.9184E-05	-6.9222E-04	-292.94	-108.58	-18.805	-92.250	-4.4818	-17.325	2630.3	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
4	-1.8415E-05	-6.9368E-04	-253.38	-96.882	-15.757	-76.176	-4.9679	-13.564	2599.2	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.0800	24.000	0.0000	0.0000
5	-1.7902E-05	-6.9284E-04	-237.64	-92.157	-14.619	-69.979	-5.0067	-12.195	2703.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-1.9071E-05	-6.9200E-04	-282.97	-105.50	-18.012	-87.871	-4.6575	-16.298	2804.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
7	-1.8400E-05	-6.9346E-04	-252.32	-96.409	-15.670	-75.534	-4.9833	-13.424	2777.1	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-1.7951E-05	-6.9261E-04	-238.44	-92.253	-14.670	-70.074	-5.0147	-12.222	2877.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-1.9109E-05	-6.9177E-04	-283.78	-105.57	-18.067	-87.944	-4.6595	-16.322	2978.7	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
10	-1.8563E-05	-6.9323E-04	-257.18	-97.720	-16.031	-77.213	-4.9659	-13.814	2951.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.0800	24.000	0.0000	0.0000
11	-1.8140E-05	-6.9239E-04	-242.99	-93.444	-14.998	-71.603	-5.0203	-12.565	3051.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-1.9198E-05	-6.9155E-04	-288.73	-106.86	-18.451	-89.716	-4.5970	-16.746	3152.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
13	-1.9354E-05	-6.9301E-04	-298.04	-109.56	-19.146	-93.506	-4.4598	-17.626	3125.4	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
14	-1.9222E-05	-6.9216E-04	-288.65	-106.76	-18.427	-89.524	-4.6163	-16.696	3226.0	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
15	-1.9561E-05	-6.9132E-04	-321.03	-116.14	-20.995	-102.97	-3.9785	-19.975	3332.8	7.8500E+06	7.8500E+06



APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 209 di 294

x( M)	13.200	0.0000	0.0000	6.9600	10.320	0.0000	18.720	3.8400	24.000	0.0000	0.0000
Min. Pile N.	-1.9561E-05	-6.9391E-04	-321.03	-116.14	-20.995	-102.97	-5.0203	-19.975	2360.4	7.8500E+06	7.8500E+06
	15	1	15	15	15	15	11	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	7.4989E-04	1.7371E-05	108.92	235.70	89.896	15.425	16.171	4.4217	3426.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
2	7.4970E-04	1.6965E-05	103.45	219.89	82.502	14.247	14.495	4.5291	3498.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.6800	0.0000	0.0000	11.280	4.3200	18.720	0.0000	0.0000	0.0000
3	7.4948E-04	1.7766E-05	117.64	259.61	102.04	17.330	19.027	4.0573	3804.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
4	7.5077E-04	1.7093E-05	104.86	223.84	84.356	14.541	14.902	4.5158	3613.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.6800	0.0000	0.0000	11.280	4.3200	18.720	0.0000	0.0000	0.0000
5	7.5054E-04	1.6635E-05	99.816	209.24	77.647	13.476	13.417	4.5528	3653.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
6	7.5032E-04	1.7634E-05	114.39	250.00	97.414	16.591	17.931	4.2127	3937.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
7	7.5161E-04	1.7063E-05	104.52	222.37	83.806	14.441	14.777	4.5225	3786.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.6800	0.0000	0.0000	11.280	4.3200	18.720	0.0000	0.0000	0.0000
8	7.5139E-04	1.6656E-05	100.07	209.48	77.897	13.505	13.469	4.5521	3830.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
9	7.5116E-04	1.7643E-05	114.64	250.17	97.674	16.616	17.988	4.2069	4113.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
10	7.5245E-04	1.7172E-05	106.04	226.26	85.811	14.746	15.222	4.4970	3979.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.4400	0.0000	0.0000	11.280	4.3200	18.720	0.0000	0.0000	0.0000
11	7.5223E-04	1.6789E-05	101.54	213.10	79.729	13.783	13.871	4.5475	4021.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
12	7.5200E-04	1.7699E-05	116.24	254.09	99.807	16.937	18.486	4.1413	4306.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
13	7.5329E-04	1.7846E-05	119.19	262.68	103.93	17.579	19.447	4.0166	4317.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.560	4.0800	18.720	0.0000	0.0000	0.0000
14	7.5307E-04	1.7706E-05	116.19	253.82	99.660	16.907	18.442	4.1563	4379.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
15	7.5288E-04	1.7995E-05	126.57	282.65	114.63	19.248	22.068	3.5659	4615.9	7.8500E+06	7.8500E+06
x( M)	0.0000	12.960	6.9600	0.0000	0.0000	10.320	3.8400	18.720	0.0000	0.0000	0.0000
Max. Pile N.	7.5329E-04	1.7995E-05	126.57	282.65	114.63	19.248	22.068	4.5528	4615.9	7.8500E+06	7.8500E+06
	13	15	15	15	15	15	15	5	15	1	1

LOAD CASE : 9  
CASE NAME : 9-9 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8519	1.0000
2	0.7837	1.0000
3	0.8659	1.0000
4	0.5582	1.0000
5	0.4963	1.0000
6	0.6265	1.0000
7	0.5232	1.0000
8	0.4689	1.0000
9	0.5955	1.0000
10	0.5200	1.0000
11	0.4676	1.0000
12	0.6018	1.0000
13	0.5627	1.0000
14	0.5058	1.0000
15	0.6514	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
56801.9	235.727	1825.00
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53200E-11	27335.6	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 210 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.29580E-03      1.94601E-04      9.38207E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.32253E-06      3.89558E-05      -2.55962E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.4256E-03	1.8439E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
2	2.5747E-03	1.8311E-04	9.3512E-04	1.3225E-06	3.8956E-05	-2.5596E-05
3	2.7316E-03	1.8156E-04	9.4088E-04	1.3225E-06	3.8956E-05	-2.5596E-05
4	2.2787E-03	1.9039E-04	9.3092E-04	1.3225E-06	3.8956E-05	-2.5596E-05
5	2.4356E-03	1.8885E-04	9.3667E-04	1.3225E-06	3.8956E-05	-2.5596E-05
6	2.5919E-03	1.8731E-04	9.4241E-04	1.3225E-06	3.8956E-05	-2.5596E-05
7	2.1393E-03	1.9614E-04	9.3245E-04	1.3225E-06	3.8956E-05	-2.5596E-05
8	2.2958E-03	1.9460E-04	9.3821E-04	1.3225E-06	3.8956E-05	-2.5596E-05
9	2.4523E-03	1.9307E-04	9.4396E-04	1.3225E-06	3.8956E-05	-2.5596E-05
10	1.9998E-03	2.0189E-04	9.3400E-04	1.3225E-06	3.8956E-05	-2.5596E-05
11	2.1560E-03	2.0035E-04	9.3974E-04	1.3225E-06	3.8956E-05	-2.5596E-05
12	2.3130E-03	1.9881E-04	9.4549E-04	1.3225E-06	3.8956E-05	-2.5596E-05
13	1.8600E-03	2.0764E-04	9.3554E-04	1.3225E-06	3.8956E-05	-2.5596E-05
14	2.0169E-03	2.0609E-04	9.4129E-04	1.3225E-06	3.8956E-05	-2.5596E-05
15	2.1661E-03	2.0481E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
MINIMUM	1.8600E-03	1.8156E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.7316E-03	2.0764E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3999.7	18.711	150.11	1.9216	-447.26	29.741
2	4244.5	17.310	143.40	1.9216	-433.99	26.636
3	4502.0	18.402	153.79	1.9216	-457.79	28.459
4	3758.6	14.309	115.09	1.9216	-369.13	21.996
5	4016.2	12.825	107.57	1.9216	-352.46	18.474
6	4272.6	15.173	125.58	1.9216	-395.64	23.204
7	3529.9	14.404	110.69	1.9216	-359.00	23.376
8	3786.8	13.013	103.98	1.9216	-344.03	20.022
9	4043.7	15.454	121.86	1.9216	-387.34	25.033
10	3301.0	15.142	110.49	1.9216	-358.75	26.146
11	3557.4	13.740	104.01	1.9216	-344.31	22.755
12	3814.9	16.458	122.92	1.9216	-390.02	28.391
13	3071.6	16.936	116.41	1.9216	-372.90	31.229
14	3329.1	15.400	109.57	1.9216	-357.87	27.563
15	3573.9	18.451	129.53	1.9216	-405.35	33.914
MINIMUM	3071.6	12.825	103.98	1.9216	-457.79	18.474
Pile N.	13	5	8	1	3	5
MAXIMUM	4502.0	18.711	153.79	1.9216	-344.03	33.914
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.4256E-03	1.8439E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
2	2.5747E-03	1.8311E-04	9.3512E-04	1.3225E-06	3.8956E-05	-2.5596E-05
3	2.7316E-03	1.8156E-04	9.4088E-04	1.3225E-06	3.8956E-05	-2.5596E-05
4	2.2787E-03	1.9039E-04	9.3092E-04	1.3225E-06	3.8956E-05	-2.5596E-05
5	2.4356E-03	1.8885E-04	9.3667E-04	1.3225E-06	3.8956E-05	-2.5596E-05
6	2.5919E-03	1.8731E-04	9.4241E-04	1.3225E-06	3.8956E-05	-2.5596E-05
7	2.1393E-03	1.9614E-04	9.3245E-04	1.3225E-06	3.8956E-05	-2.5596E-05
8	2.2958E-03	1.9460E-04	9.3821E-04	1.3225E-06	3.8956E-05	-2.5596E-05
9	2.4523E-03	1.9307E-04	9.4396E-04	1.3225E-06	3.8956E-05	-2.5596E-05
10	1.9998E-03	2.0189E-04	9.3400E-04	1.3225E-06	3.8956E-05	-2.5596E-05
11	2.1560E-03	2.0035E-04	9.3974E-04	1.3225E-06	3.8956E-05	-2.5596E-05
12	2.3130E-03	1.9881E-04	9.4549E-04	1.3225E-06	3.8956E-05	-2.5596E-05
13	1.8600E-03	2.0764E-04	9.3554E-04	1.3225E-06	3.8956E-05	-2.5596E-05
14	2.0169E-03	2.0609E-04	9.4129E-04	1.3225E-06	3.8956E-05	-2.5596E-05
15	2.1661E-03	2.0481E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
MINIMUM	1.8600E-03	1.8156E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 211 di 294

MAXIMUM	2.7316E-03	2.0764E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3999.7	18.711	150.11	1.9216	-447.26	29.741
2	4244.5	17.310	143.40	1.9216	-433.99	26.636
3	4502.0	18.402	153.79	1.9216	-457.79	28.459
4	3758.6	14.309	115.09	1.9216	-369.13	21.996
5	4016.2	12.825	107.57	1.9216	-352.46	18.474
6	4272.6	15.173	125.58	1.9216	-395.64	23.204
7	3529.9	14.404	110.69	1.9216	-359.00	23.376
8	3786.8	13.013	103.98	1.9216	-344.03	20.022
9	4043.7	15.454	121.86	1.9216	-387.34	25.033
10	3301.0	15.142	110.49	1.9216	-358.75	26.146
11	3557.4	13.740	104.01	1.9216	-344.31	22.755
12	3814.9	16.458	122.92	1.9216	-390.02	28.391
13	3071.6	16.936	116.41	1.9216	-372.90	31.229
14	3329.1	15.400	109.57	1.9216	-357.87	27.563
15	3573.9	18.451	129.53	1.9216	-405.35	33.914
MINIMUM	3071.6	12.825	103.98	1.9216	-457.79	18.474
Pile N.	13	5	8	1	3	5
MAXIMUM	4502.0	18.711	153.79	1.9216	-344.03	33.914
Pile N.	3	1	3	1	8	15

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	3608.1
2	3706.3
3	3923.6
4	3236.3
5	3331.5
6	3606.8
7	3076.8
8	3176.7
9	3452.7
10	2947.1
11	3048.3
12	3332.0
13	2860.8
14	2960.7
15	3242.7
MINIMUM	2860.8
Pile N.	13
MAXIMUM	3923.6
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.2037E-06	-2.3960E-05	-29.741	-447.26	-5.1750	-25.764	-0.8954	-5.4001	2263.4	7.8500E+06	7.8500E+06
x(M)	12.240	13.200	0.0000	0.0000	9.3600	10.560	12.720	18.720	24.000	0.0000	0.0000
2	-5.1909E-06	-2.3959E-05	-26.636	-433.99	-4.9093	-24.662	-0.8321	-5.7757	2401.9	7.8500E+06	7.8500E+06
x(M)	12.240	13.440	0.0000	0.0000	9.6000	10.800	12.960	18.720	24.000	0.0000	0.0000
3	-5.1460E-06	-2.4324E-05	-28.459	-457.79	-5.1616	-26.376	-0.8959	-5.4055	2547.6	7.8500E+06	7.8500E+06
x(M)	12.240	13.200	0.0000	0.0000	9.3600	10.560	12.720	18.720	24.000	0.0000	0.0000
4	-5.3369E-06	-2.2609E-05	-21.996	-369.13	-4.1806	-19.975	-0.9416	-6.5093	2127.0	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.080	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-5.3022E-06	-2.2119E-05	-18.474	-352.46	-3.8923	-18.744	-0.9663	-6.5974	2272.7	7.8500E+06	7.8500E+06
x(M)	13.200	14.640	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-5.2921E-06	-2.3422E-05	-23.204	-395.64	-4.4066	-21.704	-0.8667	-6.4497	2417.8	7.8500E+06	7.8500E+06
x(M)	12.720	14.160	0.0000	0.0000	9.8400	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-5.4229E-06	-2.2281E-05	-23.376	-359.00	-4.1275	-19.238	-1.0091	-6.5567	1997.5	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-5.3780E-06	-2.1760E-05	-20.022	-344.03	-3.8576	-18.150	-1.0240	-6.5890	2142.9	7.8500E+06	7.8500E+06
x(M)	13.440	14.880	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-5.3957E-06	-2.3250E-05	-25.033	-387.34	-4.3882	-21.064	-0.9360	-6.5421	2288.3	7.8500E+06	7.8500E+06
x(M)	12.960	14.160	0.0000	0.0000	10.080	11.520	18.720	18.720	24.000	0.0000	0.0000
10	-5.5182E-06	-2.2263E-05	-26.146	-358.75	-4.2091	-19.193	-1.0564	-6.5695	1868.0	7.8500E+06	7.8500E+06
x(M)	13.440	14.400	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.4588E-06	-2.1766E-05	-22.755	-344.31	-3.9421	-18.142	-1.0694	-6.5980	2013.1	7.8500E+06	7.8500E+06
x(M)	13.440	14.880	0.0000	0.0000	10.560	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-5.4964E-06	-2.3323E-05	-28.391	-390.02	-4.5210	-21.225	-0.9763	-6.5385	2158.8	7.8500E+06	7.8500E+06
x(M)	12.960	14.160	0.0000	0.0000	10.320	11.760	18.720	18.720	24.000	0.0000	0.0000
13	-5.6403E-06	-2.2718E-05	-31.229	-372.90	-4.5093	-20.151	-1.0748	-6.5360	1738.2	7.8500E+06	7.8500E+06
x(M)	13.200	14.400	0.0000	0.0000	10.320	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-5.5850E-06	-2.2294E-05	-27.563	-357.87	-4.2169	-19.033	-1.0974	-6.6309	1883.9	7.8500E+06	7.8500E+06
x(M)	13.440	14.640	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-5.6209E-06	-2.3669E-05	-33.914	-405.35	-4.8527	-22.304	-0.9817	-6.4063	2022.4	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 212 di 294

x( M)	12.960	13.920	0.0000	0.0000	10.080	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.6403E-06 13	-2.4324E-05 3	-33.914 15	-457.79 3	-5.1750 1	-26.376 3	-1.0974 14	-6.6309 14	1738.2 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.8439E-04	9.2937E-04	32.275	155.62	18.713	150.14	4.2262	28.095	3608.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	5.7600	7.2000	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
2	1.8311E-04	9.3513E-04	31.175	151.38	17.311	143.43	3.8843	26.426	3706.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	5.7600	7.2000	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
3	1.8156E-04	9.4088E-04	32.086	158.63	18.404	153.82	4.1947	28.861	3923.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	5.7600	7.2000	0.0000	0.0000	3.3600	4.0800	0.0000	0.0000	0.0000
4	1.9040E-04	9.3092E-04	28.536	131.69	14.311	115.11	3.0408	19.884	3236.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
5	1.8885E-04	9.3667E-04	27.275	126.60	12.826	107.59	2.7052	18.165	3331.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	1.8731E-04	9.4241E-04	29.348	139.68	15.175	125.60	3.2923	22.159	3606.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
7	1.9614E-04	9.3245E-04	28.528	128.65	14.405	110.71	2.9964	18.883	3076.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	1.9460E-04	9.3821E-04	27.322	123.98	13.014	104.00	2.6883	17.364	3176.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	0.0000	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
9	1.9307E-04	9.4396E-04	29.486	137.12	15.455	121.88	3.2866	21.298	3452.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
10	2.0189E-04	9.3400E-04	29.087	128.54	15.143	110.51	3.1071	18.822	2947.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	2.0035E-04	9.3974E-04	27.886	124.03	13.742	104.03	2.7973	17.355	3048.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
12	1.9881E-04	9.4549E-04	30.271	137.91	16.459	122.95	3.4583	21.521	3332.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.3200	0.0000	0.0000	0.0000
13	2.0764E-04	9.3554E-04	30.578	132.75	16.937	116.43	3.4668	20.128	2860.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	2.0609E-04	9.4129E-04	29.283	128.16	15.401	109.59	3.1232	18.558	2960.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	2.0481E-04	9.4704E-04	31.882	142.47	18.453	129.55	3.8687	23.006	3242.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.6800	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.0764E-04 13	9.4704E-04 15	32.275 1	158.63 3	18.713 1	153.82 3	4.2262 1	28.861 3	3923.6 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 10  
CASE NAME : 10-10 SLU STR  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6018	1.0000
2	0.5781	1.0000
3	0.8536	1.0000
4	0.5090	1.0000
5	0.4939	1.0000
6	0.7775	1.0000
7	0.4991	1.0000
8	0.4925	1.0000
9	0.7756	1.0000
10	0.5028	1.0000
11	0.4983	1.0000
12	0.7889	1.0000
13	0.6216	1.0000
14	0.6031	1.0000
15	0.8566	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 77161.1	HOR. LOAD Y, KN 3825.72	HOR. LOAD Z, KN 1248.30
MOMENT X, KN- M 3.86900E-10	MOMENT Y, KN- M 20395.5	MOMENT Z, KN- M -50313.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 213 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 3.28767E-03      2.42876E-03      7.79455E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 -1.59147E-06      6.93778E-05      -2.24521E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3235E-03	2.4411E-03	7.9009E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
2	3.3674E-03	2.4426E-03	7.8316E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
3	4.4253E-03	2.4444E-03	7.7624E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
4	2.2712E-03	2.4338E-03	7.8822E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
5	3.3290E-03	2.4357E-03	7.8130E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
6	4.3839E-03	2.4375E-03	7.7439E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
7	2.2305E-03	2.4269E-03	7.8638E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
8	3.2877E-03	2.4288E-03	7.7945E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
9	4.3448E-03	2.4306E-03	7.7253E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
10	2.1914E-03	2.4200E-03	7.8452E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
11	3.2463E-03	2.4218E-03	7.7761E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
12	4.3042E-03	2.4237E-03	7.7069E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
13	2.1501E-03	2.4131E-03	7.8267E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
14	3.2079E-03	2.4149E-03	7.7575E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
15	4.2519E-03	2.4165E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
MINIMUM	2.1501E-03	2.4131E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.4253E-03	2.4444E-03	7.9009E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3832.2	250.51	82.857	-2.3124	-212.48	625.16
2	5319.5	243.46	79.446	-2.3124	-203.85	610.92
3	6630.4	318.95	102.47	-2.3124	-252.38	774.83
4	3746.4	221.86	73.535	-2.3124	-191.04	559.18
5	5271.9	217.14	70.970	-2.3124	-184.21	549.88
6	6579.2	297.84	95.789	-2.3124	-237.91	728.96
7	3679.7	217.89	72.291	-2.3124	-187.81	548.74
8	5220.7	215.78	70.583	-2.3124	-182.96	545.42
9	6530.7	296.11	95.298	-2.3124	-236.44	723.72
10	3615.5	218.12	72.422	-2.3124	-187.75	547.91
11	5169.5	216.63	70.913	-2.3124	-183.36	546.03
12	6480.3	298.41	96.100	-2.3124	-237.72	727.00
13	3547.6	251.93	83.593	-2.3124	-212.55	622.39
14	5121.9	246.58	80.690	-2.3124	-205.09	612.15
15	6415.5	314.51	101.34	-2.3124	-248.27	758.99
MINIMUM	3547.6	215.78	70.583	-2.3124	-252.38	545.42
Pile N.	13	8	8	1	3	8
MAXIMUM	6630.4	318.95	102.47	-2.3124	-182.96	774.83
Pile N.	3	3	3	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.3235E-03	2.4411E-03	7.9009E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
2	3.3674E-03	2.4426E-03	7.8316E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
3	4.4253E-03	2.4444E-03	7.7624E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
4	2.2712E-03	2.4338E-03	7.8822E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
5	3.3290E-03	2.4357E-03	7.8130E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
6	4.3839E-03	2.4375E-03	7.7439E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
7	2.2305E-03	2.4269E-03	7.8638E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
8	3.2877E-03	2.4288E-03	7.7945E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
9	4.3448E-03	2.4306E-03	7.7253E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
10	2.1914E-03	2.4200E-03	7.8452E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
11	3.2463E-03	2.4218E-03	7.7761E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
12	4.3042E-03	2.4237E-03	7.7069E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
13	2.1501E-03	2.4131E-03	7.8267E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
14	3.2079E-03	2.4149E-03	7.7575E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
15	4.2519E-03	2.4165E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
MINIMUM	2.1501E-03	2.4131E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	13	13	15	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 214 di 294

MAXIMUM 4.4253E-03 2.4444E-03 7.9009E-04 -1.5915E-06 6.9378E-05 -2.2452E-04  
Pile N. 3 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3832.2	250.51	82.857	-2.3124	-212.48	625.16
2	5319.5	243.46	79.446	-2.3124	-203.85	610.92
3	6630.4	318.95	102.47	-2.3124	-252.38	774.83
4	3746.4	221.86	73.535	-2.3124	-191.04	559.18
5	5271.9	217.14	70.970	-2.3124	-184.21	549.88
6	6579.2	297.84	95.789	-2.3124	-237.91	728.96
7	3679.7	217.89	72.291	-2.3124	-187.81	548.74
8	5220.7	215.78	70.583	-2.3124	-182.96	545.42
9	6530.7	296.11	95.298	-2.3124	-236.44	723.72
10	3615.5	218.12	72.422	-2.3124	-187.75	547.91
11	5169.5	216.63	70.913	-2.3124	-183.36	546.03
12	6480.3	298.41	96.100	-2.3124	-237.72	727.00
13	3547.6	251.93	83.593	-2.3124	-212.55	622.39
14	5121.9	246.58	80.690	-2.3124	-205.09	612.15
15	6415.5	314.51	101.34	-2.3124	-248.27	758.99
MINIMUM	3547.6	215.78	70.583	-2.3124	-252.38	545.42
Pile N.	13	8	8	1	3	8
MAXIMUM	6630.4	318.95	102.47	-2.3124	-182.96	774.83
Pile N.	3	3	3	1	8	3

PILE GROUP	STRESS, KN/ M**2
1	4149.4
2	4942.3
3	6196.8
4	3892.8
5	4723.1
6	6023.4
7	3822.2
8	4680.2
9	5979.7
10	3783.5
11	4653.3
12	5961.7
13	3980.6
14	4835.2
15	6026.2
MINIMUM	3783.5
Pile N.	10
MAXIMUM	6196.8
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.2840E-05	-2.0236E-05	-625.16	-212.48	-54.127	-17.510	-14.042	-4.6204	2168.6	7.8500E+06	7.8500E+06
x( M)	13.680	13.680	0.0000	10.800	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
2	-6.2854E-05	-2.0054E-05	-610.92	-203.85	-53.023	-16.987	-14.247	-4.6268	3010.2	7.8500E+06	7.8500E+06
x( M)	13.680	13.680	0.0000	10.800	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
3	-6.4697E-05	-2.0491E-05	-774.83	-252.38	-67.138	-21.315	-11.673	-3.7058	3752.0	7.8500E+06	7.8500E+06
x( M)	12.720	12.720	0.0000	10.800	10.800	10.800	13.200	13.440	24.000	0.0000	0.0000
4	-6.1385E-05	-1.9722E-05	-559.18	-191.04	-48.851	-15.799	-14.566	-4.7870	2120.0	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	10.800	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
5	-6.1337E-05	-1.9556E-05	-549.88	-184.21	-48.151	-15.427	-14.648	-4.7529	2983.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	11.040	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
6	-6.4330E-05	-2.0381E-05	-728.96	-237.91	-63.280	-20.103	-12.166	-3.9122	3723.1	7.8500E+06	7.8500E+06
x( M)	12.960	12.960	0.0000	10.320	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
7	-6.1023E-05	-1.9615E-05	-548.74	-187.81	-48.140	-15.575	-14.547	-4.7831	2082.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	11.040	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
8	-6.1155E-05	-1.9506E-05	-545.42	-182.96	-47.932	-15.364	-14.598	-4.7395	2954.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	11.040	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
9	-6.4149E-05	-2.0331E-05	-723.72	-236.44	-63.003	-20.023	-12.140	-3.9064	3695.6	7.8500E+06	7.8500E+06
x( M)	12.960	12.960	0.0000	10.320	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
10	-6.0953E-05	-1.9591E-05	-547.91	-187.75	-48.220	-15.607	-14.479	-4.7642	2046.0	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	11.040	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
11	-6.1138E-05	-1.9493E-05	-546.03	-183.36	-48.133	-15.434	-14.524	-4.7191	2925.3	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	11.040	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
12	-6.4039E-05	-2.0309E-05	-727.00	-237.72	-63.447	-20.176	-11.927	-3.8412	3667.1	7.8500E+06	7.8500E+06
x( M)	12.960	12.960	0.0000	10.320	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
13	-6.2388E-05	-2.0104E-05	-622.39	-212.55	-54.516	-17.673	-13.654	-4.5085	2007.6	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	10.560	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
14	-6.2428E-05	-1.9968E-05	-612.15	-205.09	-53.734	-17.254	-13.832	-4.5064	2898.4	7.8500E+06	7.8500E+06
x( M)	13.680	13.680	0.0000	10.800	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
15	-6.4014E-05	-2.0311E-05	-758.99	-248.27	-66.491	-21.150	-11.572	-3.6802	3630.5	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 215 di 294

x( M)	12.720	12.720	0.0000	0.0000	10.080	10.080	13.200	13.200	24.000	0.0000	0.0000
Min. Pile N.	-6.4697E-05 3	-2.0491E-05 3	-774.83 3	-252.38 3	-67.138 3	-21.315 3	-14.648 5	-4.7870 4	2007.6 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.4410E-03	7.9009E-04	356.85	115.23	250.54	82.869	47.743	15.655	4149.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	0.0000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
2	2.4426E-03	7.8316E-04	351.82	112.56	243.51	79.463	46.156	14.957	4942.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	0.0000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	2.4445E-03	7.7624E-04	409.33	129.86	319.03	102.50	64.456	20.618	6196.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	2.4338E-03	7.8822E-04	333.71	107.81	221.89	73.546	41.213	13.530	3892.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	2.4357E-03	7.8130E-04	330.46	105.77	217.18	70.984	40.195	13.035	4723.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	2.4375E-03	7.7439E-04	393.83	124.99	297.92	95.813	59.342	18.994	6023.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	2.4269E-03	7.8638E-04	330.36	106.76	217.92	72.301	40.373	13.264	3822.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	2.4288E-03	7.7946E-04	329.22	105.42	215.82	70.598	39.949	12.964	4680.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	2.4306E-03	7.7253E-04	392.36	124.58	296.18	95.322	59.001	18.896	5979.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	2.4200E-03	7.8452E-04	330.40	106.83	218.15	72.432	40.486	13.310	3783.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	2.4218E-03	7.7761E-04	329.77	105.65	216.67	70.927	40.202	13.055	4653.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	2.4237E-03	7.7069E-04	393.85	125.12	298.48	96.123	59.648	19.115	5961.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	2.4131E-03	7.8267E-04	357.29	115.63	251.96	83.605	48.377	15.900	3980.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	0.0000	0.0000	0.0000	3.8400	0.0000	0.0000	0.0000	0.0000
14	2.4149E-03	7.7575E-04	353.72	113.40	246.63	80.706	47.166	15.316	4835.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	0.0000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
15	2.4165E-03	7.6882E-04	405.41	128.80	314.58	101.36	63.719	20.429	6026.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	6.7200	0.0000	0.0000	3.6000	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	2.4445E-03 3	7.9009E-04 1	409.33 3	129.86 3	319.03 3	102.50 3	64.456 3	20.618 3	6196.8 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 11  
CASE NAME : 11-1 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5964	1.0000
2	0.5738	1.0000
3	0.8534	1.0000
4	0.5081	1.0000
5	0.4939	1.0000
6	0.7799	1.0000
7	0.4986	1.0000
8	0.4929	1.0000
9	0.7784	1.0000
10	0.5025	1.0000
11	0.4988	1.0000
12	0.7918	1.0000
13	0.6225	1.0000
14	0.6046	1.0000
15	0.8598	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
53059.7	13267.6	3851.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5196.70	51545.5	-1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 216 di 294

VERTICAL , M          HORIZONTAL Y, M          HORIZONTAL Z, M  
2.39401E-03          8.25718E-03          2.40305E-03

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
3.68687E-05          1.89525E-04          -6.32852E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-3.7031E-04	7.9726E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
2	2.5664E-03	7.9368E-03	2.3172E-03	3.6869E-05	1.8953E-04	-6.3285E-04
3	5.5411E-03	7.8937E-03	2.4775E-03	3.6869E-05	1.8953E-04	-6.3285E-04
4	-4.9032E-04	8.1399E-03	2.1999E-03	3.6869E-05	1.8953E-04	-6.3285E-04
5	2.4843E-03	8.0968E-03	2.3603E-03	3.6869E-05	1.8953E-04	-6.3285E-04
6	5.4508E-03	8.0540E-03	2.5203E-03	3.6869E-05	1.8953E-04	-6.3285E-04
7	-5.7875E-04	8.3000E-03	2.2427E-03	3.6869E-05	1.8953E-04	-6.3285E-04
8	2.3940E-03	8.2572E-03	2.4030E-03	3.6869E-05	1.8953E-04	-6.3285E-04
9	5.3668E-03	8.2144E-03	2.5634E-03	3.6869E-05	1.8953E-04	-6.3285E-04
10	-6.6274E-04	8.4603E-03	2.2858E-03	3.6869E-05	1.8953E-04	-6.3285E-04
11	2.3037E-03	8.4176E-03	2.4458E-03	3.6869E-05	1.8953E-04	-6.3285E-04
12	5.2783E-03	8.3744E-03	2.6062E-03	3.6869E-05	1.8953E-04	-6.3285E-04
13	-7.5307E-04	8.6207E-03	2.3286E-03	3.6869E-05	1.8953E-04	-6.3285E-04
14	2.2216E-03	8.5776E-03	2.4890E-03	3.6869E-05	1.8953E-04	-6.3285E-04
15	5.1583E-03	8.5418E-03	2.6493E-03	3.6869E-05	1.8953E-04	-6.3285E-04
MINIMUM	-7.5307E-04	7.8937E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.5411E-03	8.6207E-03	2.6493E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-572.73	832.72	215.60	53.570	-558.96	2273.2
2	4230.9	801.21	231.44	53.570	-629.30	2204.9
3	7640.3	1046.8	334.14	53.570	-895.51	2757.9
4	-758.33	757.82	195.74	53.570	-520.49	2127.5
5	4096.2	733.38	211.34	53.570	-589.63	2073.3
6	7592.8	1005.5	319.64	53.570	-873.37	2703.5
7	-892.95	761.29	196.73	53.570	-530.66	2164.8
8	3948.0	745.95	214.51	53.570	-605.02	2132.5
9	7548.6	1024.4	324.36	53.570	-893.39	2780.8
10	-1020.7	779.23	201.57	53.570	-550.10	2237.0
11	3799.7	765.97	219.84	53.570	-625.64	2209.9
12	7502.1	1055.9	332.98	53.570	-921.98	2885.8
13	-1158.1	923.64	239.69	53.570	-648.35	2610.8
14	3665.0	894.55	256.50	53.570	-721.19	2547.0
15	7439.0	1139.1	357.41	53.570	-985.84	3107.2
MINIMUM	-1158.1	733.38	195.74	53.570	-985.84	2073.3
Pile N.	13	5	4	1	15	5
MAXIMUM	7640.3	1139.1	357.41	53.570	-520.49	3107.2
Pile N.	3	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-3.7031E-04	7.9726E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
2	2.5664E-03	7.9368E-03	2.3172E-03	3.6869E-05	1.8953E-04	-6.3285E-04
3	5.5411E-03	7.8937E-03	2.4775E-03	3.6869E-05	1.8953E-04	-6.3285E-04
4	-4.9032E-04	8.1399E-03	2.1999E-03	3.6869E-05	1.8953E-04	-6.3285E-04
5	2.4843E-03	8.0968E-03	2.3603E-03	3.6869E-05	1.8953E-04	-6.3285E-04
6	5.4508E-03	8.0540E-03	2.5203E-03	3.6869E-05	1.8953E-04	-6.3285E-04
7	-5.7875E-04	8.3000E-03	2.2427E-03	3.6869E-05	1.8953E-04	-6.3285E-04
8	2.3940E-03	8.2572E-03	2.4030E-03	3.6869E-05	1.8953E-04	-6.3285E-04
9	5.3668E-03	8.2144E-03	2.5634E-03	3.6869E-05	1.8953E-04	-6.3285E-04
10	-6.6274E-04	8.4603E-03	2.2858E-03	3.6869E-05	1.8953E-04	-6.3285E-04
11	2.3037E-03	8.4176E-03	2.4458E-03	3.6869E-05	1.8953E-04	-6.3285E-04
12	5.2783E-03	8.3744E-03	2.6062E-03	3.6869E-05	1.8953E-04	-6.3285E-04
13	-7.5307E-04	8.6207E-03	2.3286E-03	3.6869E-05	1.8953E-04	-6.3285E-04
14	2.2216E-03	8.5776E-03	2.4890E-03	3.6869E-05	1.8953E-04	-6.3285E-04
15	5.1583E-03	8.5418E-03	2.6493E-03	3.6869E-05	1.8953E-04	-6.3285E-04
MINIMUM	-7.5307E-04	7.8937E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	13	3	1	1	1	1



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 217 di 294

MAXIMUM 5.5411E-03 8.6207E-03 2.6493E-03 3.6869E-05 1.8953E-04 -6.3285E-04  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-572.73	832.72	215.60	53.570	-558.96	2273.2
2	4230.9	801.21	231.44	53.570	-629.30	2204.9
3	7640.3	1046.8	334.14	53.570	-895.51	2757.9
4	-758.33	757.82	195.74	53.570	-520.49	2127.5
5	4096.2	733.38	211.34	53.570	-589.63	2073.3
6	7592.8	1005.5	319.64	53.570	-873.37	2703.5
7	-892.95	761.29	196.73	53.570	-530.66	2164.8
8	3948.0	745.95	214.51	53.570	-605.02	2132.5
9	7548.6	1024.4	324.36	53.570	-893.39	2780.8
10	-1020.7	779.23	201.57	53.570	-550.10	2237.0
11	3799.7	765.97	219.84	53.570	-625.64	2209.9
12	7502.1	1055.9	332.98	53.570	-921.98	2885.8
13	-1158.1	923.64	239.69	53.570	-648.35	2610.8
14	3665.0	894.55	256.50	53.570	-721.19	2547.0
15	7439.0	1139.1	357.41	53.570	-985.84	3107.2

MINIMUM -1158.1 733.38 195.74 53.570 -985.84 2073.3  
Pile N. 13 5 4 1 15 5  
MAXIMUM 7640.3 1139.1 357.41 53.570 -520.49 3107.2  
Pile N. 3 15 15 1 4 15

PILE GROUP	STRESS, KN/ M**2
1	7346.8
2	9272.9
3	1.3023E+04
4	7000.0
5	8784.4
6	1.2820E+04
7	7192.0
8	8884.2
9	1.3034E+04
10	7488.7
11	9040.5
12	1.3334E+04
13	8725.7
14	1.0015E+04
15	1.3989E+04

MINIMUM 7000.0  
Pile N. 4  
MAXIMUM 1.3989E+04  
Pile N. 15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.9524E-04	-5.3326E-05	-2273.2	-558.96	-171.73	-46.421	-48.707	-12.757	324.10	7.8500E+06	7.8500E+06
x( M)	13.920	13.680	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
2	-1.9528E-04	-5.7152E-05	-2204.9	-629.30	-168.23	-49.114	-49.029	-14.206	2394.2	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
3	-2.0539E-04	-6.4311E-05	-2757.9	-895.51	-215.39	-67.657	-38.961	-12.448	4323.5	7.8500E+06	7.8500E+06
x( M)	12.960	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
4	-1.9123E-04	-5.2359E-05	-2127.5	-520.49	-158.23	-42.738	-51.548	-13.545	429.13	7.8500E+06	7.8500E+06
x( M)	14.400	14.160	0.0000	0.0000	11.520	11.280	18.720	18.720	24.000	0.0000	0.0000
5	-1.9151E-04	-5.5984E-05	-2073.3	-589.63	-156.06	-45.475	-51.465	-14.898	2318.0	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
6	-2.0721E-04	-6.4687E-05	-2703.5	-873.37	-207.34	-64.942	-43.309	-13.760	4296.7	7.8500E+06	7.8500E+06
x( M)	13.200	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
7	-1.9280E-04	-5.2668E-05	-2164.8	-530.66	-159.07	-42.922	-52.956	-13.926	505.31	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
8	-1.9380E-04	-5.6573E-05	-2132.5	-605.02	-158.53	-46.121	-52.827	-15.264	2234.1	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
9	-2.1031E-04	-6.5482E-05	-2780.8	-893.39	-210.82	-65.844	-44.686	-14.140	4271.6	7.8500E+06	7.8500E+06
x( M)	13.200	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
10	-1.9554E-04	-5.3390E-05	-2237.0	-550.10	-162.51	-43.841	-54.301	-14.285	577.62	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-1.9675E-04	-5.7340E-05	-2209.9	-625.64	-162.37	-47.158	-54.168	-15.621	2150.2	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
12	-2.1373E-04	-6.6392E-05	-2885.8	-921.98	-216.72	-67.503	-45.456	-14.329	4245.3	7.8500E+06	7.8500E+06
x( M)	13.200	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
13	-2.0757E-04	-5.6430E-05	-2610.8	-648.35	-188.65	-50.882	-53.716	-14.073	655.37	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
14	-2.0773E-04	-6.0414E-05	-2547.0	-721.19	-185.72	-53.876	-53.942	-15.514	2074.0	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	0.0000	11.280	11.040	18.720	18.720	24.000	0.0000	0.0000
15	-2.1840E-04	-6.7689E-05	-3107.2	-985.84	-232.21	-72.061	-43.766	-13.740	4209.6	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 218 di 294

x( M)	12.960	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-2.1840E-04	-6.7689E-05	-3107.2	-985.84	-232.21	-72.061	-54.301	-15.621	324.10	7.8500E+06	7.8500E+06
	15	15	15	15	15	15	10	11	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	7.9726E-03	2.1568E-03	1132.6	307.25	832.70	215.60	162.13	42.711	7346.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
2	7.9368E-03	2.3171E-03	1112.0	324.83	801.36	231.48	155.97	45.246	9272.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	7.8937E-03	2.4775E-03	1306.2	409.62	1047.1	334.24	216.00	68.506	1.3023E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	8.1399E-03	2.1999E-03	1078.0	292.22	757.80	195.73	143.38	37.757	7000.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	3.8400	0.0000	0.0000	0.0000
5	8.0968E-03	2.3603E-03	1063.0	309.95	733.51	211.38	138.66	40.150	8784.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	8.0540E-03	2.5203E-03	1280.7	400.62	1005.8	319.74	205.51	64.930	1.2820E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	8.2999E-03	2.2427E-03	1087.5	294.40	761.26	196.73	142.30	37.469	7192.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	8.2572E-03	2.4030E-03	1079.7	314.28	746.07	214.55	139.83	40.412	8884.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	8.2144E-03	2.5634E-03	1301.4	405.95	1024.8	324.46	210.43	66.251	1.3034E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	8.4603E-03	2.2858E-03	1108.5	299.80	779.20	201.56	144.76	38.135	7488.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	8.4176E-03	2.4458E-03	1102.4	320.37	766.10	219.88	142.81	41.200	9040.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	8.3744E-03	2.6062E-03	1331.9	414.36	1056.3	333.09	218.61	68.585	1.3334E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	8.6207E-03	2.3286E-03	1230.0	332.38	923.59	239.67	178.58	47.099	8725.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.2000	0.0000	0.0000	4.0800	3.8400	0.0000	0.0000	0.0000
14	8.5776E-03	2.4890E-03	1211.9	351.67	894.69	256.54	172.66	49.741	1.0015E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	8.5418E-03	2.6493E-03	1402.2	434.95	1139.5	357.52	238.36	74.461	1.3989E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	8.6207E-03	2.6493E-03	1402.2	434.95	1139.5	357.52	238.36	74.461	1.3989E+04	7.8500E+06	7.8500E+06
	13	15	15	15	15	15	15	15	15	1	1

LOAD CASE : 12  
CASE NAME : 12-2 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8754	1.0000
2	0.6199	1.0000
3	0.6375	1.0000
4	0.7991	1.0000
5	0.5013	1.0000
6	0.5056	1.0000
7	0.7846	1.0000
8	0.4941	1.0000
9	0.4998	1.0000
10	0.7841	1.0000
11	0.4927	1.0000
12	0.5067	1.0000
13	0.8437	1.0000
14	0.5497	1.0000
15	0.5710	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
48530.9	-14238.2	3830.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-5196.70	51784.8	1.53466E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>			
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	219 di 294	

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.16187E-03      -8.73005E-03      1.67094E-03

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
-3.13227E-05      -2.11427E-05      6.02930E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	6.0262E-03	-8.4882E-03	1.8802E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
2	3.3830E-03	-8.4578E-03	1.7439E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
3	7.3548E-04	-8.4212E-03	1.6077E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
4	5.4168E-03	-8.6304E-03	1.8435E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
5	2.7693E-03	-8.5938E-03	1.7073E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
6	1.2805E-04	-8.5575E-03	1.5713E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
7	4.8091E-03	-8.7664E-03	1.8072E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
8	2.1619E-03	-8.7300E-03	1.6709E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
9	-4.8540E-04	-8.6937E-03	1.5347E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
10	4.1957E-03	-8.9026E-03	1.7706E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
11	1.5544E-03	-8.8663E-03	1.6346E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
12	-1.0930E-03	-8.8296E-03	1.4984E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
13	3.5883E-03	-9.0389E-03	1.7342E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
14	9.4077E-04	-9.0022E-03	1.5980E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
15	-1.7025E-03	-8.9719E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
MINIMUM	-1.7025E-03	-9.0389E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	15	13	15	1	1	1
MAXIMUM	6.0262E-03	-8.4212E-03	1.8802E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	1	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	7895.6	-1167.4	353.24	-45.511	-1219.9	-3213.6
2	5338.8	-913.99	265.26	-45.511	-985.37	-2625.5
3	1226.2	-933.79	251.24	-45.511	-926.12	-2653.9
4	7574.9	-1111.0	325.17	-45.511	-1148.1	-3118.4
5	4563.8	-797.88	226.20	-45.511	-881.61	-2371.4
6	214.52	-804.27	211.37	-45.511	-820.83	-2369.0
7	7106.1	-1112.5	313.57	-45.511	-1114.2	-3149.3
8	3567.0	-802.12	218.47	-45.511	-856.12	-2403.5
9	-750.73	-810.34	204.15	-45.511	-796.68	-2405.8
10	6345.9	-1127.8	305.66	-45.511	-1088.8	-3210.6
11	2570.2	-812.95	212.51	-45.511	-835.13	-2451.6
12	-1675.3	-830.82	200.25	-45.511	-781.07	-2477.6
13	5593.2	-1204.0	312.18	-45.511	-1097.3	-3409.2
14	1563.1	-891.52	221.61	-45.511	-852.59	-2665.0
15	-2602.5	-917.80	209.61	-45.511	-798.98	-2711.5
MINIMUM	-2602.5	-1204.0	200.25	-45.511	-1219.9	-3409.2
Pile N.	15	13	12	1	1	13
MAXIMUM	7895.6	-797.88	353.24	-45.511	-781.07	-2369.0
Pile N.	1	5	1	1	12	6

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	6.0262E-03	-8.4882E-03	1.8802E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
2	3.3830E-03	-8.4578E-03	1.7439E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
3	7.3548E-04	-8.4212E-03	1.6077E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
4	5.4168E-03	-8.6304E-03	1.8435E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
5	2.7693E-03	-8.5938E-03	1.7073E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
6	1.2805E-04	-8.5575E-03	1.5713E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
7	4.8091E-03	-8.7664E-03	1.8072E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
8	2.1619E-03	-8.7300E-03	1.6709E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
9	-4.8540E-04	-8.6937E-03	1.5347E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
10	4.1957E-03	-8.9026E-03	1.7706E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
11	1.5544E-03	-8.8663E-03	1.6346E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
12	-1.0930E-03	-8.8296E-03	1.4984E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
13	3.5883E-03	-9.0389E-03	1.7342E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
14	9.4077E-04	-9.0022E-03	1.5980E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
15	-1.7025E-03	-8.9719E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
MINIMUM	-1.7025E-03	-9.0389E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	15	13	15	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 220 di 294

MAXIMUM 6.0262E-03 -8.4212E-03 1.8802E-03 -3.1323E-05 -2.1143E-05 6.0293E-04  
Pile N. 1 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	7895.6	-1167.4	353.24	-45.511	-1219.9	-3213.6
2	5338.8	-913.99	265.26	-45.511	-985.37	-2625.5
3	1226.2	-933.79	251.24	-45.511	-926.12	-2653.9
4	7574.9	-1111.0	325.17	-45.511	-1148.1	-3118.4
5	4563.8	-797.88	226.20	-45.511	-881.61	-2371.4
6	214.52	-804.27	211.37	-45.511	-820.83	-2369.0
7	7106.1	-1112.5	313.57	-45.511	-1114.2	-3149.3
8	3567.0	-802.12	218.47	-45.511	-856.12	-2403.5
9	-750.73	-810.34	204.15	-45.511	-796.68	-2405.8
10	6345.9	-1127.8	305.66	-45.511	-1088.8	-3210.6
11	2570.2	-812.95	212.51	-45.511	-835.13	-2451.6
12	-1675.3	-830.82	200.25	-45.511	-781.07	-2477.6
13	5593.2	-1204.0	312.18	-45.511	-1097.3	-3409.2
14	1563.1	-891.52	221.61	-45.511	-852.59	-2665.0
15	-2602.5	-917.80	209.61	-45.511	-798.98	-2711.5
MINIMUM	-2602.5	-1204.0	200.25	-45.511	-1219.9	-3409.2
Pile N.	15	13	12	1	1	13
MAXIMUM	7895.6	-797.88	353.24	-45.511	-781.07	-2369.0
Pile N.	1	5	1	1	12	6

PILE GROUP	STRESS, KN/ M**2
1	1.4780E+04
2	1.1434E+04
3	9126.4
4	1.4256E+04
5	1.0173E+04
6	7643.0
7	1.4043E+04
8	9672.8
9	8027.6
10	1.3762E+04
11	9224.3
12	8741.5
13	1.3910E+04
14	9278.8
15	9952.9
MINIMUM	7643.0
Pile N.	6
MAXIMUM	1.4780E+04
Pile N.	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-8.4882E-03	-4.8771E-05	-1404.9	-1219.9	-1167.8	-55.054	-244.20	-13.357	4468.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
2	-8.4579E-03	-4.2052E-05	-1209.5	-985.37	-914.20	-41.305	-177.04	-14.424	3021.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
3	-8.4212E-03	-3.8770E-05	-1217.5	-926.12	-933.84	-38.530	-181.89	-13.222	693.91	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	3.8400	18.720	24.000	0.0000	0.0000
4	-8.6304E-03	-4.7025E-05	-1369.3	-1148.1	-1111.4	-50.963	-226.49	-13.974	4286.5	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	7.2000	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
5	-8.5938E-03	-3.8050E-05	-1122.7	-881.61	-798.05	-35.622	-146.50	-14.158	2582.6	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
6	-8.5575E-03	-3.4804E-05	-1120.7	-820.83	-804.28	-32.766	-147.76	-13.016	121.39	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
7	-8.7664E-03	-4.5768E-05	-1377.1	-1114.2	-1112.8	-49.295	-224.59	-13.890	4021.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	7.2000	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
8	-8.7300E-03	-3.6839E-05	-1130.9	-856.12	-802.25	-34.496	-145.82	-13.837	2018.5	7.8500E+06	7.8500E+06
x( M)	0.0000	15.360	7.9200	0.0000	0.0000	12.720	4.0800	18.720	24.000	0.0000	0.0000
9	-8.6937E-03	-3.3669E-05	-1130.1	-796.68	-810.31	-31.725	-147.49	-12.703	424.83	7.8500E+06	7.8500E+06
x( M)	0.0000	15.360	7.9200	0.0000	0.0000	12.720	4.0800	18.720	24.000	0.0000	0.0000
10	-8.9026E-03	-4.4655E-05	-1394.3	-1088.8	-1128.1	-48.160	-226.36	-13.664	3591.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.2000	0.0000	0.0000	11.520	3.8400	18.720	24.000	0.0000	0.0000
11	-8.8663E-03	-3.5805E-05	-1144.5	-835.13	-813.04	-33.627	-146.72	-13.540	1454.4	7.8500E+06	7.8500E+06
x( M)	0.0000	15.360	7.9200	0.0000	0.0000	12.720	4.0800	18.720	24.000	0.0000	0.0000
12	-8.8297E-03	-3.2875E-05	-1151.3	-781.07	-830.76	-31.152	-150.71	-12.442	948.05	7.8500E+06	7.8500E+06
x( M)	0.0000	15.360	7.9200	0.0000	0.0000	12.720	4.0800	18.720	24.000	0.0000	0.0000
13	-9.0389E-03	-4.4142E-05	-1456.2	-1097.3	-1204.3	-49.269	-244.36	-12.870	3165.1	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	7.2000	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
14	-9.0022E-03	-3.6335E-05	-1211.8	-852.59	-891.58	-34.929	-163.98	-13.407	884.55	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
15	-8.9719E-03	-3.3407E-05	-1225.6	-798.98	-917.70	-32.530	-170.05	-12.260	1472.7	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 221 di 294

x( M)	0.0000	14.880	7.6800	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-9.0389E-03	-4.8771E-05	-1456.2	-1219.9	-1204.3	-55.054	-244.36	-14.424	121.39	7.8500E+06	7.8500E+06
	13	1	13	1	13	1	13	2	6	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1744E-04	1.8808E-03	3213.6	325.26	233.81	353.39	43.329	66.919	1.4780E+04	7.8500E+06	7.8500E+06
x( M)	12.960	0.2400	0.0000	7.6800	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	2.0646E-04	1.7454E-03	2625.5	262.41	186.88	265.34	53.252	45.660	1.1434E+04	7.8500E+06	7.8500E+06
x( M)	13.920	0.2400	0.0000	8.4000	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
3	2.0503E-04	1.6093E-03	2653.9	244.58	188.32	251.26	52.322	43.538	9126.4	7.8500E+06	7.8500E+06
x( M)	13.920	0.2400	0.0000	8.4000	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
4	2.1800E-04	1.8444E-03	3118.4	306.76	223.88	325.30	48.083	59.845	1.4256E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.2400	0.0000	7.9200	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
5	1.9886E-04	1.7091E-03	2371.4	235.88	166.06	226.26	56.339	36.415	1.0173E+04	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.8800	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
6	1.9668E-04	1.5734E-03	2369.0	217.74	165.05	211.37	55.814	34.049	7643.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.8800	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
7	2.2014E-04	1.8082E-03	3149.3	297.98	224.13	313.69	49.900	57.172	1.4043E+04	7.8500E+06	7.8500E+06
x( M)	13.440	0.2400	0.0000	7.9200	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
8	1.9961E-04	1.6729E-03	2403.5	229.29	166.75	218.52	57.464	34.833	9672.8	7.8500E+06	7.8500E+06
x( M)	14.640	0.2400	0.0000	8.8800	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
9	1.9758E-04	1.5368E-03	2405.8	211.50	166.06	204.14	56.942	32.595	8027.6	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.8800	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
10	2.2242E-04	1.7716E-03	3210.6	291.31	226.83	305.77	51.102	55.473	1.3762E+04	7.8500E+06	7.8500E+06
x( M)	13.440	0.2400	0.0000	7.9200	10.800	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
11	2.0118E-04	1.6366E-03	2451.6	223.77	168.54	212.55	58.573	33.674	9224.3	7.8500E+06	7.8500E+06
x( M)	14.640	0.2400	0.0000	8.8800	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
12	1.9999E-04	1.5006E-03	2477.6	207.33	169.56	200.23	58.047	31.933	8741.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.8800	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
13	2.2652E-04	1.7353E-03	3409.2	293.61	240.69	312.27	49.462	57.553	1.3910E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.2400	0.0000	7.9200	10.560	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	2.0867E-04	1.5999E-03	2665.0	227.95	182.38	221.63	59.376	36.093	9278.8	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
15	2.0803E-04	1.4639E-03	2711.5	211.66	184.85	209.58	58.631	34.451	9952.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.2400	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.2652E-04	1.8808E-03	3409.2	325.26	240.69	353.39	59.376	66.919	1.4780E+04	7.8500E+06	7.8500E+06
	13	1	13	1	13	1	14	1	1	1	1

LOAD CASE : 13  
CASE NAME : 13-3 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8307	1.0000
2	0.7660	1.0000
3	0.8647	1.0000
4	0.5536	1.0000
5	0.4961	1.0000
6	0.6429	1.0000
7	0.5209	1.0000
8	0.4713	1.0000
9	0.6155	1.0000
10	0.5183	1.0000
11	0.4707	1.0000
12	0.6226	1.0000
13	0.5687	1.0000
14	0.5162	1.0000
15	0.6743	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
54777.3	3567.66	12875.8
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	1.71305E+05	-38094.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 222 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.37714E-03      2.60595E-03      6.85954E-03

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
2.35611E-05      3.02229E-04      -2.77842E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.8544E-03	2.4241E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
2	4.3561E-03	2.4012E-03	6.8046E-03	2.3561E-05	3.0223E-04	-2.7784E-04
3	5.9184E-03	2.3736E-03	6.9071E-03	2.3561E-05	3.0223E-04	-2.7784E-04
4	1.8073E-03	2.5310E-03	6.7297E-03	2.3561E-05	3.0223E-04	-2.7784E-04
5	3.3695E-03	2.5035E-03	6.8322E-03	2.3561E-05	3.0223E-04	-2.7784E-04
6	4.9260E-03	2.4761E-03	6.9345E-03	2.3561E-05	3.0223E-04	-2.7784E-04
7	8.1794E-04	2.6333E-03	6.7570E-03	2.3561E-05	3.0223E-04	-2.7784E-04
8	2.3771E-03	2.6060E-03	6.8595E-03	2.3561E-05	3.0223E-04	-2.7784E-04
9	3.9363E-03	2.5786E-03	6.9620E-03	2.3561E-05	3.0223E-04	-2.7784E-04
10	-1.7168E-04	2.7358E-03	6.7846E-03	2.3561E-05	3.0223E-04	-2.7784E-04
11	1.3847E-03	2.7084E-03	6.8869E-03	2.3561E-05	3.0223E-04	-2.7784E-04
12	2.9470E-03	2.6809E-03	6.9894E-03	2.3561E-05	3.0223E-04	-2.7784E-04
13	-1.1641E-03	2.8383E-03	6.8119E-03	2.3561E-05	3.0223E-04	-2.7784E-04
14	3.9815E-04	2.8107E-03	6.9144E-03	2.3561E-05	3.0223E-04	-2.7784E-04
15	1.8999E-03	2.7878E-03	7.0169E-03	2.3561E-05	3.0223E-04	-2.7784E-04
MINIMUM	-1.1641E-03	2.3736E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.9184E-03	2.8383E-03	7.0169E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4683.7	270.91	1033.0	34.234	-3094.2	567.10
2	6544.7	250.20	994.67	34.234	-3034.2	519.95
3	7838.8	267.65	1091.9	34.234	-3274.8	551.85
4	2985.2	214.88	795.93	34.234	-2552.9	466.00
5	5322.1	192.78	749.77	34.234	-2463.4	412.16
6	7250.9	229.61	903.01	34.234	-2852.3	492.18
7	1361.6	219.02	767.80	34.234	-2487.3	493.61
8	3920.3	198.17	727.36	34.234	-2410.6	442.39
9	6024.5	237.29	880.70	34.234	-2803.3	529.15
10	-265.52	231.97	768.48	34.234	-2491.1	541.34
11	2291.7	210.85	729.61	34.234	-2418.1	489.36
12	4798.5	254.55	890.72	34.234	-2830.1	587.39
13	-1783.4	263.16	820.79	34.234	-2619.5	631.29
14	666.99	239.71	779.24	34.234	-2542.1	574.33
15	3137.1	286.89	942.84	34.234	-2954.6	680.06
MINIMUM	-1783.4	192.78	727.36	34.234	-3274.8	412.16
Pile N.	13	5	8	1	3	5
MAXIMUM	7838.8	286.89	1091.9	34.234	-2410.6	680.06
Pile N.	3	15	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.8544E-03	2.4241E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
2	4.3561E-03	2.4012E-03	6.8046E-03	2.3561E-05	3.0223E-04	-2.7784E-04
3	5.9184E-03	2.3736E-03	6.9071E-03	2.3561E-05	3.0223E-04	-2.7784E-04
4	1.8073E-03	2.5310E-03	6.7297E-03	2.3561E-05	3.0223E-04	-2.7784E-04
5	3.3695E-03	2.5035E-03	6.8322E-03	2.3561E-05	3.0223E-04	-2.7784E-04
6	4.9260E-03	2.4761E-03	6.9345E-03	2.3561E-05	3.0223E-04	-2.7784E-04
7	8.1794E-04	2.6333E-03	6.7570E-03	2.3561E-05	3.0223E-04	-2.7784E-04
8	2.3771E-03	2.6060E-03	6.8595E-03	2.3561E-05	3.0223E-04	-2.7784E-04
9	3.9363E-03	2.5786E-03	6.9620E-03	2.3561E-05	3.0223E-04	-2.7784E-04
10	-1.7168E-04	2.7358E-03	6.7846E-03	2.3561E-05	3.0223E-04	-2.7784E-04
11	1.3847E-03	2.7084E-03	6.8869E-03	2.3561E-05	3.0223E-04	-2.7784E-04
12	2.9470E-03	2.6809E-03	6.9894E-03	2.3561E-05	3.0223E-04	-2.7784E-04
13	-1.1641E-03	2.8383E-03	6.8119E-03	2.3561E-05	3.0223E-04	-2.7784E-04
14	3.9815E-04	2.8107E-03	6.9144E-03	2.3561E-05	3.0223E-04	-2.7784E-04
15	1.8999E-03	2.7878E-03	7.0169E-03	2.3561E-05	3.0223E-04	-2.7784E-04
MINIMUM	-1.1641E-03	2.3736E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	13	3	1	1	1	1

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

MAXIMUM 5.9184E-03 2.8383E-03 7.0169E-03 2.3561E-05 3.0223E-04 -2.7784E-04  
 Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4683.7	270.91	1033.0	34.234	-3094.2	567.10
2	6544.7	250.20	994.67	34.234	-3034.2	519.95
3	7838.8	267.65	1091.9	34.234	-3274.8	551.85
4	2985.2	214.88	795.93	34.234	-2552.9	466.00
5	5322.1	192.78	749.77	34.234	-2463.4	412.16
6	7250.9	229.61	903.01	34.234	-2852.3	492.18
7	1361.6	219.02	767.80	34.234	-2487.3	493.61
8	3920.3	198.17	727.36	34.234	-2410.6	442.39
9	6024.5	237.29	880.70	34.234	-2803.3	529.15
10	-265.52	231.97	768.48	34.234	-2491.1	541.34
11	2291.7	210.85	729.61	34.234	-2418.1	489.36
12	4798.5	254.55	890.72	34.234	-2830.1	587.39
13	-1783.4	263.16	820.79	34.234	-2619.5	631.29
14	666.99	239.71	779.24	34.234	-2542.1	574.33
15	3137.1	286.89	942.84	34.234	-2954.6	680.06
MINIMUM	-1783.4	192.78	727.36	34.234	-3274.8	412.16
Pile N.	13	5	8	1	3	5
MAXIMUM	7838.8	286.89	1091.9	34.234	-2410.6	680.06
Pile N.	3	15	3	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	1.2088E+04
2	1.2939E+04
3	1.4399E+04
4	9474.4
5	1.0505E+04
6	1.2786E+04
7	8377.9
8	9571.1
9	1.1968E+04
10	7798.0
11	8698.3
12	1.1387E+04
13	9092.7
14	8196.1
15	1.0871E+04
MINIMUM	7798.0
Pile N.	10
MAXIMUM	1.4399E+04
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.4981E-05	-1.7139E-04	-567.10	-3094.2	-65.307	-181.65	-11.263	-39.485	2650.5	7.8500E+06	7.8500E+06
x( M)	12.720	0.0000	0.0000	0.0000	9.8400	10.800	13.200	18.720	24.000	0.0000	0.0000
2	-6.4464E-05	-1.7270E-04	-519.95	-3034.2	-61.712	-175.85	-10.848	-42.548	3703.6	7.8500E+06	7.8500E+06
x( M)	12.720	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	24.000	0.0000	0.0000
3	-6.4210E-05	-1.7794E-04	-551.85	-3274.8	-65.794	-192.82	-11.467	-39.676	4435.9	7.8500E+06	7.8500E+06
x( M)	12.480	13.200	0.0000	0.0000	9.8400	10.560	12.960	18.720	24.000	0.0000	0.0000
4	-6.4994E-05	-1.5958E-04	-466.00	-2552.9	-52.867	-141.32	-14.027	-46.975	1689.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-6.3708E-05	-1.5750E-04	-412.16	-2463.4	-49.117	-134.67	-14.171	-48.129	3011.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-6.5323E-05	-1.7090E-04	-492.18	-2852.3	-57.050	-160.79	-12.829	-47.255	4103.2	7.8500E+06	7.8500E+06
x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-6.6066E-05	-1.5669E-04	-493.61	-2487.3	-52.653	-136.32	-15.047	-47.361	770.48	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-6.4729E-05	-1.5472E-04	-442.39	-2410.6	-49.252	-130.71	-15.063	-48.153	2218.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.880	0.0000	0.0000	11.040	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-6.6926E-05	-1.6960E-04	-529.15	-2803.3	-57.527	-156.61	-13.919	-48.080	3409.2	7.8500E+06	7.8500E+06
x( M)	13.440	14.160	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
10	-6.7698E-05	-1.5626E-04	-541.34	-2491.1	-54.238	-135.97	-15.869	-47.546	150.25	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-6.6253E-05	-1.5437E-04	-489.36	-2418.1	-50.803	-130.66	-15.860	-48.304	1296.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.880	0.0000	0.0000	11.280	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-6.8909E-05	-1.7001E-04	-587.39	-2830.1	-59.931	-157.97	-14.663	-48.152	2715.4	7.8500E+06	7.8500E+06
x( M)	13.440	14.160	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
13	-7.0461E-05	-1.6021E-04	-631.29	-2619.5	-59.270	-144.09	-16.352	-47.394	1009.2	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-6.9029E-05	-1.5880E-04	-574.33	-2542.1	-55.483	-138.25	-16.502	-48.672	377.44	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-7.1436E-05	-1.7260E-04	-680.06	-2954.6	-65.146	-166.21	-14.935	-47.118	1775.3	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 224 di 294

x( M)	13.440	13.920	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-7.1436E-05 15	-1.7794E-04 3	-680.06 15	-3274.8 3	-65.794 3	-192.82 3	-16.502 14	-48.672 14	150.25 10	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.4241E-03	6.7021E-03	404.50	1102.5	270.95	1033.2	58.588	197.29	1.2088E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
2	2.4012E-03	6.8046E-03	388.19	1082.1	250.25	994.98	53.920	187.92	1.2939E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	2.3736E-03	6.9071E-03	403.18	1155.5	267.71	1092.3	58.967	210.87	1.4399E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
4	2.5310E-03	6.7297E-03	357.07	934.07	214.90	796.04	43.750	142.42	9474.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	2.5035E-03	6.8322E-03	338.61	906.36	192.82	749.97	39.189	132.47	1.0505E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.4761E-03	6.9345E-03	371.31	1024.3	229.67	903.33	48.337	166.43	1.2786E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
7	2.6333E-03	6.7570E-03	360.41	913.26	219.03	767.85	43.812	136.20	8377.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.6059E-03	6.8595E-03	343.00	890.12	198.20	727.50	39.652	127.33	9571.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.5786E-03	6.9620E-03	377.85	1008.5	237.34	880.96	49.209	161.50	1.1968E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
10	2.7358E-03	6.7846E-03	371.45	913.59	231.97	768.47	45.964	136.36	7798.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.7084E-03	6.8869E-03	354.16	891.83	210.87	729.69	41.764	127.31	8698.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	2.6809E-03	6.9894E-03	392.45	1016.1	254.59	890.93	52.371	163.82	1.1387E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
13	2.8383E-03	6.8119E-03	398.31	951.95	263.14	820.72	52.260	147.88	9092.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	2.8107E-03	6.9144E-03	379.32	927.99	239.72	779.27	47.526	138.35	8196.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.7878E-03	7.0169E-03	419.70	1053.2	286.93	942.98	59.069	175.61	1.0871E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.8383E-03 13	7.0169E-03 15	419.70 15	1155.5 3	286.93 15	1092.3 3	59.069 15	210.87 3	1.4399E+04 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 14  
CASE NAME : 14-4 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6331	1.0000
2	0.5061	1.0000
3	0.5959	1.0000
4	0.5831	1.0000
5	0.4689	1.0000
6	0.5543	1.0000
7	0.5772	1.0000
8	0.4706	1.0000
9	0.5573	1.0000
10	0.6076	1.0000
11	0.4970	1.0000
12	0.5900	1.0000
13	0.8454	1.0000
14	0.7759	1.0000
15	0.8634	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
48515.8	4336.25	-12833.8
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	-1.71778E+05	-46842.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>			<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 225 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.04291E-03      2.19448E-03      -6.54161E-03  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 5.13974E-06      -2.25686E-04      -7.25238E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.8385E-04	2.1548E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
2	-8.7290E-05	2.1498E-03	-6.5536E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
3	-3.5865E-05	2.1438E-03	-6.5312E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
4	9.2562E-04	2.1781E-03	-6.5699E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
5	9.7704E-04	2.1721E-03	-6.5476E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
6	1.0300E-03	2.1662E-03	-6.5253E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
7	1.9892E-03	2.2004E-03	-6.5640E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
8	2.0429E-03	2.1945E-03	-6.5416E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
9	2.0966E-03	2.1885E-03	-6.5192E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
10	3.0558E-03	2.2228E-03	-6.5579E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
11	3.1088E-03	2.2168E-03	-6.5356E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
12	3.1602E-03	2.2108E-03	-6.5133E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
13	4.1217E-03	2.2452E-03	-6.5520E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
14	4.1731E-03	2.2392E-03	-6.5296E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
15	4.2697E-03	2.2342E-03	-6.5073E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
MINIMUM	-1.8385E-04	2.1438E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2697E-03	2.2452E-03	-6.5073E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-284.35	292.32	-889.73	7.4680	2876.1	946.86
2	-135.00	251.96	-765.81	7.4680	2575.4	849.30
3	-55.469	279.68	-849.54	7.4680	2773.3	915.08
4	1538.3	280.07	-841.15	7.4680	2763.3	923.10
5	1622.6	242.13	-726.47	7.4680	2480.4	829.67
6	1709.5	269.59	-808.38	7.4680	2677.0	895.88
7	3283.7	281.07	-833.56	7.4680	2747.1	930.41
8	3371.8	245.19	-726.33	7.4680	2482.1	841.90
9	3459.9	273.36	-809.33	7.4680	2681.2	909.82
10	4933.4	293.63	-860.04	7.4680	2811.8	965.21
11	4999.0	256.75	-751.10	7.4680	2545.1	875.09
12	5062.7	286.64	-838.12	7.4680	2751.7	946.44
13	6254.2	367.04	-1062.5	7.4680	3275.9	1138.3
14	6317.9	346.56	-1002.2	7.4680	3136.6	1091.3
15	6437.6	370.26	-1069.5	7.4680	3281.7	1143.1
MINIMUM	-284.35	242.13	-1069.5	7.4680	2480.4	829.67
Pile N.	1	5	15	1	5	5
MAXIMUM	6437.6	370.26	-726.33	7.4680	3281.7	1143.1
Pile N.	15	15	8	1	15	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-1.8385E-04	2.1548E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
2	-8.7290E-05	2.1498E-03	-6.5536E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
3	-3.5865E-05	2.1438E-03	-6.5312E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
4	9.2562E-04	2.1781E-03	-6.5699E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
5	9.7704E-04	2.1721E-03	-6.5476E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
6	1.0300E-03	2.1662E-03	-6.5253E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
7	1.9892E-03	2.2004E-03	-6.5640E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
8	2.0429E-03	2.1945E-03	-6.5416E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
9	2.0966E-03	2.1885E-03	-6.5192E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
10	3.0558E-03	2.2228E-03	-6.5579E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
11	3.1088E-03	2.2168E-03	-6.5356E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
12	3.1602E-03	2.2108E-03	-6.5133E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
13	4.1217E-03	2.2452E-03	-6.5520E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
14	4.1731E-03	2.2392E-03	-6.5296E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
15	4.2697E-03	2.2342E-03	-6.5073E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
MINIMUM	-1.8385E-04	2.1438E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	1	3	1	1	1	1

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 226 di 294

MAXIMUM 4.2697E-03 2.2452E-03 -6.5073E-03 5.1397E-06 -2.2569E-04 -7.2524E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-284.35	292.32	-889.73	7.4680	2876.1	946.86
2	-135.00	251.96	-765.81	7.4680	2575.4	849.30
3	-55.469	279.68	-849.54	7.4680	2773.3	915.08
4	1538.3	280.07	-841.15	7.4680	2763.3	923.10
5	1622.6	242.13	-726.47	7.4680	2480.4	829.67
6	1709.5	269.59	-808.38	7.4680	2677.0	895.88
7	3283.7	281.07	-833.56	7.4680	2747.1	930.41
8	3371.8	245.19	-726.33	7.4680	2482.1	841.90
9	3459.9	273.36	-809.33	7.4680	2681.2	909.82
10	4933.4	293.63	-860.04	7.4680	2811.8	965.21
11	4999.0	256.75	-751.10	7.4680	2545.1	875.09
12	5062.7	286.64	-838.12	7.4680	2751.7	946.44
13	6254.2	367.04	-1062.5	7.4680	3275.9	1138.3
14	6317.9	346.56	-1002.2	7.4680	3136.6	1091.3
15	6437.6	370.26	-1069.5	7.4680	3281.7	1143.1
MINIMUM	-284.35	242.13	-1069.5	7.4680	2480.4	829.67
Pile N.	1	5	15	1	5	5
MAXIMUM	6437.6	370.26	-726.33	7.4680	3281.7	1143.1
Pile N.	15	15	8	1	15	15

PILE GROUP	STRESS, KN/ M**2
1	9244.8
2	8212.0
3	8792.6
4	9610.6
5	8764.7
6	9436.1
7	1.0559E+04
8	9770.9
9	1.0452E+04
10	1.1710E+04
11	1.0903E+04
12	1.1595E+04
13	1.3943E+04
14	1.3538E+04
15	1.4068E+04
MINIMUM	8212.0
Pile N.	2
MAXIMUM	1.4068E+04
Pile N.	15

MINIMUM 8212.0  
Pile N. 2  
MAXIMUM 1.4068E+04  
Pile N. 15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.1995E-05	-6.5759E-03	-946.86	-965.53	-49.223	-889.72	-15.202	-160.19	160.91	7.8500E+06	7.8500E+06
x(M)	14.160	0.0000	0.0000	7.9200	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
2	-4.8743E-05	-6.5536E-03	-849.30	-877.76	-42.801	-765.81	-15.553	-133.02	76.397	7.8500E+06	7.8500E+06
x(M)	14.880	0.0000	0.0000	8.1600	12.000	0.0000	18.720	4.3200	24.000	0.0000	0.0000
3	-5.1053E-05	-6.5312E-03	-915.08	-936.16	-47.189	-849.54	-15.320	-151.35	31.389	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
4	-5.1732E-05	-6.5699E-03	-923.10	-933.48	-47.416	-841.21	-15.670	-149.70	870.47	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
5	-4.8164E-05	-6.5476E-03	-829.67	-850.51	-41.440	-726.53	-15.658	-124.77	918.23	7.8500E+06	7.8500E+06
x(M)	14.880	0.0000	0.0000	8.4000	12.240	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-5.0768E-05	-6.5253E-03	-895.88	-908.08	-45.764	-808.45	-15.666	-142.55	967.41	7.8500E+06	7.8500E+06
x(M)	14.640	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
7	-5.2327E-05	-6.5640E-03	-930.41	-929.38	-47.761	-833.70	-15.889	-148.29	1858.2	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-4.8953E-05	-6.5416E-03	-841.90	-851.63	-42.096	-726.46	-15.869	-124.99	1908.0	7.8500E+06	7.8500E+06
x(M)	14.880	0.0000	0.0000	8.4000	12.240	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-5.1574E-05	-6.5193E-03	-909.82	-910.08	-46.542	-809.47	-15.856	-143.02	1957.9	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
10	-5.3686E-05	-6.5580E-03	-965.21	-949.09	-49.960	-860.25	-15.936	-154.40	2791.7	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
11	-5.0618E-05	-6.5356E-03	-875.09	-870.85	-44.075	-751.30	-16.145	-130.58	2828.9	7.8500E+06	7.8500E+06
x(M)	14.880	0.0000	0.0000	8.1600	12.000	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-5.3130E-05	-6.5133E-03	-946.44	-931.84	-48.810	-838.33	-15.927	-149.61	2864.9	7.8500E+06	7.8500E+06
x(M)	14.400	0.0000	0.0000	7.9200	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
13	-5.7553E-05	-6.5520E-03	-1138.3	-1088.3	-62.098	-1062.8	-13.769	-201.44	3539.2	7.8500E+06	7.8500E+06
x(M)	13.440	0.0000	0.0000	7.4400	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
14	-5.6817E-05	-6.5296E-03	-1091.3	-1047.2	-58.709	-1002.5	-14.559	-187.22	3575.2	7.8500E+06	7.8500E+06
x(M)	13.680	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
15	-5.7438E-05	-6.5073E-03	-1143.1	-1090.8	-62.623	-1069.8	-13.457	-203.32	3642.9	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 227 di 294

x( M)	13.440	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
Min. Pile N.	-5.7553E-05	-6.5759E-03	-1143.1	-1090.8	-62.623	-1069.8	-16.145	-203.32	31.389	7.8500E+06	7.8500E+06
	13	1	15	15	15	15	11	15	3	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1548E-03	1.5870E-04	316.52	2876.1	292.32	150.13	52.588	46.291	9244.8	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
2	2.1498E-03	1.4863E-04	288.05	2575.4	251.96	130.40	43.724	47.316	8212.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.1600	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
3	2.1438E-03	1.5556E-04	307.41	2773.3	279.68	143.69	49.783	46.564	8792.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
4	2.1781E-03	1.5609E-04	309.65	2763.3	280.10	142.88	49.779	47.108	9610.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
5	2.1721E-03	1.4531E-04	282.36	2480.4	242.15	124.79	41.522	47.061	8764.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.4000	0.0000	0.0000	12.240	4.3200	18.720	0.0000	0.0000	0.0000
6	2.1662E-03	1.5296E-04	301.60	2677.0	269.61	137.74	47.470	47.031	9436.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
7	2.2004E-03	1.5617E-04	311.78	2747.1	281.12	142.29	49.913	47.185	1.0559E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
8	2.1945E-03	1.4609E-04	285.98	2482.1	245.23	125.32	42.106	47.116	9770.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.4000	0.0000	0.0000	12.240	4.3200	18.720	0.0000	0.0000	0.0000
9	2.1885E-03	1.5375E-04	305.72	2681.2	273.41	138.47	48.214	47.016	1.0452E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
10	2.2228E-03	1.5843E-04	322.03	2811.8	293.70	147.20	52.597	46.744	1.1710E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
11	2.2168E-03	1.4934E-04	295.67	2545.1	256.81	129.75	44.524	47.352	1.0903E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.1600	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
12	2.2108E-03	1.5658E-04	316.62	2751.7	286.71	143.61	51.048	46.646	1.1595E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
13	2.2452E-03	1.6792E-04	373.39	3275.9	367.15	180.93	69.418	39.841	1.3943E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.4400	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
14	2.2391E-03	1.6566E-04	359.46	3136.6	346.67	170.90	64.574	42.110	1.3538E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
15	2.2342E-03	1.6723E-04	374.87	3281.7	370.37	182.07	70.217	38.849	1.4068E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.4400	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
Max. Pile N.	2.2452E-03	1.6792E-04	374.87	3281.7	370.37	182.07	70.217	47.352	1.4068E+04	7.8500E+06	7.8500E+06
	13	13	15	15	15	15	15	11	15	1	1

LOAD CASE : 15  
CASE NAME : 15-5 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.7200	1.0000
2	0.6742	1.0000
3	0.8589	1.0000
4	0.5307	1.0000
5	0.4950	1.0000
6	0.7165	1.0000
7	0.5096	1.0000
8	0.4825	1.0000
9	0.7038	1.0000
10	0.5103	1.0000
11	0.4853	1.0000
12	0.7145	1.0000
13	0.5970	1.0000
14	0.5633	1.0000
15	0.7751	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
61951.9	3566.55	3892.45
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.13	50994.3	-38092.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 228 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.56480E-03      2.19270E-03      2.04569E-03  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.12542E-05      1.05130E-04      -1.85383E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1380E-03	2.1058E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
2	3.0464E-03	2.0949E-03	2.0195E-03	1.1254E-05	1.0513E-04	-1.8538E-04
3	3.9759E-03	2.0817E-03	2.0684E-03	1.1254E-05	1.0513E-04	-1.8538E-04
4	1.8777E-03	2.1569E-03	1.9837E-03	1.1254E-05	1.0513E-04	-1.8538E-04
5	2.8071E-03	2.1437E-03	2.0326E-03	1.1254E-05	1.0513E-04	-1.8538E-04
6	3.7336E-03	2.1307E-03	2.0815E-03	1.1254E-05	1.0513E-04	-1.8538E-04
7	1.6364E-03	2.2057E-03	1.9967E-03	1.1254E-05	1.0513E-04	-1.8538E-04
8	2.5648E-03	2.1927E-03	2.0457E-03	1.1254E-05	1.0513E-04	-1.8538E-04
9	3.4932E-03	2.1796E-03	2.0946E-03	1.1254E-05	1.0513E-04	-1.8538E-04
10	1.3960E-03	2.2547E-03	2.0099E-03	1.1254E-05	1.0513E-04	-1.8538E-04
11	2.3225E-03	2.2416E-03	2.0587E-03	1.1254E-05	1.0513E-04	-1.8538E-04
12	3.2519E-03	2.2285E-03	2.1077E-03	1.1254E-05	1.0513E-04	-1.8538E-04
13	1.1537E-03	2.3037E-03	2.0229E-03	1.1254E-05	1.0513E-04	-1.8538E-04
14	2.0832E-03	2.2905E-03	2.0719E-03	1.1254E-05	1.0513E-04	-1.8538E-04
15	2.9915E-03	2.2796E-03	2.1209E-03	1.1254E-05	1.0513E-04	-1.8538E-04
MINIMUM	1.1537E-03	2.0817E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.9759E-03	2.3037E-03	2.1209E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3527.9	249.62	273.19	16.352	-806.10	628.22
2	4921.8	236.53	269.54	16.352	-808.68	598.45
3	6073.5	276.52	323.91	16.352	-938.37	681.41
4	3100.6	209.57	226.27	16.352	-701.87	549.58
5	4625.1	197.63	222.63	16.352	-702.93	520.70
6	5773.3	252.50	290.60	16.352	-868.55	641.20
7	2704.7	210.59	222.28	16.352	-694.63	560.90
8	4228.2	200.77	220.82	16.352	-700.68	536.79
9	5475.3	257.67	289.55	16.352	-868.74	662.61
10	2310.2	217.63	224.37	16.352	-701.72	586.01
11	3830.6	208.22	223.47	16.352	-709.09	562.83
12	5176.4	268.64	294.63	16.352	-882.50	696.54
13	1912.6	249.77	250.34	16.352	-764.27	668.20
14	3437.8	237.85	248.02	16.352	-768.98	639.81
15	4853.7	293.02	312.81	16.352	-925.01	759.76
MINIMUM	1912.6	197.63	220.82	16.352	-938.37	520.70
Pile N.	13	5	8	1	3	5
MAXIMUM	6073.5	293.02	323.91	16.352	-694.63	759.76
Pile N.	3	15	3	1	7	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1380E-03	2.1058E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
2	3.0464E-03	2.0949E-03	2.0195E-03	1.1254E-05	1.0513E-04	-1.8538E-04
3	3.9759E-03	2.0817E-03	2.0684E-03	1.1254E-05	1.0513E-04	-1.8538E-04
4	1.8777E-03	2.1569E-03	1.9837E-03	1.1254E-05	1.0513E-04	-1.8538E-04
5	2.8071E-03	2.1437E-03	2.0326E-03	1.1254E-05	1.0513E-04	-1.8538E-04
6	3.7336E-03	2.1307E-03	2.0815E-03	1.1254E-05	1.0513E-04	-1.8538E-04
7	1.6364E-03	2.2057E-03	1.9967E-03	1.1254E-05	1.0513E-04	-1.8538E-04
8	2.5648E-03	2.1927E-03	2.0457E-03	1.1254E-05	1.0513E-04	-1.8538E-04
9	3.4932E-03	2.1796E-03	2.0946E-03	1.1254E-05	1.0513E-04	-1.8538E-04
10	1.3960E-03	2.2547E-03	2.0099E-03	1.1254E-05	1.0513E-04	-1.8538E-04
11	2.3225E-03	2.2416E-03	2.0587E-03	1.1254E-05	1.0513E-04	-1.8538E-04
12	3.2519E-03	2.2285E-03	2.1077E-03	1.1254E-05	1.0513E-04	-1.8538E-04
13	1.1537E-03	2.3037E-03	2.0229E-03	1.1254E-05	1.0513E-04	-1.8538E-04
14	2.0832E-03	2.2905E-03	2.0719E-03	1.1254E-05	1.0513E-04	-1.8538E-04
15	2.9915E-03	2.2796E-03	2.1209E-03	1.1254E-05	1.0513E-04	-1.8538E-04
MINIMUM	1.1537E-03	2.0817E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 229 di 294

MAXIMUM 3.9759E-03 2.3037E-03 2.1209E-03 1.1254E-05 1.0513E-04 -1.8538E-04  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3527.9	249.62	273.19	16.352	-806.10	628.22
2	4921.8	236.53	269.54	16.352	-808.68	598.45
3	6073.5	276.52	323.91	16.352	-938.37	681.41
4	3100.6	209.57	226.27	16.352	-701.87	549.58
5	4625.1	197.63	222.63	16.352	-702.93	520.70
6	5773.3	252.50	290.60	16.352	-868.55	641.20
7	2704.7	210.59	222.28	16.352	-694.63	560.90
8	4228.2	200.77	220.82	16.352	-700.68	536.79
9	5475.3	257.67	289.55	16.352	-868.74	662.61
10	2310.2	217.63	224.37	16.352	-701.72	586.01
11	3830.6	208.22	223.47	16.352	-709.09	562.83
12	5176.4	268.64	294.63	16.352	-882.50	696.54
13	1912.6	249.77	250.34	16.352	-764.27	668.20
14	3437.8	237.85	248.02	16.352	-768.98	639.81
15	4853.7	293.02	312.81	16.352	-925.01	759.76
MINIMUM	1912.6	197.63	220.82	16.352	-938.37	520.70
Pile N.	13	5	8	1	3	5
MAXIMUM	6073.5	293.02	323.91	16.352	-694.63	759.76
Pile N.	3	15	3	1	7	15

PILE GROUP	STRESS, KN/ M**2
1	5062.3
2	5803.2
3	6916.0
4	4428.9
5	5241.6
6	6505.8
7	4209.0
8	5040.7
9	6376.2
10	4050.0
11	4883.6
12	6302.0
13	4127.9
14	4946.4
15	6337.7
MINIMUM	4050.0
Pile N.	10
MAXIMUM	6916.0
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.4781E-05	-5.0098E-05	-628.22	-806.10	-51.921	-48.978	-11.303	-12.214	1996.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
2	-5.4406E-05	-5.1028E-05	-598.45	-808.68	-49.793	-48.378	-11.646	-12.974	2785.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
3	-5.4902E-05	-5.3665E-05	-681.41	-938.37	-57.330	-57.527	-9.9817	-11.496	3436.9	7.8500E+06	7.8500E+06
x( M)	12.720	13.200	0.0000	0.0000	10.080	10.560	13.200	18.720	24.000	0.0000	0.0000
4	-5.4095E-05	-4.7916E-05	-549.58	-701.87	-44.269	-40.988	-13.107	-13.456	1754.6	7.8500E+06	7.8500E+06
x( M)	13.920	14.400	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-5.3392E-05	-4.8379E-05	-520.70	-702.93	-42.325	-40.415	-13.135	-13.901	2617.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-5.5600E-05	-5.3093E-05	-641.20	-868.55	-52.570	-51.819	-11.524	-13.082	3267.0	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-5.4712E-05	-4.7718E-05	-560.90	-694.63	-44.137	-40.219	-13.568	-13.589	1530.6	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
8	-5.4143E-05	-4.8351E-05	-536.79	-700.68	-42.611	-40.046	-13.542	-13.995	2392.7	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-5.6612E-05	-5.3285E-05	-662.61	-868.74	-53.196	-51.570	-12.016	-13.296	3098.4	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
10	-5.5743E-05	-4.7987E-05	-586.01	-701.72	-45.124	-40.497	-13.949	-13.688	1307.3	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-5.5179E-05	-4.8665E-05	-562.83	-709.09	-43.671	-40.420	-13.919	-14.095	2167.7	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-5.7815E-05	-5.3674E-05	-696.54	-882.50	-54.856	-52.342	-12.277	-13.296	2929.3	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-5.8137E-05	-4.9845E-05	-668.20	-764.27	-50.592	-44.804	-13.884	-13.504	1082.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
14	-5.7604E-05	-5.0635E-05	-639.81	-768.98	-48.737	-44.433	-14.005	-14.058	1945.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
15	-5.9386E-05	-5.4434E-05	-759.76	-925.01	-58.896	-55.351	-12.001	-12.788	2746.7	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 230 di 294

x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-5.9386E-05 15	-5.4434E-05 15	-759.76 15	-938.37 3	-58.896 15	-57.527 3	-14.005 14	-14.095 11	1082.3 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1058E-03	1.9705E-03	329.11	307.28	249.66	273.23	48.623	50.281	5062.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
2	2.0949E-03	2.0195E-03	319.49	307.19	236.58	269.60	45.655	48.965	5803.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
3	2.0817E-03	2.0684E-03	348.98	346.53	276.59	324.00	55.638	61.471	6916.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	2.1569E-03	1.9837E-03	299.37	274.24	209.59	226.31	38.631	39.321	4428.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.1437E-03	2.0326E-03	289.92	273.63	197.66	222.68	36.102	38.162	5241.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.1307E-03	2.0815E-03	332.50	324.46	252.56	290.68	49.128	53.309	6505.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	2.2058E-03	1.9967E-03	300.99	271.53	210.62	222.31	38.390	38.308	4209.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.1927E-03	2.0457E-03	293.26	272.68	200.81	220.86	36.352	37.638	5040.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.1796E-03	2.0946E-03	337.64	324.27	257.73	289.62	49.782	52.907	6376.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.2547E-03	2.0099E-03	307.46	273.44	217.65	224.40	39.516	38.647	4050.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.2417E-03	2.0587E-03	300.21	275.01	208.25	223.51	37.571	38.102	4883.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.2285E-03	2.1077E-03	347.01	328.20	268.69	294.70	51.841	53.954	6302.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.3037E-03	2.0230E-03	333.71	292.75	249.79	250.37	46.397	44.333	4127.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	2.2905E-03	2.0719E-03	324.70	293.47	237.88	248.06	43.847	43.440	4946.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.2796E-03	2.1209E-03	366.04	341.20	293.08	312.88	57.139	58.112	6337.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.3037E-03 13	2.1209E-03 15	366.04 15	346.53 3	293.08 15	324.00 3	57.139 15	61.471 3	6916.0 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 16  
CASE NAME : 16-6 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6959	1.0000
2	0.6544	1.0000
3	0.8578	1.0000
4	0.5260	1.0000
5	0.4947	1.0000
6	0.7303	1.0000
7	0.5073	1.0000
8	0.4847	1.0000
9	0.7201	1.0000
10	0.5087	1.0000
11	0.4882	1.0000
12	0.7314	1.0000
13	0.6024	1.0000
14	0.5722	1.0000
15	0.7936	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
39735.4	4287.03	3850.45
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.13	51525.2	-46135.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 231 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 1.60658E-03      2.54528E-03      2.01023E-03  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.03344E-05      1.01745E-04      -1.99296E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0608E-03	2.4655E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
2	2.0264E-03	2.4555E-03	1.9861E-03	1.0334E-05	1.0174E-04	-1.9930E-04
3	3.0124E-03	2.4434E-03	2.0311E-03	1.0334E-05	1.0174E-04	-1.9930E-04
4	8.3201E-04	2.5124E-03	1.9533E-03	1.0334E-05	1.0174E-04	-1.9930E-04
5	1.8180E-03	2.5003E-03	1.9982E-03	1.0334E-05	1.0174E-04	-1.9930E-04
6	2.8009E-03	2.4883E-03	2.0431E-03	1.0334E-05	1.0174E-04	-1.9930E-04
7	6.2162E-04	2.5573E-03	1.9653E-03	1.0334E-05	1.0174E-04	-1.9930E-04
8	1.6066E-03	2.5453E-03	2.0102E-03	1.0334E-05	1.0174E-04	-1.9930E-04
9	2.5915E-03	2.5333E-03	2.0552E-03	1.0334E-05	1.0174E-04	-1.9930E-04
10	4.1220E-04	2.6022E-03	1.9774E-03	1.0334E-05	1.0174E-04	-1.9930E-04
11	1.3952E-03	2.5902E-03	2.0222E-03	1.0334E-05	1.0174E-04	-1.9930E-04
12	2.3811E-03	2.5781E-03	2.0672E-03	1.0334E-05	1.0174E-04	-1.9930E-04
13	2.0080E-04	2.6472E-03	1.9893E-03	1.0334E-05	1.0174E-04	-1.9930E-04
14	1.1868E-03	2.6351E-03	2.0343E-03	1.0334E-05	1.0174E-04	-1.9930E-04
15	2.1524E-03	2.6251E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
MINIMUM	2.0080E-04	2.4434E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.0124E-03	2.6472E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	1760.0	296.11	264.68	15.016	-786.82	776.93
2	3344.7	282.04	261.30	15.016	-789.08	745.22
3	4879.5	335.94	318.98	15.016	-925.69	859.40
4	1384.6	251.55	222.77	15.016	-693.32	686.37
5	3002.7	239.26	219.92	15.016	-695.50	656.93
6	4615.8	309.08	289.84	15.016	-864.82	811.99
7	1039.4	251.69	219.34	15.016	-687.21	694.78
8	2655.7	242.04	218.70	15.016	-694.53	671.38
9	4272.1	313.87	289.36	15.016	-866.07	831.68
10	690.53	258.43	221.45	15.016	-694.18	718.46
11	2308.8	249.35	221.39	15.016	-702.86	696.37
12	3926.9	324.95	294.39	15.016	-879.45	864.93
13	336.38	296.62	248.83	15.016	-759.81	813.86
14	1966.8	284.34	247.07	15.016	-765.13	785.06
15	3551.5	351.76	312.42	15.016	-921.23	932.38
MINIMUM	336.38	239.26	218.70	15.016	-925.69	656.93
Pile N.	13	5	8	1	3	5
MAXIMUM	4879.5	351.76	318.98	15.016	-687.21	932.38
Pile N.	3	15	3	1	7	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0608E-03	2.4655E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
2	2.0264E-03	2.4555E-03	1.9861E-03	1.0334E-05	1.0174E-04	-1.9930E-04
3	3.0124E-03	2.4434E-03	2.0311E-03	1.0334E-05	1.0174E-04	-1.9930E-04
4	8.3201E-04	2.5124E-03	1.9533E-03	1.0334E-05	1.0174E-04	-1.9930E-04
5	1.8180E-03	2.5003E-03	1.9982E-03	1.0334E-05	1.0174E-04	-1.9930E-04
6	2.8009E-03	2.4883E-03	2.0431E-03	1.0334E-05	1.0174E-04	-1.9930E-04
7	6.2162E-04	2.5573E-03	1.9653E-03	1.0334E-05	1.0174E-04	-1.9930E-04
8	1.6066E-03	2.5453E-03	2.0102E-03	1.0334E-05	1.0174E-04	-1.9930E-04
9	2.5915E-03	2.5333E-03	2.0552E-03	1.0334E-05	1.0174E-04	-1.9930E-04
10	4.1220E-04	2.6022E-03	1.9774E-03	1.0334E-05	1.0174E-04	-1.9930E-04
11	1.3952E-03	2.5902E-03	2.0222E-03	1.0334E-05	1.0174E-04	-1.9930E-04
12	2.3811E-03	2.5781E-03	2.0672E-03	1.0334E-05	1.0174E-04	-1.9930E-04
13	2.0080E-04	2.6472E-03	1.9893E-03	1.0334E-05	1.0174E-04	-1.9930E-04
14	1.1868E-03	2.6351E-03	2.0343E-03	1.0334E-05	1.0174E-04	-1.9930E-04
15	2.1524E-03	2.6251E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
MINIMUM	2.0080E-04	2.4434E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 232 di 294

MAXIMUM	3.0124E-03	2.6472E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1760.0	296.11	264.68	15.016	-786.82	776.93
2	3344.7	282.04	261.30	15.016	-789.08	745.22
3	4879.5	335.94	318.98	15.016	-925.69	859.40
4	1384.6	251.55	222.77	15.016	-693.32	686.37
5	3002.7	239.26	219.92	15.016	-695.50	656.93
6	4615.8	309.08	289.84	15.016	-864.82	811.99
7	1039.4	251.69	219.34	15.016	-687.21	694.78
8	2655.7	242.04	218.70	15.016	-694.53	671.38
9	4272.1	313.87	289.36	15.016	-866.07	831.68
10	690.53	258.43	221.45	15.016	-694.18	718.46
11	2308.8	249.35	221.39	15.016	-702.86	696.37
12	3926.9	324.95	294.39	15.016	-879.45	864.93
13	336.38	296.62	248.83	15.016	-759.81	813.86
14	1966.8	284.34	247.07	15.016	-765.13	785.06
15	3551.5	351.76	312.42	15.016	-921.23	932.38

MINIMUM	336.38	239.26	218.70	15.016	-925.69	656.93
Pile N.	13	5	8	1	3	5
MAXIMUM	4879.5	351.76	318.98	15.016	-687.21	932.38
Pile N.	3	15	3	1	7	15

PILE GROUP	STRESS, KN/ M**2
1	4313.3
2	5148.8
3	6550.6
4	3710.3
5	4569.3
6	6170.8
7	3519.8
8	4400.8
9	6019.7
10	3387.9
11	4274.8
12	5922.7
13	3530.6
14	4401.7
15	5941.9

MINIMUM	3387.9
Pile N.	10
MAXIMUM	6550.6
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.3307E-05	-4.8974E-05	-776.93	-786.82	-59.408	-47.148	-13.921	-12.273	995.96	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	11.040	18.720	18.720	24.000	0.0000	0.0000
2	-6.2862E-05	-4.9823E-05	-745.22	-789.08	-57.152	-46.626	-14.270	-12.942	1892.7	7.8500E+06	7.8500E+06
x( M)	13.440	13.920	0.0000	0.0000	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000
3	-6.4000E-05	-5.2570E-05	-859.40	-925.69	-67.083	-56.371	-11.804	-11.339	2761.2	7.8500E+06	7.8500E+06
x( M)	12.960	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000
4	-6.2023E-05	-4.6867E-05	-686.37	-693.32	-51.112	-40.040	-15.628	-13.281	783.54	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-6.1350E-05	-4.7340E-05	-656.93	-695.50	-49.188	-39.627	-15.649	-13.681	1699.2	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-6.4431E-05	-5.2079E-05	-811.99	-864.82	-62.019	-51.395	-13.712	-12.746	2612.0	7.8500E+06	7.8500E+06
x( M)	13.200	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
7	-6.2579E-05	-4.6670E-05	-694.78	-687.21	-50.889	-39.394	-16.045	-13.396	588.16	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-6.1963E-05	-4.7345E-05	-671.38	-694.53	-49.412	-39.365	-16.017	-13.767	1502.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
9	-6.5411E-05	-5.2280E-05	-831.68	-866.07	-62.585	-51.224	-14.165	-12.929	2417.5	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
10	-6.3534E-05	-4.6936E-05	-718.46	-694.18	-51.836	-39.682	-16.392	-13.486	390.76	7.8500E+06	7.8500E+06
x( M)	14.160	14.400	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-6.2960E-05	-4.7657E-05	-696.37	-702.86	-50.465	-39.751	-16.361	-13.860	1306.5	7.8500E+06	7.8500E+06
x( M)	14.160	14.640	0.0000	0.0000	11.280	11.760	18.720	18.720	24.000	0.0000	0.0000
12	-6.6514E-05	-5.2624E-05	-864.93	-879.45	-64.271	-52.008	-14.366	-12.912	2222.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.680	0.0000	0.0000	10.560	10.800	18.720	18.720	24.000	0.0000	0.0000
13	-6.6256E-05	-4.8896E-05	-813.86	-759.81	-58.353	-44.207	-16.212	-13.278	190.35	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.280	18.720	18.720	24.000	0.0000	0.0000
14	-6.5789E-05	-4.9692E-05	-785.06	-765.13	-56.468	-43.941	-16.353	-13.788	1113.0	7.8500E+06	7.8500E+06
x( M)	13.920	14.160	0.0000	0.0000	11.040	11.520	18.720	18.720	24.000	0.0000	0.0000
15	-6.8063E-05	-5.3345E-05	-932.38	-921.23	-68.689	-54.945	-13.919	-12.374	2009.7	7.8500E+06	7.8500E+06



APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 233 di 294

x( M)	13.200	13.440	0.0000	0.0000	10.320	10.800	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-6.8063E-05 15	-5.3345E-05 15	-932.38 15	-925.69 3	-68.689 15	-56.371 3	-16.392 10	-13.860 11	190.35 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.4655E-03	1.9412E-03	379.25	298.53	296.13	264.70	56.486	48.292	4313.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
2	2.4555E-03	1.9861E-03	368.92	298.46	282.08	261.34	53.314	47.096	5148.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	2.4434E-03	2.0311E-03	408.59	340.05	336.01	319.05	66.670	60.417	6550.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	2.5124E-03	1.9533E-03	346.13	268.91	251.57	222.79	45.609	38.549	3710.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
5	2.5003E-03	1.9982E-03	336.84	268.82	239.29	219.95	43.010	37.600	4569.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.4883E-03	2.0431E-03	390.42	320.75	309.13	289.90	59.507	53.267	6170.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
7	2.5573E-03	1.9653E-03	347.34	266.61	251.70	219.35	45.204	37.672	3519.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.5453E-03	2.0102E-03	340.00	268.29	242.07	218.73	43.213	37.221	4400.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.5333E-03	2.0552E-03	395.14	320.91	313.92	289.42	60.111	53.010	6019.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
10	2.6022E-03	1.9774E-03	353.63	268.51	258.44	221.46	46.299	38.026	3387.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.5902E-03	2.0222E-03	346.75	270.61	249.37	221.42	44.435	37.702	4274.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	2.5781E-03	2.0672E-03	404.45	324.71	325.00	294.45	62.238	54.055	5922.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
13	2.6472E-03	1.9894E-03	384.10	288.78	296.62	248.84	54.599	44.040	3530.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	2.6351E-03	2.0343E-03	374.93	289.80	284.37	247.10	51.971	43.308	4401.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.6800	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
15	2.6251E-03	2.0793E-03	424.99	337.59	351.81	312.47	68.180	58.196	5941.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.2000	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.6472E-03 13	2.0793E-03 15	424.99 15	340.05 3	351.81 15	319.05 3	68.180 15	60.417 3	6550.6 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 17  
CASE NAME : 17-7 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8273	1.0000
2	0.7632	1.0000
3	0.8645	1.0000
4	0.5528	1.0000
5	0.4961	1.0000
6	0.6454	1.0000
7	0.5205	1.0000
8	0.4717	1.0000
9	0.6185	1.0000
10	0.5180	1.0000
11	0.4712	1.0000
12	0.6258	1.0000
13	0.5697	1.0000
14	0.5178	1.0000
15	0.6778	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 53059.7	HOR. LOAD Y, KN 3816.62	HOR. LOAD Z, KN 12833.8
MOMENT X, KN- M 1559.54	MOMENT Y, KN- M 1.71757E+05	MOMENT Z, KN- M -40908.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.29889E-03      2.75323E-03      6.84425E-03  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 2.36922E-05      3.03171E-04      -2.87753E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7172E-03	2.5703E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
2	4.2630E-03	2.5473E-03	6.7890E-03	2.3692E-05	3.0317E-04	-2.8775E-04
3	5.8694E-03	2.5196E-03	6.8921E-03	2.3692E-05	3.0317E-04	-2.8775E-04
4	1.6775E-03	2.6779E-03	6.7137E-03	2.3692E-05	3.0317E-04	-2.8775E-04
5	3.2839E-03	2.6502E-03	6.8168E-03	2.3692E-05	3.0317E-04	-2.8775E-04
6	4.8844E-03	2.6227E-03	6.9196E-03	2.3692E-05	3.0317E-04	-2.8775E-04
7	6.9548E-04	2.7807E-03	6.7412E-03	2.3692E-05	3.0317E-04	-2.8775E-04
8	2.2989E-03	2.7532E-03	6.8442E-03	2.3692E-05	3.0317E-04	-2.8775E-04
9	3.9023E-03	2.7257E-03	6.9473E-03	2.3692E-05	3.0317E-04	-2.8775E-04
10	-2.8664E-04	2.8838E-03	6.7689E-03	2.3692E-05	3.0317E-04	-2.8775E-04
11	1.3139E-03	2.8563E-03	6.8717E-03	2.3692E-05	3.0317E-04	-2.8775E-04
12	2.9203E-03	2.8286E-03	6.9748E-03	2.3692E-05	3.0317E-04	-2.8775E-04
13	-1.2716E-03	2.9868E-03	6.7964E-03	2.3692E-05	3.0317E-04	-2.8775E-04
14	3.3479E-04	2.9591E-03	6.8994E-03	2.3692E-05	3.0317E-04	-2.8775E-04
15	1.8806E-03	2.9361E-03	7.0025E-03	2.3692E-05	3.0317E-04	-2.8775E-04
MINIMUM	-1.2716E-03	2.5196E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.8694E-03	2.9868E-03	7.0025E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4478.3	290.47	1026.5	34.424	-3074.7	621.71
2	6429.3	268.68	988.63	34.424	-3015.9	572.28
3	7813.1	288.33	1087.9	34.424	-3261.3	609.12
4	2772.1	230.19	792.12	34.424	-2539.2	510.85
5	5216.0	207.04	746.77	34.424	-2452.0	454.64
6	7199.4	247.31	901.97	34.424	-2845.7	542.84
7	1160.6	233.81	764.31	34.424	-2474.4	537.27
8	3791.9	212.10	724.81	34.424	-2400.3	484.08
9	5982.3	254.74	880.23	34.424	-2798.1	579.29
10	-443.33	246.78	765.06	34.424	-2478.5	585.10
11	2175.4	224.83	727.09	34.424	-2408.0	531.22
12	4765.5	272.22	890.24	34.424	-2825.0	638.16
13	-1947.0	279.42	818.30	34.424	-2609.2	678.55
14	560.85	255.04	777.60	34.424	-2534.2	619.50
15	3105.4	305.68	942.34	34.424	-2949.4	733.43
MINIMUM	-1947.0	207.04	724.81	34.424	-3261.3	454.64
Pile N.	13	5	8	1	3	5
MAXIMUM	7813.1	305.68	1087.9	34.424	-2400.3	733.43
Pile N.	3	15	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.7172E-03	2.5703E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
2	4.2630E-03	2.5473E-03	6.7890E-03	2.3692E-05	3.0317E-04	-2.8775E-04
3	5.8694E-03	2.5196E-03	6.8921E-03	2.3692E-05	3.0317E-04	-2.8775E-04
4	1.6775E-03	2.6779E-03	6.7137E-03	2.3692E-05	3.0317E-04	-2.8775E-04
5	3.2839E-03	2.6502E-03	6.8168E-03	2.3692E-05	3.0317E-04	-2.8775E-04
6	4.8844E-03	2.6227E-03	6.9196E-03	2.3692E-05	3.0317E-04	-2.8775E-04
7	6.9548E-04	2.7807E-03	6.7412E-03	2.3692E-05	3.0317E-04	-2.8775E-04
8	2.2989E-03	2.7532E-03	6.8442E-03	2.3692E-05	3.0317E-04	-2.8775E-04
9	3.9023E-03	2.7257E-03	6.9473E-03	2.3692E-05	3.0317E-04	-2.8775E-04
10	-2.8664E-04	2.8838E-03	6.7689E-03	2.3692E-05	3.0317E-04	-2.8775E-04
11	1.3139E-03	2.8563E-03	6.8717E-03	2.3692E-05	3.0317E-04	-2.8775E-04
12	2.9203E-03	2.8286E-03	6.9748E-03	2.3692E-05	3.0317E-04	-2.8775E-04
13	-1.2716E-03	2.9868E-03	6.7964E-03	2.3692E-05	3.0317E-04	-2.8775E-04
14	3.3479E-04	2.9591E-03	6.8994E-03	2.3692E-05	3.0317E-04	-2.8775E-04
15	1.8806E-03	2.9361E-03	7.0025E-03	2.3692E-05	3.0317E-04	-2.8775E-04
MINIMUM	-1.2716E-03	2.5196E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 235 di 294

MAXIMUM 5.8694E-03 2.9868E-03 7.0025E-03 2.3692E-05 3.0317E-04 -2.8775E-04  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4478.3	290.47	1026.5	34.424	-3074.7	621.71
2	6429.3	268.68	988.63	34.424	-3015.9	572.28
3	7813.1	288.33	1087.9	34.424	-3261.3	609.12
4	2772.1	230.19	792.12	34.424	-2539.2	510.85
5	5216.0	207.04	746.77	34.424	-2452.0	454.64
6	7199.4	247.31	901.97	34.424	-2845.7	542.84
7	1160.6	233.81	764.31	34.424	-2474.4	537.27
8	3791.9	212.10	724.81	34.424	-2400.3	484.08
9	5982.3	254.74	880.23	34.424	-2798.1	579.29
10	-443.33	246.78	765.06	34.424	-2478.5	585.10
11	2175.4	224.83	727.09	34.424	-2408.0	531.22
12	4765.5	272.22	890.24	34.424	-2825.0	638.16
13	-1947.0	279.42	818.30	34.424	-2609.2	678.55
14	560.85	255.04	777.60	34.424	-2534.2	619.50
15	3105.4	305.68	942.34	34.424	-2949.4	733.43
MINIMUM	-1947.0	207.04	724.81	34.424	-3261.3	454.64
Pile N.	13	5	8	1	3	5
MAXIMUM	7813.1	305.68	1087.9	34.424	-2400.3	733.43
Pile N.	3	15	3	1	8	15

PILE GROUP	STRESS, KN/ M**2
1	1.1945E+04
2	1.2847E+04
3	1.4375E+04
4	9338.9
5	1.0433E+04
6	1.2765E+04
7	8253.1
8	9491.6
9	1.1958E+04
10	7890.9
11	8628.7
12	1.1385E+04
13	9189.8
14	8143.7
15	1.0875E+04
MINIMUM	7890.9
Pile N.	10
MAXIMUM	1.4375E+04
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.8633E-05	-1.7084E-04	-621.71	-3074.7	-68.935	-180.68	-11.885	-39.476	2534.2	7.8500E+06	7.8500E+06
x( M)	12.720	0.0000	0.0000	0.0000	9.8400	10.800	18.720	18.720	24.000	0.0000	0.0000
2	-6.8006E-05	-1.7218E-04	-572.28	-3015.9	-65.219	-174.96	-11.716	-42.511	3638.2	7.8500E+06	7.8500E+06
x( M)	12.720	13.680	0.0000	0.0000	10.000	10.800	18.720	18.720	24.000	0.0000	0.0000
3	-6.7850E-05	-1.7752E-04	-609.12	-3261.3	-69.732	-192.32	-12.149	-39.565	4421.3	7.8500E+06	7.8500E+06
x( M)	12.480	13.200	0.0000	0.0000	9.8400	10.560	12.960	18.720	24.000	0.0000	0.0000
4	-6.8394E-05	-1.5905E-04	-510.85	-2539.2	-55.794	-140.77	-14.984	-46.832	1568.7	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-6.7044E-05	-1.5708E-04	-454.64	-2452.0	-51.872	-134.29	-15.135	-47.987	2951.7	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	12.000	18.720	18.720	24.000	0.0000	0.0000
6	-6.8867E-05	-1.7065E-04	-542.84	-2845.7	-60.449	-160.77	-13.719	-47.062	4074.0	7.8500E+06	7.8500E+06
x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-6.9431E-05	-1.5618E-04	-537.27	-2474.4	-55.492	-135.85	-16.012	-47.215	656.76	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-6.7989E-05	-1.5433E-04	-484.08	-2400.3	-51.953	-130.40	-16.029	-48.016	2145.8	7.8500E+06	7.8500E+06
x( M)	14.160	14.880	0.0000	0.0000	11.040	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-7.0490E-05	-1.6936E-04	-579.29	-2798.1	-60.909	-156.72	-14.824	-47.887	3385.3	7.8500E+06	7.8500E+06
x( M)	13.440	14.160	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
10	-7.1042E-05	-1.5576E-04	-585.10	-2478.5	-57.079	-135.52	-16.838	-47.402	250.87	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-6.9551E-05	-1.5400E-04	-531.22	-2408.0	-53.547	-130.38	-16.829	-48.172	1231.0	7.8500E+06	7.8500E+06
x( M)	14.160	14.880	0.0000	0.0000	11.280	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-7.2490E-05	-1.6976E-04	-638.16	-2825.0	-63.357	-158.10	-15.567	-47.958	2696.7	7.8500E+06	7.8500E+06
x( M)	13.440	14.160	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
13	-7.3896E-05	-1.5980E-04	-678.55	-2609.2	-62.356	-143.81	-17.306	-47.244	1101.8	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.800	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-7.2426E-05	-1.5851E-04	-619.50	-2534.2	-58.455	-138.14	-17.469	-48.535	317.38	7.8500E+06	7.8500E+06
x( M)	13.920	14.640	0.0000	0.0000	11.040	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-7.5087E-05	-1.7235E-04	-733.43	-2949.4	-68.781	-166.31	-15.807	-46.902	1757.3	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 236 di 294

x( M)	13.440	13.920	0.0000	0.0000	10.560	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-7.5087E-05 15	-1.7752E-04 3	-733.43 15	-3261.3 3	-69.732 3	-192.32 3	-17.469 14	-48.535 14	250.87 10	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.5703E-03	6.6860E-03	426.95	1097.7	290.51	1026.7	62.404	196.06	1.1945E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
2	2.5473E-03	6.7890E-03	410.05	1077.7	268.73	988.93	57.497	186.82	1.2847E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	2.5196E-03	6.8921E-03	426.73	1152.7	288.40	1088.2	63.120	210.26	1.4375E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
4	2.6779E-03	6.7137E-03	376.40	931.00	230.21	792.23	46.587	141.84	9338.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	2.6502E-03	6.8168E-03	357.35	903.98	207.07	746.96	41.835	132.09	1.0433E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	2.6227E-03	6.9196E-03	392.89	1023.5	247.37	902.29	51.785	166.50	1.2765E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
7	2.7807E-03	6.7412E-03	379.54	910.47	233.82	764.35	46.564	135.73	8253.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	2.7532E-03	6.8443E-03	361.51	888.09	212.12	724.95	42.231	126.81	9491.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	8.1600	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	2.7258E-03	6.9473E-03	399.22	1008.2	254.79	880.48	52.607	161.72	1.1958E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
10	2.8838E-03	6.7689E-03	390.66	910.89	246.78	765.05	48.726	135.92	7890.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	2.8563E-03	6.8717E-03	372.88	889.90	224.84	727.17	44.365	127.08	8628.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	8.1600	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	2.8286E-03	6.9748E-03	414.06	1015.8	272.27	890.45	55.838	164.07	1.1385E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
13	2.9868E-03	6.7964E-03	418.73	949.98	279.40	818.22	55.362	147.66	9189.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	7.9200	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
14	2.9591E-03	6.8995E-03	399.23	926.81	255.04	777.62	50.443	138.30	8143.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.9200	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	2.9361E-03	7.0025E-03	442.23	1052.8	305.71	942.48	62.813	175.91	1.0875E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	2.9868E-03 13	7.0025E-03 15	442.23 15	1152.7 3	305.71 15	1088.2 3	63.120 3	210.26 3	1.4375E+04 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 18  
CASE NAME : 18-8 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6328	1.0000
2	0.5063	1.0000
3	0.5974	1.0000
4	0.5827	1.0000
5	0.4691	1.0000
6	0.5556	1.0000
7	0.5768	1.0000
8	0.4707	1.0000
9	0.5587	1.0000
10	0.6071	1.0000
11	0.4970	1.0000
12	0.5912	1.0000
13	0.8445	1.0000
14	0.7752	1.0000
15	0.8635	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47825.5	4430.81	-12813.8
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1559.54	-1.74385E+05	-47762.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 003	A	237 di 294	

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.01311E-03      2.24536E-03      -6.54017E-03

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
5.06933E-06      -2.27824E-04      -7.49397E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-2.4629E-04	2.2062E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
2	-1.4129E-04	2.2013E-03	-6.5520E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
3	-8.1861E-05	2.1954E-03	-6.5299E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
4	8.7571E-04	2.2292E-03	-6.5681E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
5	9.3514E-04	2.2233E-03	-6.5461E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
6	9.9610E-04	2.2174E-03	-6.5240E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
7	1.9514E-03	2.2512E-03	-6.5622E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
8	2.0131E-03	2.2454E-03	-6.5402E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
9	2.0748E-03	2.2395E-03	-6.5181E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
10	3.0301E-03	2.2733E-03	-6.5563E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
11	3.0911E-03	2.2674E-03	-6.5343E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
12	3.1505E-03	2.2615E-03	-6.5122E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
13	4.1081E-03	2.2953E-03	-6.5504E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
14	4.1675E-03	2.2894E-03	-6.5283E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
15	4.2725E-03	2.2845E-03	-6.5063E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
MINIMUM	-2.4629E-04	2.1954E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2725E-03	2.2953E-03	-6.5063E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-380.92	298.79	-887.86	7.3657	2867.5	967.01
2	-218.53	257.68	-764.61	7.3657	2568.5	867.69
3	-126.61	286.46	-849.44	7.3657	2769.0	936.03
4	1456.3	286.10	-839.27	7.3657	2754.6	942.19
5	1553.9	247.48	-725.22	7.3657	2473.4	847.15
6	1653.9	275.99	-808.24	7.3657	2672.7	915.92
7	3221.6	287.00	-831.68	7.3657	2738.5	949.23
8	3322.9	250.50	-725.08	7.3657	2475.1	859.26
9	3424.1	279.73	-809.16	7.3657	2676.9	929.76
10	4901.5	299.67	-858.02	7.3657	2802.9	984.29
11	4977.1	262.17	-749.70	7.3657	2537.8	892.70
12	5050.7	293.14	-837.77	7.3657	2746.9	966.64
13	6237.3	374.43	-1060.0	7.3657	3266.0	1160.5
14	6311.0	353.60	-999.94	7.3657	3127.3	1112.7
15	6441.1	378.05	-1067.8	7.3657	3273.9	1166.2
MINIMUM	-380.92	247.48	-1067.8	7.3657	2473.4	847.15
Pile N.	1	5	15	1	5	5
MAXIMUM	6441.1	378.05	-725.08	7.3657	3273.9	1166.2
Pile N.	15	15	8	1	15	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-2.4629E-04	2.2062E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
2	-1.4129E-04	2.2013E-03	-6.5520E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
3	-8.1861E-05	2.1954E-03	-6.5299E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
4	8.7571E-04	2.2292E-03	-6.5681E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
5	9.3514E-04	2.2233E-03	-6.5461E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
6	9.9610E-04	2.2174E-03	-6.5240E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
7	1.9514E-03	2.2512E-03	-6.5622E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
8	2.0131E-03	2.2454E-03	-6.5402E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
9	2.0748E-03	2.2395E-03	-6.5181E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
10	3.0301E-03	2.2733E-03	-6.5563E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
11	3.0911E-03	2.2674E-03	-6.5343E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
12	3.1505E-03	2.2615E-03	-6.5122E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
13	4.1081E-03	2.2953E-03	-6.5504E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
14	4.1675E-03	2.2894E-03	-6.5283E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
15	4.2725E-03	2.2845E-03	-6.5063E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
MINIMUM	-2.4629E-04	2.1954E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	1	3	1	1	1	1

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 238 di 294

MAXIMUM 4.2725E-03 2.2953E-03 -6.5063E-03 5.0693E-06 -2.2782E-04 -7.4940E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-380.92	298.79	-887.86	7.3657	2867.5	967.01
2	-218.53	257.68	-764.61	7.3657	2568.5	867.69
3	-126.61	286.46	-849.44	7.3657	2769.0	936.03
4	1456.3	286.10	-839.27	7.3657	2754.6	942.19
5	1553.9	247.48	-725.22	7.3657	2473.4	847.15
6	1653.9	275.99	-808.24	7.3657	2672.7	915.92
7	3221.6	287.00	-831.68	7.3657	2738.5	949.23
8	3322.9	250.50	-725.08	7.3657	2475.1	859.26
9	3424.1	279.73	-809.16	7.3657	2676.9	929.76
10	4901.5	299.67	-858.02	7.3657	2802.9	984.29
11	4977.1	262.17	-749.70	7.3657	2537.8	892.70
12	5050.7	293.14	-837.77	7.3657	2746.9	966.64
13	6237.3	374.43	-1060.0	7.3657	3266.0	1160.5
14	6311.0	353.60	-999.94	7.3657	3127.3	1112.7
15	6441.1	378.05	-1067.8	7.3657	3273.9	1166.2
MINIMUM	-380.92	247.48	-1067.8	7.3657	2473.4	847.15
Pile N.	1	5	15	1	5	5
MAXIMUM	6441.1	378.05	-725.08	7.3657	3273.9	1166.2
Pile N.	15	15	8	1	15	15

PILE GROUP	STRESS, KN/ M**2
1	9293.9
2	8256.9
3	8840.6
4	9558.1
5	8722.7
6	9411.7
7	1.0518E+04
8	9740.3
9	1.0439E+04
10	1.1686E+04
11	1.0887E+04
12	1.1594E+04
13	1.3928E+04
14	1.3529E+04
15	1.4071E+04
MINIMUM	8256.9
Pile N.	2
MAXIMUM	1.4071E+04
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-5.3217E-05	-6.5740E-03	-967.01	-964.76	-50.361	-887.85	-15.551	-159.94	215.56	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.9200	11.520	18.720	4.3200	24.000	0.0000	0.0000	0.0000
2	-4.9906E-05	-6.5520E-03	-867.69	-877.45	-43.818	-764.60	-15.911	-132.92	123.66	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	8.1600	12.000	18.720	4.3200	24.000	0.0000	0.0000	0.0000
3	-5.2300E-05	-6.5299E-03	-936.03	-936.66	-48.382	-849.44	-15.666	-151.49	71.645	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.520	18.720	4.3200	24.000	0.0000	0.0000	0.0000
4	-5.2927E-05	-6.5681E-03	-942.19	-932.72	-48.488	-839.33	-16.023	-149.45	824.12	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.760	18.720	4.3200	24.000	0.0000	0.0000	0.0000
5	-4.9301E-05	-6.5460E-03	-847.15	-850.12	-42.404	-725.28	-16.013	-124.66	879.32	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	8.4000	12.240	18.720	4.3200	24.000	0.0000	0.0000	0.0000
6	-5.1990E-05	-6.5240E-03	-915.92	-908.64	-46.900	-808.31	-16.018	-142.68	935.93	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.9200	11.760	18.720	4.3200	24.000	0.0000	0.0000	0.0000
7	-5.3518E-05	-6.5622E-03	-949.23	-928.64	-48.824	-831.82	-16.241	-148.04	1823.1	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.760	18.720	4.3200	24.000	0.0000	0.0000	0.0000
8	-5.0093E-05	-6.5402E-03	-859.26	-851.25	-43.060	-725.20	-16.222	-124.88	1880.4	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	8.4000	12.240	18.720	4.3200	24.000	0.0000	0.0000	0.0000
9	-5.2814E-05	-6.5181E-03	-929.76	-910.64	-47.678	-809.30	-16.205	-143.15	1937.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.760	18.720	4.3200	24.000	0.0000	0.0000	0.0000
10	-5.4889E-05	-6.5563E-03	-984.29	-948.28	-51.052	-858.23	-16.284	-154.12	2773.7	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.520	18.720	4.3200	24.000	0.0000	0.0000	0.0000
11	-5.1772E-05	-6.5343E-03	-892.70	-870.46	-45.065	-749.89	-16.498	-130.44	2816.4	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	8.1600	12.000	18.720	4.3200	24.000	0.0000	0.0000	0.0000
12	-5.4369E-05	-6.5122E-03	-966.64	-932.23	-49.978	-837.99	-16.270	-149.70	2858.1	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.9200	11.520	18.720	4.3200	24.000	0.0000	0.0000	0.0000
13	-5.8825E-05	-6.5504E-03	-1160.5	-1087.3	-63.424	-1060.3	-14.070	-201.04	3529.6	7.8500E+06	7.8500E+06
x( M)	13.440	0.0000	0.0000	7.4400	10.800	18.720	4.0800	24.000	0.0000	0.0000	0.0000
14	-5.8079E-05	-6.5284E-03	-1112.7	-1046.3	-59.974	-1000.2	-14.876	-186.88	3571.3	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.4400	11.040	18.720	4.0800	24.000	0.0000	0.0000	0.0000
15	-5.8725E-05	-6.5063E-03	-1166.2	-1090.5	-64.017	-1068.1	-13.742	-203.12	3644.9	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 239 di 294

x( M)	13.440	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
Min. Pile N.	-5.8825E-05 13	-6.5740E-03 1	-1166.2 15	-1090.5 15	-64.017 15	-1068.1 15	-16.498 11	-203.12 15	71.645 3	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.2062E-03	1.5860E-04	323.92	2867.5	298.78	149.98	53.779	46.232	9293.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
2	2.2013E-03	1.4858E-04	294.92	2568.5	257.68	130.34	44.751	47.258	8256.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.1600	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
3	2.1954E-03	1.5558E-04	315.04	2769.0	286.46	143.83	51.041	46.484	8840.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
4	2.2292E-03	1.5599E-04	316.75	2754.6	286.12	142.72	50.878	47.050	9558.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
5	2.2233E-03	1.4529E-04	288.95	2473.4	247.50	124.72	42.473	47.007	8722.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.4000	0.0000	0.0000	12.240	4.3200	18.720	0.0000	0.0000	0.0000
6	2.2174E-03	1.5304E-04	308.99	2672.7	276.02	137.86	48.650	46.964	9411.7	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
7	2.2512E-03	1.5608E-04	318.82	2738.5	287.05	142.14	50.995	47.127	1.0518E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
8	2.2454E-03	1.4607E-04	292.55	2475.1	250.55	125.25	43.054	47.063	9740.3	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.4000	0.0000	0.0000	12.240	4.3200	18.720	0.0000	0.0000	0.0000
9	2.2395E-03	1.5384E-04	313.09	2676.9	279.78	138.60	49.391	46.949	1.0439E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
10	2.2733E-03	1.5835E-04	329.15	2802.9	299.74	147.04	53.710	46.691	1.1686E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
11	2.2674E-03	1.4931E-04	302.34	2537.8	262.24	129.68	45.500	47.298	1.0887E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	8.1600	0.0000	0.0000	12.000	4.3200	18.720	0.0000	0.0000	0.0000
12	2.2615E-03	1.5662E-04	324.07	2746.9	293.21	143.73	52.259	46.573	1.1594E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
13	2.2953E-03	1.6784E-04	381.48	3266.0	374.54	180.71	70.846	39.814	1.3928E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.4400	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
14	2.2894E-03	1.6559E-04	367.31	3127.3	353.71	170.72	65.917	42.075	1.3529E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
15	2.2845E-03	1.6718E-04	383.23	3273.9	378.16	182.00	71.740	38.791	1.4071E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.4400	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
Max. Pile N.	2.2953E-03 13	1.6784E-04 13	383.23 15	3273.9 15	378.16 15	182.00 15	71.740 15	47.298 11	1.4071E+04 15	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 19  
CASE NAME : 19-9 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8752	1.0000
2	0.6215	1.0000
3	0.6398	1.0000
4	0.7974	1.0000
5	0.5013	1.0000
6	0.5066	1.0000
7	0.7828	1.0000
8	0.4939	1.0000
9	0.5006	1.0000
10	0.7822	1.0000
11	0.4925	1.0000
12	0.5075	1.0000
13	0.8417	1.0000
14	0.5493	1.0000
15	0.5716	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 53059.7	HOR. LOAD Y, KN -13267.6	HOR. LOAD Z, KN 3851.50
MOMENT X, KN- M 5196.70	MOMENT Y, KN- M 51545.5	MOMENT Z, KN- M 1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 240 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.35220E-03      -7.92198E-03      1.68852E-03  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 5.24107E-05      -1.42354E-05      5.58539E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	5.9733E-03	-8.3266E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
2	3.5299E-03	-8.3774E-03	1.5664E-03	5.2411E-05	-1.4235E-05	5.5854E-04
3	1.0836E-03	-8.4388E-03	1.7944E-03	5.2411E-05	-1.4235E-05	5.5854E-04
4	5.3845E-03	-8.0886E-03	1.3997E-03	5.2411E-05	-1.4235E-05	5.5854E-04
5	2.9382E-03	-8.1500E-03	1.6277E-03	5.2411E-05	-1.4235E-05	5.5854E-04
6	4.9761E-04	-8.2108E-03	1.8552E-03	5.2411E-05	-1.4235E-05	5.5854E-04
7	4.7984E-03	-7.8612E-03	1.4605E-03	5.2411E-05	-1.4235E-05	5.5854E-04
8	2.3522E-03	-7.9220E-03	1.6885E-03	5.2411E-05	-1.4235E-05	5.5854E-04
9	-9.3953E-05	-7.9828E-03	1.9165E-03	5.2411E-05	-1.4235E-05	5.5854E-04
10	4.2068E-03	-7.6332E-03	1.5218E-03	5.2411E-05	-1.4235E-05	5.5854E-04
11	1.7662E-03	-7.6940E-03	1.7493E-03	5.2411E-05	-1.4235E-05	5.5854E-04
12	-6.8008E-04	-7.7553E-03	1.9773E-03	5.2411E-05	-1.4235E-05	5.5854E-04
13	3.6208E-03	-7.4052E-03	1.5826E-03	5.2411E-05	-1.4235E-05	5.5854E-04
14	1.1745E-03	-7.4665E-03	1.8106E-03	5.2411E-05	-1.4235E-05	5.5854E-04
15	-1.2689E-03	-7.5174E-03	2.0386E-03	5.2411E-05	-1.4235E-05	5.5854E-04
MINIMUM	-1.2689E-03	-8.4388E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	5.9733E-03	-7.4052E-03	2.0386E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	7867.8	-1175.8	252.95	76.152	-869.60	-3280.4
2	5520.9	-928.80	236.43	76.152	-871.95	-2724.8
3	1797.5	-954.33	273.92	76.152	-1001.6	-2787.8
4	7557.9	-1071.9	251.33	76.152	-877.12	-2996.9
5	4787.6	-777.84	216.37	76.152	-831.19	-2319.9
6	833.61	-789.53	246.59	76.152	-942.73	-2350.0
7	7092.8	-1027.1	260.61	76.152	-909.49	-2846.3
8	3879.4	-749.89	224.47	76.152	-860.43	-2208.5
9	-145.31	-762.83	255.24	76.152	-973.25	-2241.8
10	6359.7	-993.87	272.60	76.152	-948.10	-2720.7
11	2917.7	-727.51	234.20	76.152	-893.76	-2110.9
12	-1047.1	-749.67	268.18	76.152	-1014.5	-2166.6
13	5633.5	-1008.7	297.39	76.152	-1015.7	-2700.0
14	1946.7	-760.73	261.15	76.152	-970.28	-2145.9
15	-1942.9	-788.98	300.09	76.152	-1102.8	-2213.5
MINIMUM	-1942.9	-1175.8	216.37	76.152	-1102.8	-3280.4
Pile N.	15	1	5	1	15	1
MAXIMUM	7867.8	-727.51	300.09	76.152	-831.19	-2110.9
Pile N.	1	11	15	1	5	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	5.9733E-03	-8.3266E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
2	3.5299E-03	-8.3774E-03	1.5664E-03	5.2411E-05	-1.4235E-05	5.5854E-04
3	1.0836E-03	-8.4388E-03	1.7944E-03	5.2411E-05	-1.4235E-05	5.5854E-04
4	5.3845E-03	-8.0886E-03	1.3997E-03	5.2411E-05	-1.4235E-05	5.5854E-04
5	2.9382E-03	-8.1500E-03	1.6277E-03	5.2411E-05	-1.4235E-05	5.5854E-04
6	4.9761E-04	-8.2108E-03	1.8552E-03	5.2411E-05	-1.4235E-05	5.5854E-04
7	4.7984E-03	-7.8612E-03	1.4605E-03	5.2411E-05	-1.4235E-05	5.5854E-04
8	2.3522E-03	-7.9220E-03	1.6885E-03	5.2411E-05	-1.4235E-05	5.5854E-04
9	-9.3953E-05	-7.9828E-03	1.9165E-03	5.2411E-05	-1.4235E-05	5.5854E-04
10	4.2068E-03	-7.6332E-03	1.5218E-03	5.2411E-05	-1.4235E-05	5.5854E-04
11	1.7662E-03	-7.6940E-03	1.7493E-03	5.2411E-05	-1.4235E-05	5.5854E-04
12	-6.8008E-04	-7.7553E-03	1.9773E-03	5.2411E-05	-1.4235E-05	5.5854E-04
13	3.6208E-03	-7.4052E-03	1.5826E-03	5.2411E-05	-1.4235E-05	5.5854E-04
14	1.1745E-03	-7.4665E-03	1.8106E-03	5.2411E-05	-1.4235E-05	5.5854E-04
15	-1.2689E-03	-7.5174E-03	2.0386E-03	5.2411E-05	-1.4235E-05	5.5854E-04
MINIMUM	-1.2689E-03	-8.4388E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	15	3	1	1	1	1



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 241 di 294

MAXIMUM 5.9733E-03 -7.4052E-03 2.0386E-03 5.2411E-05 -1.4235E-05 5.5854E-04  
Pile N. 1 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	7867.8	-1175.8	252.95	76.152	-869.60	-3280.4
2	5520.9	-928.80	236.43	76.152	-871.95	-2724.8
3	1797.5	-954.33	273.92	76.152	-1001.6	-2787.8
4	7557.9	-1071.9	251.33	76.152	-877.12	-2996.9
5	4787.6	-777.84	216.37	76.152	-831.19	-2319.9
6	833.61	-789.53	246.59	76.152	-942.73	-2350.0
7	7092.8	-1027.1	260.61	76.152	-909.49	-2846.3
8	3879.4	-749.89	224.47	76.152	-860.43	-2208.5
9	-145.31	-762.83	255.24	76.152	-973.25	-2241.8
10	6359.7	-993.87	272.60	76.152	-948.10	-2720.7
11	2917.7	-727.51	234.20	76.152	-893.76	-2110.9
12	-1047.1	-749.67	268.18	76.152	-1014.5	-2166.6
13	5633.5	-1008.7	297.39	76.152	-1015.7	-2700.0
14	1946.7	-760.73	261.15	76.152	-970.28	-2145.9
15	-1942.9	-788.98	300.09	76.152	-1102.8	-2213.5

MINIMUM -1942.9 -1175.8 216.37 76.152 -1102.8 -3280.4  
Pile N. 15 5 1 15 1  
MAXIMUM 7867.8 -727.51 300.09 76.152 -831.19 -2110.9  
Pile N. 1 11 15 5 11

PILE GROUP	STRESS, KN/ M**2
1	1.4633E+04
2	1.1707E+04
3	9903.8
4	1.3645E+04
5	1.0102E+04
6	8068.0
7	1.2978E+04
8	9306.0
9	7414.0
10	1.2242E+04
11	8528.0
12	7769.6
13	1.1842E+04
14	8166.8
15	8518.6

MINIMUM 7414.0  
Pile N. 9  
MAXIMUM 1.4633E+04  
Pile N. 1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
1	-8.3266E-03	-3.4800E-05	-1382.5	-869.60	-1176.2	-39.222	-242.07	-9.4483	4452.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
2	-8.3774E-03	-3.7767E-05	-1199.5	-871.95	-929.03	-37.025	-178.49	-12.837	3124.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
3	-8.4387E-03	-4.3094E-05	-1218.3	-1001.6	-954.41	-42.785	-183.34	-14.575	1017.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.4400	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
4	-8.0886E-03	-3.6010E-05	-1294.7	-877.12	-1072.2	-38.781	-216.10	-10.450	4276.9	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
5	-8.1500E-03	-3.6581E-05	-1070.8	-831.19	-778.01	-33.897	-143.68	-13.332	2709.2	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
6	-8.2108E-03	-4.1329E-05	-1079.0	-942.73	-789.55	-38.530	-145.04	-15.132	471.73	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
7	-7.8612E-03	-3.7527E-05	-1252.0	-909.49	-1027.5	-40.031	-205.40	-10.967	4013.7	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
8	-7.9220E-03	-3.7800E-05	-1038.0	-860.43	-750.02	-34.843	-139.32	-13.750	2195.3	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
9	-7.9828E-03	-4.2570E-05	-1047.2	-973.25	-762.83	-39.505	-140.99	-15.551	82.228	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
10	-7.6332E-03	-3.9137E-05	-1218.3	-948.10	-994.14	-41.694	-197.97	-11.387	3598.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
11	-7.6940E-03	-3.9210E-05	-1010.4	-893.76	-727.61	-36.026	-135.85	-14.189	1651.1	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
12	-7.7553E-03	-4.4287E-05	-1026.6	-1014.5	-749.64	-41.075	-140.28	-16.014	592.54	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.480	4.0800	18.720	24.000	0.0000	0.0000
13	-7.4052E-03	-4.1139E-05	-1220.0	-1015.7	-1009.0	-45.329	-202.79	-11.286	3187.9	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
14	-7.4665E-03	-4.2364E-05	-1028.7	-970.28	-760.79	-39.742	-143.40	-14.747	1101.6	7.8500E+06	7.8500E+06
x( M)	0.0000	14.800	7.4400	0.0000	0.0000	12.240	4.0800	18.720	24.000	0.0000	0.0000
15	-7.5174E-03	-4.7730E-05	-1048.7	-1102.8	-788.91	-45.425	-149.74	-16.513	1099.5	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6								
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO			
IF3A	02	E ZZ CL	VI0103 003	A	242 di 294			

x( M)	0.0000	14.880	7.4400	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-8.4387E-03	-4.7730E-05	-1382.5	-1102.8	-1176.2	-45.425	-242.07	-16.513	82.228	7.8500E+06	7.8500E+06
	3	15	1	15	1	15	1	15	9	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.1368E-04	1.3386E-03	3280.4	231.86	230.17	253.05	43.104	47.558	1.4633E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.2400	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
2	2.0392E-04	1.5666E-03	2724.8	235.17	185.68	236.50	53.613	40.874	1.1707E+04	7.8500E+06	7.8500E+06
x( M)	13.920	0.2400	0.0000	8.4000	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
3	2.0410E-04	1.7944E-03	2787.8	271.33	188.97	273.95	53.629	47.515	9903.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	8.4000	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
4	2.0685E-04	1.3999E-03	2996.9	233.81	211.35	251.43	44.714	46.132	1.3645E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.2400	0.0000	7.9200	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	1.9004E-04	1.6281E-03	2319.9	224.66	158.36	216.43	53.538	35.408	1.0102E+04	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
6	1.8926E-04	1.8552E-03	2350.0	256.08	159.18	246.61	53.910	40.253	8068.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.6400	11.760	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
7	2.0135E-04	1.4606E-03	2846.3	242.48	203.27	260.71	43.529	47.322	1.2978E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.2400	0.0000	7.9200	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	1.8508E-04	1.6888E-03	2208.5	231.99	152.67	224.52	51.592	36.835	9306.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
9	1.8442E-04	1.9165E-03	2241.8	263.64	153.71	255.23	51.963	41.800	7414.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
10	1.9612E-04	1.5219E-03	2720.7	252.85	197.37	272.69	41.787	49.175	1.2242E+04	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.9200	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	1.8072E-04	1.7495E-03	2110.9	240.44	148.19	234.24	49.652	38.562	8528.0	7.8500E+06	7.8500E+06
x( M)	14.400	0.2400	0.0000	8.6400	11.520	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
12	1.8091E-04	1.9773E-03	2166.6	273.92	150.80	268.16	49.987	44.406	7769.6	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.6400	11.520	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
13	1.9179E-04	1.5827E-03	2700.0	271.16	200.45	297.47	37.741	54.051	1.1842E+04	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
14	1.8080E-04	1.8106E-03	2145.9	260.22	153.92	261.18	47.213	44.154	8166.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.4000	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
15	1.8104E-04	2.0386E-03	2213.5	296.63	157.50	300.06	47.210	51.091	8518.6	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.4000	11.280	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
Max. Pile N.	2.1368E-04	2.0386E-03	3280.4	296.63	230.17	300.06	53.910	54.051	1.4633E+04	7.8500E+06	7.8500E+06
	1	15	1	15	1	15	6	13	1	1	1

LOAD CASE : 20  
CASE NAME : 20-10 SISMA  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5934	1.0000
2	0.5714	1.0000
3	0.8533	1.0000
4	0.5075	1.0000
5	0.4939	1.0000
6	0.7813	1.0000
7	0.4984	1.0000
8	0.4932	1.0000
9	0.7799	1.0000
10	0.5024	1.0000
11	0.4991	1.0000
12	0.7935	1.0000
13	0.6231	1.0000
14	0.6055	1.0000
15	0.8615	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47969.5	14220.4	3830.50
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5196.70	51986.8	-1.54095E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6								
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO			
IF3A	02	E ZZ CL	VI0103 003	A	243 di 294			

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.17563E-03      9.10504E-03      2.48902E-03

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
3.93411E-05      1.97475E-04      -6.79767E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-8.4071E-04	8.8013E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
2	2.3078E-03	8.7632E-03	2.3974E-03	3.9341E-05	1.9747E-04	-6.7977E-04
3	5.4959E-03	8.7171E-03	2.5685E-03	3.9341E-05	1.9747E-04	-6.7977E-04
4	-9.4192E-04	8.9799E-03	2.2722E-03	3.9341E-05	1.9747E-04	-6.7977E-04
5	2.2461E-03	8.9339E-03	2.4434E-03	3.9341E-05	1.9747E-04	-6.7977E-04
6	5.4254E-03	8.8883E-03	2.6141E-03	3.9341E-05	1.9747E-04	-6.7977E-04
7	-1.0104E-03	9.1507E-03	2.3179E-03	3.9341E-05	1.9747E-04	-6.7977E-04
8	2.1756E-03	9.1050E-03	2.4890E-03	3.9341E-05	1.9747E-04	-6.7977E-04
9	5.3617E-03	9.0594E-03	2.6602E-03	3.9341E-05	1.9747E-04	-6.7977E-04
10	-1.0741E-03	9.3218E-03	2.3639E-03	3.9341E-05	1.9747E-04	-6.7977E-04
11	2.1051E-03	9.2762E-03	2.5347E-03	3.9341E-05	1.9747E-04	-6.7977E-04
12	5.2932E-03	9.2301E-03	2.7058E-03	3.9341E-05	1.9747E-04	-6.7977E-04
13	-1.1446E-03	9.4929E-03	2.4095E-03	3.9341E-05	1.9747E-04	-6.7977E-04
14	2.0434E-03	9.4469E-03	2.5807E-03	3.9341E-05	1.9747E-04	-6.7977E-04
15	5.1920E-03	9.4088E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
MINIMUM	-1.1446E-03	8.7171E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.4959E-03	9.4929E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-1291.5	891.79	212.39	57.162	-551.35	2485.4
2	3806.5	858.28	228.96	57.162	-625.61	2412.9
3	7616.5	1132.7	335.46	57.162	-905.54	3042.1
4	-1445.4	811.96	193.22	57.162	-514.39	2327.1
5	3705.3	786.51	209.62	57.162	-587.64	2271.2
6	7579.5	1081.5	319.49	57.162	-879.77	2964.7
7	-1549.7	815.30	194.52	57.162	-525.70	2365.4
8	3589.6	799.49	213.05	57.162	-604.13	2333.2
9	7545.9	1098.1	323.66	57.162	-898.93	3038.3
10	-1646.6	833.84	199.57	57.162	-546.14	2441.0
11	3473.9	820.24	218.58	57.162	-625.74	2414.3
12	7509.9	1129.5	332.15	57.162	-927.80	3145.4
13	-1753.8	987.28	237.72	57.162	-645.76	2842.1
14	3372.6	956.76	255.35	57.162	-722.84	2775.8
15	7456.6	1217.1	356.76	57.162	-993.04	3380.5
MINIMUM	-1753.8	786.51	193.22	57.162	-993.04	2271.2
Pile N.	13	5	4	1	15	5
MAXIMUM	7616.5	1217.1	356.76	57.162	-514.39	3380.5
Pile N.	3	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	-8.4071E-04	8.8013E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
2	2.3078E-03	8.7632E-03	2.3974E-03	3.9341E-05	1.9747E-04	-6.7977E-04
3	5.4959E-03	8.7171E-03	2.5685E-03	3.9341E-05	1.9747E-04	-6.7977E-04
4	-9.4192E-04	8.9799E-03	2.2722E-03	3.9341E-05	1.9747E-04	-6.7977E-04
5	2.2461E-03	8.9339E-03	2.4434E-03	3.9341E-05	1.9747E-04	-6.7977E-04
6	5.4254E-03	8.8883E-03	2.6141E-03	3.9341E-05	1.9747E-04	-6.7977E-04
7	-1.0104E-03	9.1507E-03	2.3179E-03	3.9341E-05	1.9747E-04	-6.7977E-04
8	2.1756E-03	9.1050E-03	2.4890E-03	3.9341E-05	1.9747E-04	-6.7977E-04
9	5.3617E-03	9.0594E-03	2.6602E-03	3.9341E-05	1.9747E-04	-6.7977E-04
10	-1.0741E-03	9.3218E-03	2.3639E-03	3.9341E-05	1.9747E-04	-6.7977E-04
11	2.1051E-03	9.2762E-03	2.5347E-03	3.9341E-05	1.9747E-04	-6.7977E-04
12	5.2932E-03	9.2301E-03	2.7058E-03	3.9341E-05	1.9747E-04	-6.7977E-04
13	-1.1446E-03	9.4929E-03	2.4095E-03	3.9341E-05	1.9747E-04	-6.7977E-04
14	2.0434E-03	9.4469E-03	2.5807E-03	3.9341E-05	1.9747E-04	-6.7977E-04
15	5.1920E-03	9.4088E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
MINIMUM	-1.1446E-03	8.7171E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6								
			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
			IF3A	02	E ZZ CL	VI0103 003	A	244 di 294

MAXIMUM	5.4959E-03	9.4929E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	-1291.5	891.79	212.39	57.162	-551.35	2485.4
2	3806.5	858.28	228.96	57.162	-625.61	2412.9
3	7616.5	1132.7	335.46	57.162	-905.54	3042.1
4	-1445.4	811.96	193.22	57.162	-514.39	2327.1
5	3705.3	786.51	209.62	57.162	-587.64	2271.2
6	7579.5	1081.5	319.49	57.162	-879.77	2964.7
7	-1549.7	815.30	194.52	57.162	-525.70	2365.4
8	3589.6	799.49	213.05	57.162	-604.13	2333.2
9	7545.9	1098.1	323.66	57.162	-898.93	3038.3
10	-1646.6	833.84	199.57	57.162	-546.14	2441.0
11	3473.9	820.24	218.58	57.162	-625.74	2414.3
12	7509.9	1129.5	332.15	57.162	-927.80	3145.4
13	-1753.8	987.28	237.72	57.162	-645.76	2842.1
14	3372.6	956.76	255.35	57.162	-722.84	2775.8
15	7456.6	1217.1	356.76	57.162	-993.04	3380.5
MINIMUM	-1753.8	786.51	193.22	57.162	-993.04	2271.2
Pile N.	13	5	4	1	15	5
MAXIMUM	7616.5	1217.1	356.76	57.162	-514.39	3380.5
Pile N.	3	15	15	1	4	15

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	8368.4
2	9632.2
3	1.3832E+04
4	7967.7
5	9134.7
6	1.3567E+04
7	8146.4
8	9261.8
9	1.3776E+04
10	8435.9
11	9448.1
12	1.4088E+04
13	9736.0
14	1.0514E+04
15	1.4789E+04
MINIMUM	7967.7
Pile N.	4
MAXIMUM	1.4789E+04
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.1054E-04	-5.3942E-05	-2485.4	-551.35	-186.65	-47.170	-54.820	-13.278	730.82	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	0.0000	11.280	11.040	18.720	18.720	24.000	0.0000	0.0000
2	-2.1054E-04	-5.7938E-05	-2412.9	-625.61	-183.17	-50.043	-55.132	-14.820	2154.1	7.8500E+06	7.8500E+06
x( M)	14.160	13.920	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
3	-2.2329E-04	-6.5740E-05	-3042.1	-905.54	-235.70	-69.463	-44.172	-13.084	4310.1	7.8500E+06	7.8500E+06
x( M)	12.960	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
4	-2.0604E-04	-5.2922E-05	-2327.1	-514.39	-172.45	-43.543	-57.638	-14.049	817.95	7.8500E+06	7.8500E+06
x( M)	14.400	14.160	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-2.0645E-04	-5.6847E-05	-2271.2	-587.64	-170.29	-46.543	-57.532	-15.494	2096.7	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.520	11.520	18.720	18.720	24.000	0.0000	0.0000
6	-2.2436E-04	-6.5938E-05	-2964.7	-879.77	-226.65	-66.675	-49.017	-14.477	4289.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
7	-2.0733E-04	-5.3354E-05	-2365.4	-525.70	-173.32	-43.813	-59.120	-14.450	876.93	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.760	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-2.0868E-04	-5.7443E-05	-2333.2	-604.13	-172.94	-47.228	-58.992	-15.884	2031.3	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.760	11.520	18.720	18.720	24.000	0.0000	0.0000
9	-2.2742E-04	-6.6758E-05	-3038.3	-898.93	-230.07	-67.570	-50.581	-14.905	4270.1	7.8500E+06	7.8500E+06
x( M)	13.440	13.440	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
10	-2.1014E-04	-5.4099E-05	-2441.0	-546.14	-177.03	-44.774	-60.576	-14.837	931.76	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.760	11.520	18.720	18.720	24.000	0.0000	0.0000
11	-2.1175E-04	-5.8242E-05	-2414.3	-625.74	-177.07	-48.314	-60.450	-16.271	1965.8	7.8500E+06	7.8500E+06
x( M)	14.400	14.400	0.0000	0.0000	11.760	11.520	18.720	18.720	24.000	0.0000	0.0000
12	-2.3084E-04	-6.7657E-05	-3145.4	-927.80	-236.30	-69.282	-51.460	-15.130	4249.7	7.8500E+06	7.8500E+06
x( M)	13.440	13.440	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
13	-2.2337E-04	-5.7233E-05	-2842.1	-645.76	-205.39	-51.960	-60.238	-14.698	992.44	7.8500E+06	7.8500E+06
x( M)	13.920	13.920	0.0000	0.0000	11.280	11.040	18.720	18.720	24.000	0.0000	0.0000
14	-2.2376E-04	-6.1383E-05	-2775.8	-722.84	-202.56	-55.232	-60.455	-16.236	1908.5	7.8500E+06	7.8500E+06
x( M)	14.160	13.920	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000
15	-2.3619E-04	-6.9069E-05	-3380.5	-993.04	-252.93	-73.992	-49.664	-14.559	4219.6	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 245 di 294

x( M)	13.200	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-2.3619E-04	-6.9069E-05	-3380.5	-993.04	-252.93	-73.992	-60.576	-16.271	730.82	7.8500E+06	7.8500E+06
	15	15	15	15	15	15	10	11	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	8.8013E-03	2.2262E-03	1231.0	312.16	891.74	212.38	171.87	41.978	8368.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.2000	0.0000	0.0000	0.0000	3.8400	0.0000	0.0000	0.0000
2	8.7632E-03	2.3974E-03	1209.6	331.15	858.42	228.99	164.88	44.440	9632.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	8.7171E-03	2.5685E-03	1426.2	420.25	1133.1	335.56	238.22	70.411	1.3832E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	8.9799E-03	2.2723E-03	1173.7	297.60	811.91	193.21	149.91	36.620	7967.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	8.9339E-03	2.4434E-03	1158.1	316.95	786.63	209.65	145.16	39.118	9134.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	8.8883E-03	2.6141E-03	1394.7	410.13	1081.8	319.60	221.48	65.314	1.3567E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	9.1507E-03	2.3179E-03	1182.9	300.06	815.24	194.51	148.70	36.402	8146.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	9.1050E-03	2.4890E-03	1175.2	321.50	799.62	213.09	146.32	39.420	9261.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	9.0594E-03	2.6602E-03	1415.5	415.68	1098.4	323.76	223.13	65.667	1.3776E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	9.3218E-03	2.3639E-03	1204.8	305.92	833.78	199.55	151.17	37.088	8435.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.9200	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	9.2762E-03	2.5347E-03	1199.1	327.83	820.36	218.62	149.33	40.223	9448.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.9200	7.6800	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	9.2301E-03	2.7058E-03	1447.6	424.40	1129.9	332.26	228.75	67.183	1.4088E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	9.4929E-03	2.4096E-03	1335.5	339.05	987.20	237.70	186.64	45.900	9736.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
14	9.4469E-03	2.5807E-03	1316.7	359.75	956.90	255.39	180.61	48.660	1.0514E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.6800	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	9.4088E-03	2.7518E-03	1522.1	445.18	1217.5	356.87	249.24	72.996	1.4789E+04	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	9.4929E-03	2.7518E-03	1522.1	445.18	1217.5	356.87	249.24	72.996	1.4789E+04	7.8500E+06	7.8500E+06
	13	15	15	15	15	15	15	15	15	1	1

LOAD CASE : 21  
CASE NAME : 21-1 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8623	1.0000
2	0.7882	1.0000
3	0.8613	1.0000
4	0.5680	1.0000
5	0.4966	1.0000
6	0.6157	1.0000
7	0.5327	1.0000
8	0.4685	1.0000
9	0.5835	1.0000
10	0.5293	1.0000
11	0.4668	1.0000
12	0.5893	1.0000
13	0.5690	1.0000
14	0.5021	1.0000
15	0.6383	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
49984.9	-235.727	1216.67
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53100E-11	18223.7	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.01886E-03      -9.90914E-05      6.15798E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 -2.48430E-07      2.32192E-05      -1.24938E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1898E-03	-9.7173E-05	6.1746E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
2	2.2177E-03	-9.6932E-05	6.1638E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
3	2.2503E-03	-9.6642E-05	6.1530E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
4	2.0858E-03	-9.8301E-05	6.1717E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
5	2.1184E-03	-9.8011E-05	6.1609E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
6	2.1508E-03	-9.7723E-05	6.1501E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
7	1.9865E-03	-9.9380E-05	6.1688E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
8	2.0189E-03	-9.9091E-05	6.1580E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
9	2.0512E-03	-9.8803E-05	6.1472E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
10	1.8870E-03	-1.0046E-04	6.1659E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
11	1.9193E-03	-1.0017E-04	6.1551E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
12	1.9519E-03	-9.9881E-05	6.1443E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
13	1.7874E-03	-1.0154E-04	6.1630E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
14	1.8200E-03	-1.0125E-04	6.1522E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
15	1.8480E-03	-1.0101E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
MINIMUM	1.7874E-03	-1.0154E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.2503E-03	-9.6642E-05	6.1746E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3612.8	-19.135	102.19	-0.3610	-307.62	-64.646
2	3658.7	-18.100	96.373	-0.3610	-294.78	-62.293
3	3712.2	-19.019	101.69	-0.3610	-306.10	-64.283
4	3442.2	-15.118	78.538	-0.3610	-254.62	-55.625
5	3495.7	-13.926	72.009	-0.3610	-239.00	-52.677
6	3548.8	-15.765	82.297	-0.3610	-262.94	-57.066
7	3279.2	-14.711	75.400	-0.3610	-247.17	-54.826
8	3332.3	-13.598	69.381	-0.3610	-232.58	-52.039
9	3385.4	-15.435	79.520	-0.3610	-256.45	-56.472
10	3115.9	-14.809	75.063	-0.3610	-246.30	-55.244
11	3169.0	-13.712	69.193	-0.3610	-232.05	-52.493
12	3222.5	-15.690	79.987	-0.3610	-257.45	-57.267
13	2952.5	-15.615	78.528	-0.3610	-254.36	-57.374
14	3006.0	-14.464	72.422	-0.3610	-239.75	-54.529
15	3051.9	-16.628	84.081	-0.3610	-266.78	-59.682
MINIMUM	2952.5	-19.135	69.193	-0.3610	-307.62	-64.646
Pile N.	13	1	11	1	1	1
MAXIMUM	3712.2	-13.598	102.19	-0.3610	-232.05	-52.039
Pile N.	3	8	1	1	11	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.1898E-03	-9.7173E-05	6.1746E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
2	2.2177E-03	-9.6932E-05	6.1638E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
3	2.2503E-03	-9.6642E-05	6.1530E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
4	2.0858E-03	-9.8301E-05	6.1717E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
5	2.1184E-03	-9.8011E-05	6.1609E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
6	2.1508E-03	-9.7723E-05	6.1501E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
7	1.9865E-03	-9.9380E-05	6.1688E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
8	2.0189E-03	-9.9091E-05	6.1580E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
9	2.0512E-03	-9.8803E-05	6.1472E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
10	1.8870E-03	-1.0046E-04	6.1659E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
11	1.9193E-03	-1.0017E-04	6.1551E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
12	1.9519E-03	-9.9881E-05	6.1443E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
13	1.7874E-03	-1.0154E-04	6.1630E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
14	1.8200E-03	-1.0125E-04	6.1522E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
15	1.8480E-03	-1.0101E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
MINIMUM	1.7874E-03	-1.0154E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	13	13	15	1	1	1

APPALTATORE: <u>Consorzio</u> <u>Soci</u> <b>HIRPINIA - ORSARA AV      WEBUILD ITALIA      PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> <b>ROCKSOIL S.P.A.</b> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 247 di 294

MAXIMUM      2.2503E-03      -9.6642E-05      6.1746E-04      -2.4843E-07      2.3219E-05      -1.2494E-06  
Pile N.                      3                      3                      1                      1                      1                      1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3612.8	-19.135	102.19	-0.3610	-307.62	-64.646
2	3658.7	-18.100	96.373	-0.3610	-294.78	-62.293
3	3712.2	-19.019	101.69	-0.3610	-306.10	-64.283
4	3442.2	-15.118	78.538	-0.3610	-254.62	-55.625
5	3495.7	-13.926	72.009	-0.3610	-239.00	-52.677
6	3548.8	-15.765	82.297	-0.3610	-262.94	-57.066
7	3279.2	-14.711	75.400	-0.3610	-247.17	-54.826
8	3332.3	-13.598	69.381	-0.3610	-232.58	-52.039
9	3385.4	-15.435	79.520	-0.3610	-256.45	-56.472
10	3115.9	-14.809	75.063	-0.3610	-246.30	-55.244
11	3169.0	-13.712	69.193	-0.3610	-232.05	-52.493
12	3222.5	-15.690	79.987	-0.3610	-257.45	-57.267
13	2952.5	-15.615	78.528	-0.3610	-254.36	-57.374
14	3006.0	-14.464	72.422	-0.3610	-239.75	-54.529
15	3051.9	-16.628	84.081	-0.3610	-266.78	-59.682

MINIMUM      2952.5      -19.135      69.193      -0.3610      -307.62      -64.646  
Pile N.                      13                      1                      11                      1                      1  
MAXIMUM      3712.2      -13.598      102.19      -0.3610      -232.05      -52.039  
Pile N.                      3                      8                      1                      1                      11                      8

PILE GROUP	STRESS, KN/ M**2
1	2987.4
2	2974.3
3	3039.0
4	2729.8
5	2712.4
6	2815.4
7	2615.2
8	2600.7
9	2703.5
10	2520.5
11	2507.0
12	2614.8
13	2453.0
14	2438.7
15	2547.1

MINIMUM      2438.7  
Pile N.                      14  
MAXIMUM      3039.0  
Pile N.                      3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-9.7236E-05	-1.5921E-05	-16.930	-307.62	-19.139	-17.279	-3.4057	-3.6158	2044.4	7.8500E+06	7.8500E+06
x( M)	0.2400	13.440	7.6800	0.0000	0.0000	10.560	4.0800	18.720	24.000	0.0000	0.0000
2	-9.7004E-05	-1.5774E-05	-16.294	-294.78	-18.103	-16.338	-3.1654	-3.8521	2070.4	7.8500E+06	7.8500E+06
x( M)	0.2400	13.440	7.9200	0.0000	0.0000	10.800	4.3200	18.720	24.000	0.0000	0.0000
3	-9.6706E-05	-1.5867E-05	-16.831	-306.10	-19.023	-17.207	-3.3842	-3.6048	2100.7	7.8500E+06	7.8500E+06
x( M)	0.2400	13.440	7.6800	0.0000	0.0000	10.560	4.0800	18.720	24.000	0.0000	0.0000
4	-9.8397E-05	-1.5005E-05	-14.547	-254.62	-15.120	-13.411	-2.4740	-4.3624	1947.9	7.8500E+06	7.8500E+06
x( M)	0.2400	14.400	8.4000	0.0000	0.0000	11.520	4.5600	18.720	24.000	0.0000	0.0000
5	-9.8117E-05	-1.4492E-05	-13.772	-239.00	-13.928	-12.348	-2.2164	-4.3867	1978.2	7.8500E+06	7.8500E+06
x( M)	0.2400	14.640	8.6400	0.0000	0.0000	12.000	4.8000	18.720	24.000	0.0000	0.0000
6	-9.7813E-05	-1.5208E-05	-14.921	-262.94	-15.768	-14.026	-2.6222	-4.2781	2008.2	7.8500E+06	7.8500E+06
x( M)	0.2400	14.160	8.1600	0.0000	0.0000	11.280	4.5600	18.720	24.000	0.0000	0.0000
7	-9.9478E-05	-1.4764E-05	-14.342	-247.17	-14.714	-12.896	-2.3760	-4.3873	1855.7	7.8500E+06	7.8500E+06
x( M)	0.2400	14.400	8.4000	0.0000	0.0000	11.760	4.5600	18.720	24.000	0.0000	0.0000
8	-9.9200E-05	-1.4227E-05	-13.611	-232.58	-13.601	-11.928	-2.1397	-4.3684	1885.7	7.8500E+06	7.8500E+06
x( M)	0.2400	14.880	8.6400	0.0000	0.0000	12.000	4.8000	18.720	24.000	0.0000	0.0000
9	-9.8896E-05	-1.5021E-05	-14.769	-256.45	-15.438	-13.574	-2.5399	-4.3244	1915.8	7.8500E+06	7.8500E+06
x( M)	0.2400	14.160	8.4000	0.0000	0.0000	11.520	4.5600	18.720	24.000	0.0000	0.0000
10	-1.0056E-04	-1.4723E-05	-14.458	-246.30	-14.812	-12.838	-2.3886	-4.3860	1763.2	7.8500E+06	7.8500E+06
x( M)	0.2400	14.400	8.4000	0.0000	0.0000	11.760	4.5600	18.720	24.000	0.0000	0.0000
11	-1.0028E-04	-1.4200E-05	-13.737	-232.05	-13.715	-11.893	-2.1560	-4.3640	1793.3	7.8500E+06	7.8500E+06
x( M)	0.2400	14.880	8.6400	0.0000	0.0000	12.000	4.8000	18.720	24.000	0.0000	0.0000
12	-9.9971E-05	-1.5045E-05	-14.983	-257.45	-15.693	-13.645	-2.5871	-4.3139	1823.5	7.8500E+06	7.8500E+06
x( M)	0.2400	14.160	8.4000	0.0000	0.0000	11.520	4.5600	18.720	24.000	0.0000	0.0000
13	-1.0163E-04	-1.4973E-05	-15.028	-254.36	-15.618	-13.395	-2.5566	-4.3531	1670.8	7.8500E+06	7.8500E+06
x( M)	0.2400	14.400	8.4000	0.0000	0.0000	11.520	4.5600	18.720	24.000	0.0000	0.0000
14	-1.0135E-04	-1.4499E-05	-14.277	-239.75	-14.466	-12.404	-2.3070	-4.3790	1701.0	7.8500E+06	7.8500E+06
x( M)	0.2400	14.640	8.6400	0.0000	0.0000	11.760	4.5600	18.720	24.000	0.0000	0.0000
15	-1.0109E-04	-1.5254E-05	-15.635	-266.78	-16.631	-14.309	-2.7854	-4.2284	1727.0	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 248 di 294

x( M)	0.2400	14.160	8.1600	0.0000	0.0000	11.280	4.5600	18.720	24.000	0.0000	0.0000
Min. Pile N.	-1.0163E-04 13	-1.5921E-05 1	-16.930 1	-307.62 1	-19.139 1	-17.279 1	-3.4057 1	-4.3873 7	1670.8 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.5445E-06	6.1746E-04	64.646	104.06	2.8385	102.20	0.6859	19.072	2987.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	2.5112E-06	6.1638E-04	62.293	100.18	2.6827	96.390	0.7237	17.689	2974.3	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
3	2.5308E-06	6.1530E-04	64.283	103.64	2.8214	101.71	0.6829	18.979	3039.0	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	11.040	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
4	2.3768E-06	6.1717E-04	55.625	88.070	2.2379	78.551	0.8051	13.536	2729.8	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.9200	12.000	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	2.2712E-06	6.1609E-04	52.677	83.373	2.0633	72.021	0.7992	12.090	2712.4	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.9200	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
6	2.4145E-06	6.1501E-04	57.066	90.639	2.3331	82.311	0.7938	14.405	2815.4	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.6800	11.760	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
7	2.3578E-06	6.1688E-04	54.826	85.860	2.1785	75.413	0.8141	12.834	2615.2	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	7.9200	12.240	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	2.2424E-06	6.1580E-04	52.039	81.478	2.0168	69.392	0.8003	11.522	2600.7	7.8500E+06	7.8500E+06
x( M)	15.360	0.0000	0.0000	8.1600	12.480	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	2.4087E-06	6.1472E-04	56.472	88.640	2.2849	79.533	0.8076	13.778	2703.5	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.6800	12.000	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
10	2.3772E-06	6.1659E-04	55.244	85.594	2.1931	75.074	0.8223	12.759	2520.5	7.8500E+06	7.8500E+06
x( M)	14.880	0.0000	0.0000	7.9200	12.240	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	2.2630E-06	6.1551E-04	52.493	81.318	2.0335	69.204	0.8081	11.482	2507.0	7.8500E+06	7.8500E+06
x( M)	15.360	0.0000	0.0000	8.1600	12.480	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	2.4408E-06	6.1443E-04	57.267	88.952	2.3222	80.000	0.8152	13.884	2614.8	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.6800	12.000	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
13	2.4536E-06	6.1630E-04	57.374	87.984	2.3112	78.539	0.8304	13.535	2453.0	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.9200	12.000	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
14	2.3522E-06	6.1522E-04	54.529	83.609	2.1416	72.433	0.8254	12.183	2438.7	7.8500E+06	7.8500E+06
x( M)	15.120	0.0000	0.0000	7.9200	12.480	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
15	2.5160E-06	6.1414E-04	59.682	91.792	2.4614	84.094	0.8138	14.812	2547.1	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.760	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
Max. Pile N.	2.5445E-06 1	6.1746E-04 1	64.646 1	104.06 1	2.8385 1	102.20 1	0.8304 13	19.072 1	3039.0 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 22  
CASE NAME : 22-2 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8752	1.0000
2	0.6227	1.0000
3	0.6414	1.0000
4	0.7962	1.0000
5	0.5013	1.0000
6	0.5074	1.0000
7	0.7815	1.0000
8	0.4937	1.0000
9	0.5011	1.0000
10	0.7810	1.0000
11	0.4924	1.0000
12	0.5080	1.0000
13	0.8403	1.0000
14	0.5490	1.0000
15	0.5720	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 58089.1	HOR. LOAD Y, KN -2731.59	HOR. LOAD Z, KN 835.000
MOMENT X, KN- M -2.00600E-10	MOMENT Y, KN- M 12666.2	MOMENT Z, KN- M 31593.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>			<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 249 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.35482E-03      -1.54748E-03      3.51788E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.92015E-06      -1.82997E-06      1.07716E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.0602E-03	-1.5623E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
2	2.5899E-03	-1.5642E-03	3.4731E-04	1.9202E-06	-1.8300E-06	1.0772E-04
3	2.1192E-03	-1.5664E-03	3.5567E-04	1.9202E-06	-1.8300E-06	1.0772E-04
4	2.9425E-03	-1.5536E-03	3.4121E-04	1.9202E-06	-1.8300E-06	1.0772E-04
5	2.4718E-03	-1.5558E-03	3.4956E-04	1.9202E-06	-1.8300E-06	1.0772E-04
6	2.0022E-03	-1.5581E-03	3.5789E-04	1.9202E-06	-1.8300E-06	1.0772E-04
7	2.8255E-03	-1.5452E-03	3.4344E-04	1.9202E-06	-1.8300E-06	1.0772E-04
8	2.3548E-03	-1.5475E-03	3.5179E-04	1.9202E-06	-1.8300E-06	1.0772E-04
9	1.8841E-03	-1.5497E-03	3.6014E-04	1.9202E-06	-1.8300E-06	1.0772E-04
10	2.7074E-03	-1.5369E-03	3.4568E-04	1.9202E-06	-1.8300E-06	1.0772E-04
11	2.2378E-03	-1.5391E-03	3.5402E-04	1.9202E-06	-1.8300E-06	1.0772E-04
12	1.7671E-03	-1.5414E-03	3.6237E-04	1.9202E-06	-1.8300E-06	1.0772E-04
13	2.5904E-03	-1.5286E-03	3.4791E-04	1.9202E-06	-1.8300E-06	1.0772E-04
14	2.1198E-03	-1.5308E-03	3.5626E-04	1.9202E-06	-1.8300E-06	1.0772E-04
15	1.6494E-03	-1.5327E-03	3.6461E-04	1.9202E-06	-1.8300E-06	1.0772E-04
MINIMUM	1.6494E-03	-1.5664E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	3.0602E-03	-1.5286E-03	3.6461E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4938.9	-230.07	65.700	2.7900	-218.38	-621.05
2	4269.4	-184.07	54.951	2.7900	-195.59	-521.27
3	3497.0	-188.20	57.279	2.7900	-202.51	-530.63
4	4793.0	-214.61	62.507	2.7900	-211.76	-586.25
5	4075.6	-158.23	48.605	2.7900	-180.75	-460.40
6	3305.0	-159.93	50.129	2.7900	-185.82	-464.44
7	4648.0	-210.52	62.217	2.7900	-211.55	-575.60
8	3883.7	-155.53	48.475	2.7900	-180.79	-452.48
9	3111.2	-157.51	50.074	2.7900	-186.05	-457.16
10	4462.3	-208.97	62.598	2.7900	-212.84	-570.38
11	3691.7	-154.15	48.704	2.7900	-181.70	-447.63
12	2919.2	-157.83	50.798	2.7900	-188.18	-456.32
13	4270.3	-217.82	65.814	2.7900	-220.43	-587.34
14	3497.9	-164.60	52.295	2.7900	-190.81	-470.26
15	2726.0	-169.56	54.853	2.7900	-198.34	-481.63
MINIMUM	2726.0	-230.07	48.475	2.7900	-220.43	-621.05
Pile N.	15	1	8	1	13	1
MAXIMUM	4938.9	-154.15	65.814	2.7900	-180.75	-447.63
Pile N.	1	11	13	1	5	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	3.0602E-03	-1.5623E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
2	2.5899E-03	-1.5642E-03	3.4731E-04	1.9202E-06	-1.8300E-06	1.0772E-04
3	2.1192E-03	-1.5664E-03	3.5567E-04	1.9202E-06	-1.8300E-06	1.0772E-04
4	2.9425E-03	-1.5536E-03	3.4121E-04	1.9202E-06	-1.8300E-06	1.0772E-04
5	2.4718E-03	-1.5558E-03	3.4956E-04	1.9202E-06	-1.8300E-06	1.0772E-04
6	2.0022E-03	-1.5581E-03	3.5789E-04	1.9202E-06	-1.8300E-06	1.0772E-04
7	2.8255E-03	-1.5452E-03	3.4344E-04	1.9202E-06	-1.8300E-06	1.0772E-04
8	2.3548E-03	-1.5475E-03	3.5179E-04	1.9202E-06	-1.8300E-06	1.0772E-04
9	1.8841E-03	-1.5497E-03	3.6014E-04	1.9202E-06	-1.8300E-06	1.0772E-04
10	2.7074E-03	-1.5369E-03	3.4568E-04	1.9202E-06	-1.8300E-06	1.0772E-04
11	2.2378E-03	-1.5391E-03	3.5402E-04	1.9202E-06	-1.8300E-06	1.0772E-04
12	1.7671E-03	-1.5414E-03	3.6237E-04	1.9202E-06	-1.8300E-06	1.0772E-04
13	2.5904E-03	-1.5286E-03	3.4791E-04	1.9202E-06	-1.8300E-06	1.0772E-04
14	2.1198E-03	-1.5308E-03	3.5626E-04	1.9202E-06	-1.8300E-06	1.0772E-04
15	1.6494E-03	-1.5327E-03	3.6461E-04	1.9202E-06	-1.8300E-06	1.0772E-04
MINIMUM	1.6494E-03	-1.5664E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	15	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 250 di 294

MAXIMUM 3.0602E-03 -1.5286E-03 3.6461E-04 1.9202E-06 -1.8300E-06 1.0772E-04  
Pile N. 1 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	4938.9	-230.07	65.700	2.7900	-218.38	-621.05
2	4269.4	-184.07	54.951	2.7900	-195.59	-521.27
3	3497.0	-188.20	57.279	2.7900	-202.51	-530.63
4	4793.0	-214.61	62.507	2.7900	-211.76	-586.25
5	4075.6	-158.23	48.605	2.7900	-180.75	-460.40
6	3305.0	-159.93	50.129	2.7900	-185.82	-464.44
7	4648.0	-210.52	62.217	2.7900	-211.55	-575.60
8	3883.7	-155.53	48.475	2.7900	-180.79	-452.48
9	3111.2	-157.51	50.074	2.7900	-186.05	-457.16
10	4462.3	-208.97	62.598	2.7900	-212.84	-570.38
11	3691.7	-154.15	48.704	2.7900	-181.70	-447.63
12	2919.2	-157.83	50.798	2.7900	-188.18	-456.32
13	4270.3	-217.82	65.814	2.7900	-220.43	-587.34
14	3497.9	-164.60	52.295	2.7900	-190.81	-470.26
15	2726.0	-169.56	54.853	2.7900	-198.34	-481.63

MINIMUM 2726.0 -230.07 48.475 2.7900 -220.43 -621.05  
Pile N. 15 1 8 1 13 1  
MAXIMUM 4938.9 -154.15 65.814 2.7900 -180.75 -447.63  
Pile N. 1 11 13 1 5 11

PILE GROUP	STRESS, KN/ M**2
1	4769.8
2	4086.3
3	3682.8
4	4582.2
5	3790.2
6	3370.9
7	4470.0
8	3659.5
9	3241.3
10	4351.5
11	3538.4
12	3132.7
13	4298.5
14	3501.9
15	3105.2

MINIMUM 3105.2  
Pile N. 15  
MAXIMUM 4769.8  
Pile N. 1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT y-DIR	MOMENT z-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
1	-1.5623E-03	-8.8726E-06	-262.90	-218.38	-230.11	-9.9306	-44.919	-2.3073	2794.8	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
2	-1.5642E-03	-8.6091E-06	-230.07	-195.59	-184.10	-8.2930	-33.801	-2.7567	2416.0	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
3	-1.5664E-03	-8.8615E-06	-233.08	-202.51	-188.23	-8.6288	-34.717	-2.8032	1978.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.2000	0.0000	0.0000	11.760	4.0800	18.720	24.000	0.0000	0.0000
4	-1.5536E-03	-8.8356E-06	-251.93	-211.76	-214.65	-9.4386	-41.213	-2.4720	2712.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
5	-1.5588E-03	-8.1333E-06	-210.15	-180.75	-158.25	-7.3443	-27.965	-2.8007	2306.3	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
6	-1.5581E-03	-8.3464E-06	-211.40	-185.82	-159.95	-7.5625	-28.302	-2.8675	1870.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.4400	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
7	-1.5453E-03	-8.8744E-06	-248.72	-211.55	-210.56	-9.3967	-40.311	-2.5137	2630.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
8	-1.5475E-03	-8.1429E-06	-207.79	-180.79	-155.55	-7.3214	-27.431	-2.8133	2197.7	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
9	-1.5497E-03	-8.3590E-06	-209.23	-186.05	-157.53	-7.5517	-27.828	-2.8815	1760.6	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.4400	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
10	-1.5369E-03	-8.9285E-06	-247.29	-212.84	-209.01	-9.4514	-40.027	-2.5307	2525.2	7.8500E+06	7.8500E+06
x( M)	0.0000	13.920	6.9600	0.0000	0.0000	11.280	3.8400	18.720	24.000	0.0000	0.0000
11	-1.5391E-03	-8.1832E-06	-206.44	-181.70	-154.17	-7.3528	-27.189	-2.8295	2089.1	7.8500E+06	7.8500E+06
x( M)	0.0000	15.120	7.6800	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
12	-1.5414E-03	-8.4468E-06	-209.25	-188.18	-157.85	-7.6576	-27.965	-2.9021	1651.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.4400	0.0000	0.0000	12.240	4.3200	18.720	24.000	0.0000	0.0000
13	-1.5285E-03	-9.0641E-06	-253.11	-220.43	-217.86	-9.9406	-42.299	-2.4364	2416.5	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	6.9600	0.0000	0.0000	11.040	3.8400	18.720	24.000	0.0000	0.0000
14	-1.5308E-03	-8.5233E-06	-214.33	-190.81	-164.62	-7.8845	-29.611	-2.8620	1979.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.880	7.4400	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
15	-1.5327E-03	-8.8173E-06	-217.95	-198.34	-169.58	-8.2567	-30.709	-2.9209	1542.6	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 251 di 294

x( M)	0.0000	14.640	7.4400	0.0000	0.0000	12.000	4.0800	18.720	24.000	0.0000	0.0000
Min. Pile N.	-1.5664E-03	-9.0641E-06	-262.90	-220.43	-230.11	-9.9406	-44.919	-2.9209	1542.6	7.8500E+06	7.8500E+06
	3	13	1	13	1	13	1	15	15	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	4.0691E-05	3.3896E-04	621.05	59.043	43.562	65.717	7.8705	11.810	4769.8	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
2	3.9437E-05	3.4731E-04	521.27	52.933	35.446	54.963	9.7237	9.2185	4086.3	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	8.1600	11.040	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
3	3.9612E-05	3.5567E-04	530.63	54.802	36.077	57.290	9.6363	9.6643	3682.8	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	8.1600	11.040	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
4	4.0241E-05	3.4121E-04	586.25	57.268	40.879	62.523	8.4619	11.023	4582.2	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
5	3.7797E-05	3.4956E-04	460.40	48.942	30.934	48.616	10.072	7.8056	3790.2	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
6	3.7865E-05	3.5789E-04	464.44	50.331	31.156	50.138	10.076	8.0677	3370.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
7	3.9959E-05	3.4344E-04	575.60	57.203	40.199	62.232	8.5177	10.932	4470.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
8	3.7490E-05	3.5179E-04	452.48	48.958	30.483	48.486	10.012	7.7592	3659.5	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
9	3.7569E-05	3.6014E-04	457.16	50.390	30.754	50.083	10.016	8.0375	3241.3	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
10	3.9736E-05	3.4568E-04	570.38	57.555	39.949	62.612	8.4620	10.997	4351.5	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.560	0.0000	18.720	4.3200	0.0000	0.0000	0.0000
11	3.7267E-05	3.5402E-04	447.63	49.213	30.257	48.714	7.7907	7.7907	3538.4	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
12	3.7475E-05	3.6237E-04	456.32	50.976	30.818	50.806	9.9400	8.1763	3132.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.4000	11.520	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
13	3.9662E-05	3.4791E-04	587.34	59.640	41.520	65.829	7.9330	11.728	4298.5	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	7.6800	10.320	0.0000	18.720	4.0800	0.0000	0.0000	0.0000
14	3.7853E-05	3.5626E-04	470.26	51.672	32.105	52.306	9.7667	8.5549	3501.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	8.4000	11.280	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
15	3.8104E-05	3.6461E-04	481.63	53.685	32.888	54.862	9.6989	9.0446	3105.2	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	8.1600	11.040	0.0000	18.720	4.5600	0.0000	0.0000	0.0000
Max. Pile N.	4.0691E-05	3.6461E-04	621.05	59.640	43.562	65.829	10.076	11.810	4769.8	7.8500E+06	7.8500E+06
	1	15	1	13	1	13	6	1	1	1	1

LOAD CASE : 23  
CASE NAME : 23-3 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8441	1.0000
2	0.7772	1.0000
3	0.8654	1.0000
4	0.5565	1.0000
5	0.4963	1.0000
6	0.6326	1.0000
7	0.5223	1.0000
8	0.4698	1.0000
9	0.6030	1.0000
10	0.5193	1.0000
11	0.4687	1.0000
12	0.6095	1.0000
13	0.5649	1.0000
14	0.5097	1.0000
15	0.6600	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1216.67
MOMENT X, KN- M 1.53100E-11	MOMENT Y, KN- M 18223.7	MOMENT Z, KN- M -2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>			<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 252 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.01886E-03      1.75176E-04      6.26390E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 9.99502E-07      2.65157E-05      -2.02217E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1

APPALTATORE: <u>Consorzio</u> HIRPINIA - ORSARA AV	<u>Soci</u> WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.	<u>Mandanti</u> NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A		LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A

MAXIMUM 2.3212E-03 1.8503E-04 6.3307E-04 9.9950E-07 2.6516E-05 -2.0222E-05  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2842.8
2	2922.4
3	3084.9
4	2598.2
5	2676.3
6	2878.2
7	2494.0
8	2575.4
9	2778.1
10	2409.5
11	2491.8
12	2699.7
13	2356.0
14	2437.3
15	2642.7
MINIMUM	2356.0
Pile N.	13
MAXIMUM	3084.9
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-4.5661E-06	-1.5952E-05	-36.729	-295.21	-4.5928	-17.060	-0.7952	-3.6143	1950.4	7.8500E+06	7.8500E+06
x( M)	12.480	0.0000	0.0000	9.8400	10.560	18.720	24.000	0.0000	0.0000	0.0000	0.0000
2	-4.5447E-06	-1.5955E-05	-33.893	-286.84	-4.3576	-16.352	-0.7384	-3.8621	2055.9	7.8500E+06	7.8500E+06
x( M)	12.720	13.440	0.0000	9.8400	10.800	13.200	18.720	24.000	0.0000	0.0000	0.0000
3	-4.5199E-06	-1.6227E-05	-36.104	-304.03	-4.6108	-17.586	-0.8027	-3.6003	2166.4	7.8500E+06	7.8500E+06
x( M)	12.480	13.200	0.0000	9.6000	10.560	12.960	18.720	24.000	0.0000	0.0000	0.0000
4	-4.6083E-06	-1.5059E-05	-28.593	-244.21	-3.6898	-13.280	-0.9155	-4.3299	1860.5	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	10.560	11.520	18.720	18.720	24.000	0.0000	0.0000	0.0000
5	-4.5490E-06	-1.4752E-05	-25.386	-233.72	-3.4346	-12.492	-0.9340	-4.3913	1971.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
6	-4.5926E-06	-1.5653E-05	-30.444	-263.94	-3.9293	-14.563	-0.8497	-4.2840	2081.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.920	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
7	-4.6648E-06	-1.4852E-05	-29.330	-237.72	-3.6366	-12.805	-0.9668	-4.3618	1775.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	10.600	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
8	-4.6006E-06	-1.4527E-05	-26.318	-228.39	-3.4025	-12.114	-0.9764	-4.3880	1885.7	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000	0.0000
9	-4.6727E-06	-1.5559E-05	-31.619	-258.79	-3.9098	-14.164	-0.9037	-4.3471	1996.0	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
10	-4.7478E-06	-1.4848E-05	-31.402	-237.68	-3.7026	-12.784	-1.0025	-4.3715	1690.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
11	-4.6756E-06	-1.4538E-05	-28.386	-228.71	-3.4714	-12.118	-1.0107	-4.3956	1800.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.800	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000	0.0000
12	-4.7618E-06	-1.5612E-05	-34.239	-260.71	-4.0221	-14.283	-0.9334	-4.3448	1910.9	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
13	-4.8687E-06	-1.5169E-05	-35.795	-247.75	-3.9760	-13.469	-1.0138	-4.3476	1605.0	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	10.600	11.520	18.720	18.720	24.000	0.0000	0.0000	0.0000
14	-4.8023E-06	-1.4913E-05	-32.549	-238.39	-3.7231	-12.758	-1.0316	-4.4174	1715.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
15	-4.8760E-06	-1.5849E-05	-38.891	-271.09	-4.3129	-15.007	-0.9321	-4.2514	1821.1	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 254 di 294

x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-4.8760E-06 15	-1.6227E-05 3	-38.891 15	-304.03 3	-4.6108 3	-17.586 3	-1.0316 14	-4.4174 14	1605.0 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.6746E-04	6.1971E-04	28.489	103.34	18.752	99.237	4.0225	18.552	2842.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
2	1.6649E-04	6.2406E-04	27.507	100.63	17.473	94.943	3.7134	17.477	2922.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	1.6532E-04	6.2841E-04	28.443	105.87	18.687	102.44	4.0387	19.228	3084.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
4	1.7200E-04	6.2088E-04	25.019	87.685	14.422	76.372	2.8984	13.196	2598.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	1.7083E-04	6.2523E-04	23.869	84.459	13.074	71.585	2.5958	12.095	2676.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	1.6967E-04	6.2957E-04	25.916	93.607	15.491	84.189	3.1803	14.888	2878.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
7	1.7634E-04	6.2204E-04	24.965	85.724	14.364	73.529	2.8378	12.549	2494.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	1.7518E-04	6.2639E-04	23.902	82.779	13.118	69.295	2.5611	11.583	2575.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
9	1.7402E-04	6.3074E-04	26.022	92.030	15.613	81.851	3.1592	14.345	2778.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
10	1.8068E-04	6.2321E-04	25.437	85.690	14.912	73.433	2.9195	12.516	2409.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	1.7952E-04	6.2755E-04	24.369	82.857	13.668	69.354	2.6437	11.585	2491.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
12	1.7835E-04	6.3190E-04	26.678	92.593	16.407	82.603	3.2989	14.503	2699.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
13	1.8503E-04	6.2437E-04	26.782	88.709	16.504	77.643	3.2459	13.445	2356.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	1.8386E-04	6.2872E-04	25.642	85.825	15.145	73.318	2.9406	12.445	2437.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	1.8289E-04	6.3307E-04	28.090	95.669	18.122	87.071	3.6572	15.515	2642.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.8503E-04 13	6.3307E-04 15	28.489 1	105.87 3	18.752 1	102.44 3	4.0387 3	19.228 3	3084.9 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 24  
CASE NAME : 24-4 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5690	1.0000
2	0.5519	1.0000
3	0.8523	1.0000
4	0.5035	1.0000
5	0.4937	1.0000
6	0.7918	1.0000
7	0.4964	1.0000
8	0.4950	1.0000
9	0.7922	1.0000
10	0.5010	1.0000
11	0.5015	1.0000
12	0.8062	1.0000
13	0.6275	1.0000
14	0.6124	1.0000
15	0.8755	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN -2.10400E-16
MOMENT X, KN- M 1.52900E-11	MOMENT Y, KN- M -1.79506E-05	MOMENT Z, KN- M -2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 255 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.01886E-03      1.34066E-04      5.76689E-06

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
1.39119E-08      1.64528E-06      -9.46191E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9684E-03	1.3396E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
2	2.0111E-03	1.3395E-04	5.7345E-06	1.3912E-08	1.6453E-06	-9.4619E-06
3	2.0542E-03	1.3393E-04	5.7950E-06	1.3912E-08	1.6453E-06	-9.4619E-06
4	1.9720E-03	1.3402E-04	5.6902E-06	1.3912E-08	1.6453E-06	-9.4619E-06
5	2.0151E-03	1.3401E-04	5.7507E-06	1.3912E-08	1.6453E-06	-9.4619E-06
6	2.0580E-03	1.3399E-04	5.8111E-06	1.3912E-08	1.6453E-06	-9.4619E-06
7	1.9758E-03	1.3408E-04	5.7064E-06	1.3912E-08	1.6453E-06	-9.4619E-06
8	2.0189E-03	1.3407E-04	5.7669E-06	1.3912E-08	1.6453E-06	-9.4619E-06
9	2.0619E-03	1.3405E-04	5.8274E-06	1.3912E-08	1.6453E-06	-9.4619E-06
10	1.9797E-03	1.3414E-04	5.7227E-06	1.3912E-08	1.6453E-06	-9.4619E-06
11	2.0227E-03	1.3413E-04	5.7830E-06	1.3912E-08	1.6453E-06	-9.4619E-06
12	2.0658E-03	1.3411E-04	5.8436E-06	1.3912E-08	1.6453E-06	-9.4619E-06
13	1.9835E-03	1.3420E-04	5.7388E-06	1.3912E-08	1.6453E-06	-9.4619E-06
14	2.0266E-03	1.3419E-04	5.7993E-06	1.3912E-08	1.6453E-06	-9.4619E-06
15	2.0694E-03	1.3417E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3249.4	14.736	-0.032366	0.020214	2.0200	41.836
2	3319.6	14.437	-0.028283	0.020214	1.9941	41.152
3	3390.3	19.263	0.067480	0.020214	1.8427	51.756
4	3255.4	13.589	-0.047863	0.020214	2.0332	39.202
5	3326.1	13.408	-0.042373	0.020214	2.0061	38.780
6	3396.6	18.358	0.052931	0.020214	1.8576	49.845
7	3261.6	13.469	-0.047590	0.020214	2.0274	38.934
8	3332.3	13.439	-0.039832	0.020214	1.9976	38.864
9	3403.0	18.375	0.055969	0.020214	1.8477	49.895
10	3268.1	13.560	-0.044120	0.020214	2.0178	39.158
11	3338.6	13.565	-0.035788	0.020214	1.9872	39.170
12	3409.3	18.600	0.062992	0.020214	1.8320	50.389
13	3274.3	15.766	-6.3324E-03	0.020214	1.9643	44.214
14	3345.0	15.511	-1.2986E-03	0.020214	1.9369	43.639
15	3415.2	19.653	0.086474	0.020214	1.7926	52.634
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9684E-03	1.3396E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
2	2.0111E-03	1.3395E-04	5.7345E-06	1.3912E-08	1.6453E-06	-9.4619E-06
3	2.0542E-03	1.3393E-04	5.7950E-06	1.3912E-08	1.6453E-06	-9.4619E-06
4	1.9720E-03	1.3402E-04	5.6902E-06	1.3912E-08	1.6453E-06	-9.4619E-06
5	2.0151E-03	1.3401E-04	5.7507E-06	1.3912E-08	1.6453E-06	-9.4619E-06
6	2.0580E-03	1.3399E-04	5.8111E-06	1.3912E-08	1.6453E-06	-9.4619E-06
7	1.9758E-03	1.3408E-04	5.7064E-06	1.3912E-08	1.6453E-06	-9.4619E-06
8	2.0189E-03	1.3407E-04	5.7669E-06	1.3912E-08	1.6453E-06	-9.4619E-06
9	2.0619E-03	1.3405E-04	5.8274E-06	1.3912E-08	1.6453E-06	-9.4619E-06
10	1.9797E-03	1.3414E-04	5.7227E-06	1.3912E-08	1.6453E-06	-9.4619E-06
11	2.0227E-03	1.3413E-04	5.7830E-06	1.3912E-08	1.6453E-06	-9.4619E-06
12	2.0658E-03	1.3411E-04	5.8436E-06	1.3912E-08	1.6453E-06	-9.4619E-06
13	1.9835E-03	1.3420E-04	5.7388E-06	1.3912E-08	1.6453E-06	-9.4619E-06
14	2.0266E-03	1.3419E-04	5.7993E-06	1.3912E-08	1.6453E-06	-9.4619E-06
15	2.0694E-03	1.3417E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 256 di 294

MAXIMUM 2.0694E-03 1.3420E-04 5.8598E-06 1.3912E-08 1.6453E-06 -9.4619E-06  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3249.4	14.736	-0.032366	0.020214	2.0200	41.836
2	3319.6	14.437	-0.028283	0.020214	1.9941	41.152
3	3390.3	19.263	0.067480	0.020214	1.8427	51.756
4	3255.4	13.589	-0.047863	0.020214	2.0332	39.202
5	3326.1	13.408	-0.042373	0.020214	2.0061	38.780
6	3396.6	18.358	0.052931	0.020214	1.8576	49.845
7	3261.6	13.469	-0.047590	0.020214	2.0274	38.934
8	3332.3	13.439	-0.039832	0.020214	1.9976	38.864
9	3403.0	18.375	0.055969	0.020214	1.8477	49.895
10	3268.1	13.560	-0.044120	0.020214	2.0178	39.158
11	3338.6	13.565	-0.035788	0.020214	1.9872	39.170
12	3409.3	18.600	0.062992	0.020214	1.8320	50.389
13	3274.3	15.766	-6.3324E-03	0.020214	1.9643	44.214
14	3345.0	15.511	-1.2986E-03	0.020214	1.9369	43.639
15	3415.2	19.653	0.086474	0.020214	1.7926	52.634
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

PILE GROUP STRESS, KN/ M\*\*2  
\*\*\*\*\*

1	1964.5
2	2002.1
3	2073.9
4	1959.9
5	1998.7
6	2071.7
7	1962.7
8	2002.5
9	2075.5
10	1967.0
11	2006.9
12	2080.5
13	1985.7
14	2024.0
15	2090.6
MINIMUM	1959.9
Pile N.	4
MAXIMUM	2090.6
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-3.3325E-06	-4.0122E-07	-41.836	-0.089916	-2.8675	-0.2460	-0.8479	-0.036770	1838.8	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.320	24.000	0.0000	0.0000
2	-3.3140E-06	-4.0168E-07	-41.152	-0.089146	-2.8170	-0.2421	-0.8529	-0.036013	1878.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.080	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
3	-3.4742E-06	-3.2885E-07	-51.756	-0.087630	-3.6649	-0.2694	-0.6861	-0.044274	1918.5	7.8500E+06	7.8500E+06
x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.080	24.000	0.0000	0.0000
4	-3.2574E-06	-4.2341E-07	-39.202	-0.090460	-2.6666	-0.2385	-0.8630	-0.034695	1842.2	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.080	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
5	-3.2457E-06	-4.2130E-07	-38.780	-0.089758	-2.6364	-0.2353	-0.8639	-0.034117	1882.2	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
6	-3.4623E-06	-3.3779E-07	-49.845	-0.087311	-3.5053	-0.2635	-0.7288	-0.042602	1922.1	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
7	-3.2501E-06	-4.2462E-07	-38.934	-0.090345	-2.6462	-0.2372	-0.8642	-0.034399	1845.7	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
8	-3.2486E-06	-4.1918E-07	-38.864	-0.089496	-2.6416	-0.2349	-0.8643	-0.034086	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
9	-3.4639E-06	-3.3667E-07	-49.895	-0.087115	-3.5080	-0.2631	-0.7289	-0.042562	1925.7	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
10	-3.2566E-06	-4.2119E-07	-39.158	-0.090009	-2.6615	-0.2371	-0.8643	-0.034474	1849.3	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
11	-3.2573E-06	-4.1508E-07	-39.170	-0.089143	-2.6629	-0.2350	-0.8641	-0.034225	1889.3	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
12	-3.4696E-06	-3.3330E-07	-50.389	-0.086938	-3.5459	-0.2640	-0.7198	-0.042889	1929.3	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
13	-3.3861E-06	-3.7845E-07	-44.214	-0.088442	-3.0485	-0.2497	-0.8267	-0.038239	1852.9	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.320	24.000	0.0000	0.0000
14	-3.3740E-06	-3.7797E-07	-43.639	-0.087720	-3.0052	-0.2463	-0.8333	-0.037565	1892.9	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.4800	18.720	10.560	24.000	0.0000	0.0000
15	-3.4876E-06	-3.2174E-07	-52.634	-0.086941	-3.7321	-0.2700	-0.6710	-0.044670	1932.6	7.8500E+06	7.8500E+06



APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 257 di 294

x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
Min. Pile N.	-3.4876E-06	-4.2462E-07	-52.634	-0.090460	-3.7321	-0.2700	-0.8643	-0.044670	1838.8	7.8500E+06	7.8500E+06
	15	7	15	4	15	15	8	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.3396E-04	5.6740E-06	19.015	2.0200	14.738	0.020188	2.6689	0.054310	1964.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
2	1.3395E-04	5.7345E-06	18.792	1.9941	14.439	0.020434	2.6006	0.053803	2002.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
3	1.3393E-04	5.7950E-06	22.291	1.9161	19.265	0.067384	3.7492	0.084117	2073.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
4	1.3402E-04	5.6902E-06	18.135	2.0332	13.590	0.021186	2.4076	0.048392	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.3200	2.4000	0.0000	0.0000	0.0000
5	1.3401E-04	5.7508E-06	17.991	2.0061	13.410	0.021428	2.3680	0.048452	1998.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
6	1.3399E-04	5.8111E-06	21.669	1.9119	18.360	0.052835	3.5257	0.078690	2071.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
7	1.3408E-04	5.7064E-06	18.041	2.0274	13.471	0.021319	2.3807	0.047987	1962.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
8	1.3407E-04	5.7669E-06	18.018	1.9976	13.441	0.021421	2.3744	0.048842	2002.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
9	1.3405E-04	5.8274E-06	21.683	1.9062	18.377	0.055873	3.5291	0.079146	2075.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
10	1.3414E-04	5.7227E-06	18.115	2.0178	13.562	0.021243	2.4003	0.048695	1967.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
11	1.3413E-04	5.7830E-06	18.120	1.9872	13.567	0.021310	2.4018	0.049745	2006.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
12	1.3411E-04	5.8435E-06	21.843	1.9001	18.602	0.062897	3.5836	0.080930	2080.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
13	1.3420E-04	5.7388E-06	19.797	1.9643	15.769	0.019546	2.9050	0.061152	1985.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.440	4.0800	2.4000	0.0000	0.0000	0.0000
14	1.3419E-04	5.7993E-06	19.605	1.9380	15.513	0.019731	2.8460	0.060925	2024.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.4800	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
15	1.3417E-04	5.8598E-06	22.564	1.8960	19.656	0.086380	3.8427	0.088164	2090.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
Max. Pile N.	1.3420E-04	5.8598E-06	22.564	2.0332	19.656	0.086380	3.8427	0.088164	2090.6	7.8500E+06	7.8500E+06
	13	15	15	4	15	15	15	15	15	1	1

LOAD CASE : 25  
CASE NAME : 25-5 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6121	1.0000
2	0.5864	1.0000
3	0.8540	1.0000
4	0.5107	1.0000
5	0.4940	1.0000
6	0.7728	1.0000
7	0.4999	1.0000
8	0.4917	1.0000
9	0.7701	1.0000
10	0.5034	1.0000
11	0.4973	1.0000
12	0.7832	1.0000
13	0.6196	1.0000
14	0.6000	1.0000
15	0.8503	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
58572.7	2468.36	940.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.70600E-10	15755.6	-27928.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>								
<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 258 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.37598E-03      1.44947E-03      5.43211E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 -9.81472E-07      3.99099E-05      -1.11641E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9383E-03	1.4571E-03	5.4977E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
2	2.4627E-03	1.4580E-03	5.4550E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
3	2.9950E-03	1.4591E-03	5.4123E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
4	1.8878E-03	1.4526E-03	5.4862E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
5	2.4201E-03	1.4537E-03	5.4435E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
6	2.9509E-03	1.4549E-03	5.4009E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
7	1.8440E-03	1.4483E-03	5.4748E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
8	2.3760E-03	1.4495E-03	5.4321E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
9	2.9079E-03	1.4506E-03	5.3894E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
10	1.8011E-03	1.4441E-03	5.4633E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
11	2.3319E-03	1.4452E-03	5.4207E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
12	2.8642E-03	1.4463E-03	5.3780E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
13	1.7569E-03	1.4398E-03	5.4519E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
14	2.2893E-03	1.4409E-03	5.4092E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
15	2.8136E-03	1.4419E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
MINIMUM	1.7569E-03	1.4398E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.9950E-03	1.4591E-03	5.4977E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3200.1	163.55	62.911	-1.4261	-175.20	446.18
2	4060.6	158.90	60.444	-1.4261	-168.94	436.30
3	4858.0	204.61	76.825	-1.4261	-203.90	536.35
4	3117.2	144.12	55.572	-1.4261	-158.20	401.07
5	3990.7	140.94	53.720	-1.4261	-153.25	394.28
6	4803.4	190.63	71.681	-1.4261	-192.70	505.70
7	3045.4	141.47	54.626	-1.4261	-155.78	394.11
8	3918.4	139.93	53.403	-1.4261	-152.28	391.11
9	4750.1	189.43	71.312	-1.4261	-191.65	502.18
10	2974.9	141.58	54.732	-1.4261	-155.81	393.53
11	3846.0	140.43	53.657	-1.4261	-152.66	391.46
12	4695.9	190.85	71.923	-1.4261	-192.70	504.26
13	2902.5	162.26	62.734	-1.4261	-173.84	439.75
14	3776.1	158.82	60.699	-1.4261	-168.57	432.65
15	4633.3	200.82	75.760	-1.4261	-200.59	524.39
MINIMUM	2902.5	139.93	53.403	-1.4261	-203.90	391.11
Pile N.	13	8	8	1	3	8
MAXIMUM	4858.0	204.61	76.825	-1.4261	-152.28	536.35
Pile N.	3	3	3	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9383E-03	1.4571E-03	5.4977E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
2	2.4627E-03	1.4580E-03	5.4550E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
3	2.9950E-03	1.4591E-03	5.4123E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
4	1.8878E-03	1.4526E-03	5.4862E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
5	2.4201E-03	1.4537E-03	5.4435E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
6	2.9509E-03	1.4549E-03	5.4009E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
7	1.8440E-03	1.4483E-03	5.4748E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
8	2.3760E-03	1.4495E-03	5.4321E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
9	2.9079E-03	1.4506E-03	5.3894E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
10	1.8011E-03	1.4441E-03	5.4633E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
11	2.3319E-03	1.4452E-03	5.4207E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
12	2.8642E-03	1.4463E-03	5.3780E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
13	1.7569E-03	1.4398E-03	5.4519E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
14	2.2893E-03	1.4409E-03	5.4092E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
15	2.8136E-03	1.4419E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
MINIMUM	1.7569E-03	1.4398E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	13	13	15	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 259 di 294

MAXIMUM 2.9950E-03 1.4591E-03 5.4977E-04 -9.8147E-07 3.9910E-05 -1.1164E-04  
Pile N. 3 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3200.1	163.55	62.911	-1.4261	-175.20	446.18
2	4060.6	158.90	60.444	-1.4261	-168.94	436.30
3	4858.0	204.61	76.825	-1.4261	-203.90	536.35
4	3117.2	144.12	55.572	-1.4261	-158.20	401.07
5	3990.7	140.94	53.720	-1.4261	-153.25	394.28
6	4803.4	190.63	71.681	-1.4261	-192.70	505.70
7	3045.4	141.47	54.626	-1.4261	-155.78	394.11
8	3918.4	139.93	53.403	-1.4261	-152.28	391.11
9	4750.1	189.43	71.312	-1.4261	-191.65	502.18
10	2974.9	141.58	54.732	-1.4261	-155.81	393.53
11	3846.0	140.43	53.657	-1.4261	-152.66	391.46
12	4695.9	190.85	71.923	-1.4261	-192.70	504.26
13	2902.5	162.26	62.734	-1.4261	-173.84	439.75
14	3776.1	158.82	60.699	-1.4261	-168.57	432.65
15	4633.3	200.82	75.760	-1.4261	-200.59	524.39
MINIMUM	2902.5	139.93	53.403	-1.4261	-203.90	391.11
Pile N.	13	8	8	1	3	8
MAXIMUM	4858.0	204.61	76.825	-1.4261	-152.28	536.35
Pile N.	3	3	3	1	8	3

PILE GROUP	STRESS, KN/ M**2
1	3248.9
2	3701.4
3	4470.5
4	3057.4
5	3527.3
6	4341.7
7	2994.7
8	3476.5
9	4300.5
10	2953.2
11	3436.9
12	4276.8
13	3061.1
14	3529.8
15	4306.2
MINIMUM	2953.2
Pile N.	10
MAXIMUM	4470.5
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
1	-3.6853E-05	-1.3841E-05	-446.18	-175.20	-32.562	-12.299	-8.8440	-3.3880	1810.9	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000	0.0000
2	-3.6729E-05	-1.3698E-05	-436.30	-168.94	-31.818	-11.910	-8.9699	-3.3981	2297.8	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000	0.0000
3	-3.8098E-05	-1.4108E-05	-536.35	-203.90	-40.008	-14.850	-7.2541	-2.7265	2749.1	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000	0.0000
4	-3.5724E-05	-1.3416E-05	-401.07	-158.20	-29.134	-11.005	-9.1532	-3.5041	1763.9	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
5	-3.5583E-05	-1.3249E-05	-394.28	-153.25	-28.620	-10.718	-9.1924	-3.4808	2258.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
6	-3.7774E-05	-1.3995E-05	-505.70	-192.70	-37.528	-13.943	-7.8364	-2.9461	2718.1	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000	0.0000
7	-3.5472E-05	-1.3322E-05	-394.11	-155.78	-28.670	-10.837	-9.1362	-3.5007	1723.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
8	-3.5447E-05	-1.3211E-05	-391.11	-152.28	-28.451	-10.666	-9.1608	-3.4724	2217.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
9	-3.7656E-05	-1.3961E-05	-502.18	-191.65	-37.335	-13.882	-7.8253	-2.9451	2688.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.560	10.560	18.720	18.720	24.000	0.0000	0.0000	0.0000
10	-3.5425E-05	-1.3318E-05	-393.53	-155.81	-28.705	-10.859	-9.0969	-3.4898	1683.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
11	-3.5438E-05	-1.3217E-05	-391.46	-152.66	-28.559	-10.710	-9.1201	-3.4611	2176.4	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
12	-3.7586E-05	-1.3950E-05	-504.26	-192.70	-37.601	-13.990	-7.6995	-2.9015	2657.4	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.320	10.560	18.720	18.720	24.000	0.0000	0.0000	0.0000
13	-3.6493E-05	-1.3755E-05	-439.75	-173.84	-32.403	-12.276	-8.6717	-3.3383	1642.5	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000	0.0000
14	-3.6412E-05	-1.3619E-05	-432.65	-168.57	-31.853	-11.966	-8.7757	-3.3401	2136.8	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000	0.0000
15	-3.7644E-05	-1.3984E-05	-524.39	-200.59	-39.411	-14.679	-7.1657	-2.7062	2621.9	7.8500E+06	7.8500E+06

<b>APPALDATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

x( M)	12.960	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-3.8098E-05 3	-1.4108E-05 3	-536.35 3	-203.90 3	-40.008 3	-14.850 3	-9.1924 5	-3.5041 4	1642.5 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4570E-03	5.4977E-04	213.07	80.331	163.57	62.920	30.324	11.582	3248.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
2	1.4580E-03	5.4550E-04	209.73	78.392	158.93	60.455	29.264	11.063	3701.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	1.4591E-03	5.4123E-04	243.33	90.203	204.65	76.840	40.244	15.044	4470.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	1.4526E-03	5.4862E-04	197.95	74.691	144.14	55.580	25.905	9.9080	3057.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	1.4537E-03	5.4435E-04	195.66	73.186	140.97	53.730	25.199	9.5403	3527.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
6	1.4549E-03	5.4009E-04	233.26	86.574	190.67	71.695	36.858	13.793	4341.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	1.4483E-03	5.4748E-04	195.75	73.910	141.49	54.633	25.342	9.7053	2994.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
8	1.4495E-03	5.4321E-04	194.74	72.900	139.96	53.412	25.008	9.4788	3476.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
9	1.4506E-03	5.3894E-04	232.25	86.269	189.47	71.326	36.616	13.716	4300.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	1.4441E-03	5.4633E-04	195.71	73.961	141.59	54.739	25.402	9.7376	2953.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
11	1.4452E-03	5.4207E-04	195.02	73.071	140.46	53.666	25.158	9.5437	3436.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.3200	0.0000	0.0000	0.0000
12	1.4464E-03	5.3780E-04	233.09	86.660	190.88	71.937	37.013	13.879	4276.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	1.4398E-03	5.4519E-04	211.55	80.047	162.28	62.741	30.192	11.584	3061.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
14	1.4409E-03	5.4092E-04	209.17	78.452	158.85	60.709	29.407	11.164	3529.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	1.4419E-03	5.3665E-04	240.06	89.286	200.86	75.774	39.521	14.837	4306.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	1.4591E-03 3	5.4977E-04 1	243.33 3	90.203 3	204.65 3	76.840 3	40.244 3	15.044 3	4470.5 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 26  
CASE NAME : 26-6 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8441	1.0000
2	0.7772	1.0000
3	0.8654	1.0000
4	0.5565	1.0000
5	0.4963	1.0000
6	0.6326	1.0000
7	0.5223	1.0000
8	0.4698	1.0000
9	0.6030	1.0000
10	0.5193	1.0000
11	0.4687	1.0000
12	0.6095	1.0000
13	0.5649	1.0000
14	0.5097	1.0000
15	0.6600	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN 1216.67
MOMENT X, KN- M 1.53100E-11	MOMENT Y, KN- M 18223.7	MOMENT Z, KN- M -2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.01886E-03      1.75176E-04      6.26390E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 9.99502E-07      2.65157E-05      -2.02217E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 262 di 294

MAXIMUM 2.3212E-03 1.8503E-04 6.3307E-04 9.9950E-07 2.6516E-05 -2.0222E-05  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891

MINIMUM 2836.2 13.073 69.284 1.4523 -304.03 25.386  
Pile N. 13 5 8 1 3 5  
MAXIMUM 3828.4 18.750 102.42 1.4523 -228.39 38.891  
Pile N. 3 1 3 1 8 15

PILE GROUP	STRESS, KN/ M**2
1	2842.8
2	2922.4
3	3084.9
4	2598.2
5	2676.3
6	2878.2
7	2494.0
8	2575.4
9	2778.1
10	2409.5
11	2491.8
12	2699.7
13	2356.0
14	2437.3
15	2642.7

MINIMUM 2356.0  
Pile N. 13  
MAXIMUM 3084.9  
Pile N. 3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-4.5661E-06	-1.5952E-05	-36.729	-295.21	-4.5928	-17.060	-0.7952	-3.6143	1950.4	7.8500E+06	7.8500E+06
x( M)	12.480	13.440	0.0000	0.0000	9.8400	10.560	18.720	18.720	24.000	0.0000	0.0000
2	-4.5447E-06	-1.5955E-05	-33.893	-286.84	-4.3576	-16.352	-0.7384	-3.8621	2055.9	7.8500E+06	7.8500E+06
x( M)	12.720	13.440	0.0000	0.0000	9.8400	10.800	13.200	18.720	24.000	0.0000	0.0000
3	-4.5199E-06	-1.6227E-05	-36.104	-304.03	-4.6108	-17.586	-0.8027	-3.6003	2166.4	7.8500E+06	7.8500E+06
x( M)	12.480	13.200	0.0000	0.0000	9.6000	10.560	12.960	18.720	24.000	0.0000	0.0000
4	-4.6083E-06	-1.5059E-05	-28.593	-244.21	-3.6898	-13.280	-0.9155	-4.3299	1860.5	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	0.0000	10.560	11.520	18.720	18.720	24.000	0.0000	0.0000
5	-4.5490E-06	-1.4752E-05	-25.386	-233.72	-3.4346	-12.492	-0.9340	-4.3913	1971.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
6	-4.5926E-06	-1.5653E-05	-30.444	-263.94	-3.9293	-14.563	-0.8497	-4.2840	2081.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
7	-4.6648E-06	-1.4852E-05	-29.330	-237.72	-3.6366	-12.805	-0.9668	-4.3618	1775.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000
8	-4.6006E-06	-1.4527E-05	-26.318	-228.39	-3.4025	-12.114	-0.9764	-4.3880	1885.7	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000
9	-4.6727E-06	-1.5559E-05	-31.619	-258.79	-3.9098	-14.164	-0.9037	-4.3471	1996.0	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
10	-4.7478E-06	-1.4848E-05	-31.402	-237.68	-3.7026	-12.784	-1.0025	-4.3715	1690.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000
11	-4.6756E-06	-1.4538E-05	-28.386	-228.71	-3.4714	-12.118	-1.0107	-4.3956	1800.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.800	0.0000	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000
12	-4.7618E-06	-1.5612E-05	-34.239	-260.71	-4.0221	-14.283	-0.9334	-4.3448	1910.9	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
13	-4.8687E-06	-1.5169E-05	-35.795	-247.75	-3.9760	-13.469	-1.0138	-4.3476	1605.0	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	0.0000	10.560	11.520	18.720	18.720	24.000	0.0000	0.0000
14	-4.8023E-06	-1.4913E-05	-32.549	-238.39	-3.7231	-12.758	-1.0316	-4.4174	1715.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000
15	-4.8760E-06	-1.5849E-05	-38.891	-271.09	-4.3129	-15.007	-0.9321	-4.2514	1821.1	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 263 di 294

x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-4.8760E-06 15	-1.6227E-05 3	-38.891 15	-304.03 3	-4.6108 3	-17.586 3	-1.0316 14	-4.4174 14	1605.0 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.6746E-04	6.1971E-04	28.489	103.34	18.752	99.237	4.0225	18.552	2842.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
2	1.6649E-04	6.2406E-04	27.507	100.63	17.473	94.943	3.7134	17.477	2922.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	1.6532E-04	6.2841E-04	28.443	105.87	18.687	102.44	4.0387	19.228	3084.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
4	1.7200E-04	6.2088E-04	25.019	87.685	14.422	76.372	2.8984	13.196	2598.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	1.7083E-04	6.2523E-04	23.869	84.459	13.074	71.585	2.5958	12.095	2676.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	1.6967E-04	6.2957E-04	25.916	93.607	15.491	84.189	3.1803	14.888	2878.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
7	1.7634E-04	6.2204E-04	24.965	85.724	14.364	73.529	2.8378	12.549	2494.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	1.7518E-04	6.2639E-04	23.902	82.779	13.118	69.295	2.5611	11.583	2575.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
9	1.7402E-04	6.3074E-04	26.022	92.030	15.613	81.851	3.1592	14.345	2778.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
10	1.8068E-04	6.2321E-04	25.437	85.690	14.912	73.433	2.9195	12.516	2409.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	1.7952E-04	6.2755E-04	24.369	82.857	13.668	69.354	2.6437	11.585	2491.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
12	1.7835E-04	6.3190E-04	26.678	92.593	16.407	82.603	3.2989	14.503	2699.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
13	1.8503E-04	6.2437E-04	26.782	88.709	16.504	77.643	3.2459	13.445	2356.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	1.8386E-04	6.2872E-04	25.642	85.825	15.145	73.318	2.9406	12.445	2437.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	1.8289E-04	6.3307E-04	28.090	95.669	18.122	87.071	3.6572	15.515	2642.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.8503E-04 13	6.3307E-04 15	28.489 1	105.87 3	18.752 1	102.44 3	4.0387 3	19.228 3	3084.9 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 27  
CASE NAME : 27-7 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.5690	1.0000
2	0.5519	1.0000
3	0.8523	1.0000
4	0.5035	1.0000
5	0.4937	1.0000
6	0.7918	1.0000
7	0.4964	1.0000
8	0.4950	1.0000
9	0.7922	1.0000
10	0.5010	1.0000
11	0.5015	1.0000
12	0.8062	1.0000
13	0.6275	1.0000
14	0.6124	1.0000
15	0.8755	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 49984.9	HOR. LOAD Y, KN 235.727	HOR. LOAD Z, KN -2.10400E-16
MOMENT X, KN- M 1.52900E-11	MOMENT Y, KN- M -1.79506E-05	MOMENT Z, KN- M -2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 264 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.01886E-03      1.34066E-04      5.76689E-06  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.39119E-08      1.64528E-06      -9.46191E-06

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9684E-03	1.3396E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
2	2.0111E-03	1.3395E-04	5.7345E-06	1.3912E-08	1.6453E-06	-9.4619E-06
3	2.0542E-03	1.3393E-04	5.7950E-06	1.3912E-08	1.6453E-06	-9.4619E-06
4	1.9720E-03	1.3402E-04	5.6902E-06	1.3912E-08	1.6453E-06	-9.4619E-06
5	2.0151E-03	1.3401E-04	5.7507E-06	1.3912E-08	1.6453E-06	-9.4619E-06
6	2.0580E-03	1.3399E-04	5.8111E-06	1.3912E-08	1.6453E-06	-9.4619E-06
7	1.9758E-03	1.3408E-04	5.7064E-06	1.3912E-08	1.6453E-06	-9.4619E-06
8	2.0189E-03	1.3407E-04	5.7669E-06	1.3912E-08	1.6453E-06	-9.4619E-06
9	2.0619E-03	1.3405E-04	5.8274E-06	1.3912E-08	1.6453E-06	-9.4619E-06
10	1.9797E-03	1.3414E-04	5.7227E-06	1.3912E-08	1.6453E-06	-9.4619E-06
11	2.0227E-03	1.3413E-04	5.7830E-06	1.3912E-08	1.6453E-06	-9.4619E-06
12	2.0658E-03	1.3411E-04	5.8436E-06	1.3912E-08	1.6453E-06	-9.4619E-06
13	1.9835E-03	1.3420E-04	5.7388E-06	1.3912E-08	1.6453E-06	-9.4619E-06
14	2.0266E-03	1.3419E-04	5.7993E-06	1.3912E-08	1.6453E-06	-9.4619E-06
15	2.0694E-03	1.3417E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3249.4	14.736	-0.032366	0.020214	2.0200	41.836
2	3319.6	14.437	-0.028283	0.020214	1.9941	41.152
3	3390.3	19.263	0.067480	0.020214	1.8427	51.756
4	3255.4	13.589	-0.047863	0.020214	2.0332	39.202
5	3326.1	13.408	-0.042373	0.020214	2.0061	38.780
6	3396.6	18.358	0.052931	0.020214	1.8576	49.845
7	3261.6	13.469	-0.047590	0.020214	2.0274	38.934
8	3332.3	13.439	-0.039832	0.020214	1.9976	38.864
9	3403.0	18.375	0.055969	0.020214	1.8477	49.895
10	3268.1	13.560	-0.044120	0.020214	2.0178	39.158
11	3338.6	13.565	-0.035788	0.020214	1.9872	39.170
12	3409.3	18.600	0.062992	0.020214	1.8320	50.389
13	3274.3	15.766	-6.3324E-03	0.020214	1.9643	44.214
14	3345.0	15.511	-1.2986E-03	0.020214	1.9369	43.639
15	3415.2	19.653	0.086474	0.020214	1.7926	52.634
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9684E-03	1.3396E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
2	2.0111E-03	1.3395E-04	5.7345E-06	1.3912E-08	1.6453E-06	-9.4619E-06
3	2.0542E-03	1.3393E-04	5.7950E-06	1.3912E-08	1.6453E-06	-9.4619E-06
4	1.9720E-03	1.3402E-04	5.6902E-06	1.3912E-08	1.6453E-06	-9.4619E-06
5	2.0151E-03	1.3401E-04	5.7507E-06	1.3912E-08	1.6453E-06	-9.4619E-06
6	2.0580E-03	1.3399E-04	5.8111E-06	1.3912E-08	1.6453E-06	-9.4619E-06
7	1.9758E-03	1.3408E-04	5.7064E-06	1.3912E-08	1.6453E-06	-9.4619E-06
8	2.0189E-03	1.3407E-04	5.7669E-06	1.3912E-08	1.6453E-06	-9.4619E-06
9	2.0619E-03	1.3405E-04	5.8274E-06	1.3912E-08	1.6453E-06	-9.4619E-06
10	1.9797E-03	1.3414E-04	5.7227E-06	1.3912E-08	1.6453E-06	-9.4619E-06
11	2.0227E-03	1.3413E-04	5.7830E-06	1.3912E-08	1.6453E-06	-9.4619E-06
12	2.0658E-03	1.3411E-04	5.8436E-06	1.3912E-08	1.6453E-06	-9.4619E-06
13	1.9835E-03	1.3420E-04	5.7388E-06	1.3912E-08	1.6453E-06	-9.4619E-06
14	2.0266E-03	1.3419E-04	5.7993E-06	1.3912E-08	1.6453E-06	-9.4619E-06
15	2.0694E-03	1.3417E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 265 di 294

MAXIMUM 2.0694E-03 1.3420E-04 5.8598E-06 1.3912E-08 1.6453E-06 -9.4619E-06  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3249.4	14.736	-0.032366	0.020214	2.0200	41.836
2	3319.6	14.437	-0.028283	0.020214	1.9941	41.152
3	3390.3	19.263	0.067480	0.020214	1.8427	51.756
4	3255.4	13.589	-0.047863	0.020214	2.0332	39.202
5	3326.1	13.408	-0.042373	0.020214	2.0061	38.780
6	3396.6	18.358	0.052931	0.020214	1.8576	49.845
7	3261.6	13.469	-0.047590	0.020214	2.0274	38.934
8	3332.3	13.439	-0.039832	0.020214	1.9976	38.864
9	3403.0	18.375	0.055969	0.020214	1.8477	49.895
10	3268.1	13.560	-0.044120	0.020214	2.0178	39.158
11	3338.6	13.565	-0.035788	0.020214	1.9872	39.170
12	3409.3	18.600	0.062992	0.020214	1.8320	50.389
13	3274.3	15.766	-6.3324E-03	0.020214	1.9643	44.214
14	3345.0	15.511	-1.2986E-03	0.020214	1.9369	43.639
15	3415.2	19.653	0.086474	0.020214	1.7926	52.634
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

PILE GROUP	STRESS, KN/ M**2
1	1964.5
2	2002.1
3	2073.9
4	1959.9
5	1998.7
6	2071.7
7	1962.7
8	2002.5
9	2075.5
10	1967.0
11	2006.9
12	2080.5
13	1985.7
14	2024.0
15	2090.6
MINIMUM	1959.9
Pile N.	4
MAXIMUM	2090.6
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
1	-3.3325E-06	-4.0122E-07	-41.836	-0.089916	-2.8675	-0.2460	-0.8479	-0.036770	1838.8	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.320	24.000	0.0000	0.0000
2	-3.3140E-06	-4.0168E-07	-41.152	-0.089146	-2.8170	-0.2421	-0.8529	-0.036013	1878.5	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.080	11.280	6.2400	18.720	10.560	24.000	0.0000	0.0000
3	-3.4742E-06	-3.2885E-07	-51.756	-0.087630	-3.6649	-0.2694	-0.6861	-0.044274	1918.5	7.8500E+06	7.8500E+06
x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.080	24.000	0.0000	0.0000
4	-3.2574E-06	-4.2341E-07	-39.202	-0.090460	-2.6666	-0.2385	-0.8630	-0.034695	1842.2	7.8500E+06	7.8500E+06
x( M)	14.160	9.6000	0.0000	16.080	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
5	-3.2457E-06	-4.2130E-07	-38.780	-0.089758	-2.6364	-0.2353	-0.8639	-0.034117	1882.2	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
6	-3.4623E-06	-3.3779E-07	-49.845	-0.087311	-3.5053	-0.2635	-0.7288	-0.042602	1922.1	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
7	-3.2501E-06	-4.2462E-07	-38.934	-0.090345	-2.6462	-0.2372	-0.8642	-0.034399	1845.7	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
8	-3.2486E-06	-4.1918E-07	-38.864	-0.089496	-2.6416	-0.2349	-0.8643	-0.034086	1885.7	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
9	-3.4639E-06	-3.3667E-07	-49.895	-0.087115	-3.5080	-0.2631	-0.7289	-0.042562	1925.7	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
10	-3.2566E-06	-4.2119E-07	-39.158	-0.090009	-2.6650	-0.2371	-0.8643	-0.034474	1849.3	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
11	-3.2573E-06	-4.1508E-07	-39.170	-0.089143	-2.6629	-0.2350	-0.8641	-0.034225	1889.3	7.8500E+06	7.8500E+06
x( M)	14.400	9.6000	0.0000	16.320	11.520	6.2400	18.720	10.560	24.000	0.0000	0.0000
12	-3.4696E-06	-3.3330E-07	-50.389	-0.086938	-3.5459	-0.2640	-0.7198	-0.042889	1929.3	7.8500E+06	7.8500E+06
x( M)	13.200	9.3600	0.0000	15.360	10.560	6.4800	18.720	10.320	24.000	0.0000	0.0000
13	-3.3861E-06	-3.7845E-07	-44.214	-0.088442	-3.0485	-0.2497	-0.8267	-0.038239	1852.9	7.8500E+06	7.8500E+06
x( M)	13.680	9.6000	0.0000	15.840	11.040	6.2400	18.720	10.320	24.000	0.0000	0.0000
14	-3.3740E-06	-3.7797E-07	-43.639	-0.087720	-3.0052	-0.2463	-0.8333	-0.037565	1892.9	7.8500E+06	7.8500E+06
x( M)	13.920	9.6000	0.0000	15.840	11.040	6.4800	18.720	10.560	24.000	0.0000	0.0000
15	-3.4876E-06	-3.2174E-07	-52.634	-0.086941	-3.7321	-0.2700	-0.6710	-0.044670	1932.6	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 003 A 266 di 294	

x( M)	12.960	9.3600	0.0000	15.120	10.320	6.4800	18.720	10.320	24.000	0.0000	0.0000
Min. Pile N.	-3.4876E-06	-4.2462E-07	-52.634	-0.090460	-3.7321	-0.2700	-0.8643	-0.044670	1838.8	7.8500E+06	7.8500E+06
	15	7	15	4	15	15	8	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT z-Dir	MOMENT y-Dir	SHEAR y-Dir	SHEAR z-Dir	SOIL REACT y-Dir	SOIL REACT z-Dir	TOTAL STRESS	FLEX. RIG. z-Dir	FLEX. RIG. y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.3396E-04	5.6740E-06	19.015	2.0200	14.738	0.020188	2.6689	0.054310	1964.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
2	1.3395E-04	5.7345E-06	18.792	1.9941	14.439	0.020434	2.6006	0.053803	2002.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.0800	2.4000	0.0000	0.0000	0.0000
3	1.3393E-04	5.7950E-06	22.291	1.9161	19.265	0.067384	3.7492	0.084117	2073.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
4	1.3402E-04	5.6902E-06	18.135	2.0332	13.590	0.021186	2.4076	0.048392	1959.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	19.920	4.3200	2.4000	0.0000	0.0000	0.0000
5	1.3401E-04	5.7508E-06	17.991	2.0061	13.410	0.021428	2.3680	0.048452	1998.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
6	1.3399E-04	5.8111E-06	21.669	1.9119	18.360	0.052835	3.5257	0.078690	2071.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
7	1.3408E-04	5.7064E-06	18.041	2.0274	13.471	0.021319	2.3807	0.047987	1962.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
8	1.3407E-04	5.7669E-06	18.018	1.9976	13.441	0.021421	2.3744	0.048842	2002.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
9	1.3405E-04	5.8274E-06	21.683	1.9062	18.377	0.055873	3.5291	0.079146	2075.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
10	1.3414E-04	5.7227E-06	18.115	2.0178	13.562	0.021243	2.4003	0.048695	1967.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
11	1.3413E-04	5.7830E-06	18.120	1.9872	13.567	0.021310	2.4018	0.049745	2006.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	0.0000	0.0000	20.160	4.3200	2.4000	0.0000	0.0000	0.0000
12	1.3411E-04	5.8435E-06	21.843	1.9001	18.602	0.062897	3.5836	0.080930	2080.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.9600	1.4400	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
13	1.3420E-04	5.7388E-06	19.797	1.9643	15.769	0.019546	2.9050	0.061152	1985.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	19.440	4.0800	2.4000	0.0000	0.0000	0.0000
14	1.3419E-04	5.7993E-06	19.605	1.9380	15.513	0.019731	2.8460	0.060925	2024.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	0.4800	0.0000	19.680	4.0800	2.4000	0.0000	0.0000	0.0000
15	1.3417E-04	5.8598E-06	22.564	1.8960	19.656	0.086380	3.8427	0.088164	2090.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	1.6800	0.0000	0.0000	3.8400	2.4000	0.0000	0.0000	0.0000
Max. Pile N.	1.3420E-04	5.8598E-06	22.564	2.0332	19.656	0.086380	3.8427	0.088164	2090.6	7.8500E+06	7.8500E+06
	13	15	15	4	15	15	15	15	15	1	1

LOAD CASE : 28  
CASE NAME : 28-8 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6009	1.0000
2	0.5297	1.0000
3	0.7381	1.0000
4	0.5438	1.0000
5	0.4817	1.0000
6	0.6861	1.0000
7	0.5374	1.0000
8	0.4832	1.0000
9	0.6876	1.0000
10	0.5557	1.0000
11	0.4993	1.0000
12	0.7089	1.0000
13	0.7422	1.0000
14	0.6973	1.0000
15	0.8698	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
54562.1	949.411	-830.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
6.40100E-11	-24616.3	-10666.3

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.20481E-03      4.97065E-04      -4.40420E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 1.81373E-07      -2.37196E-05      -2.52482E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.8530E-03	4.9566E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
2	1.9399E-03	4.9549E-04	-4.4084E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
3	2.0219E-03	4.9528E-04	-4.4005E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
4	1.9903E-03	4.9649E-04	-4.4142E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
5	2.0723E-03	4.9628E-04	-4.4063E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
6	2.1544E-03	4.9607E-04	-4.3984E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
7	2.1225E-03	4.9728E-04	-4.4121E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
8	2.2048E-03	4.9706E-04	-4.4042E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
9	2.2871E-03	4.9686E-04	-4.3963E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
10	2.2552E-03	4.9806E-04	-4.4100E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
11	2.3373E-03	4.9785E-04	-4.4021E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
12	2.4194E-03	4.9764E-04	-4.3942E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
13	2.3877E-03	4.9885E-04	-4.4079E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
14	2.4698E-03	4.9864E-04	-4.4000E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
15	2.5566E-03	4.9847E-04	-4.3921E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
MINIMUM	1.8530E-03	4.9528E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.5566E-03	4.9885E-04	-4.3921E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3060.2	61.817	-54.419	0.2635	165.03	189.45
2	3202.7	56.965	-50.038	0.2635	154.77	178.20
3	3337.4	70.465	-61.855	0.2635	181.39	208.81
4	3285.4	58.078	-50.977	0.2635	157.08	180.99
5	3420.1	53.677	-47.015	0.2635	147.62	170.58
6	3554.8	67.358	-58.966	0.2635	174.99	202.11
7	3502.4	57.738	-50.549	0.2635	156.07	180.37
8	3637.5	53.879	-47.072	0.2635	147.74	171.23
9	3772.6	67.571	-59.004	0.2635	175.06	202.78
10	3720.2	59.098	-51.613	0.2635	158.53	183.72
11	3854.9	55.125	-48.044	0.2635	150.04	174.37
12	3989.6	69.029	-60.133	0.2635	177.55	206.21
13	3937.6	71.303	-62.176	0.2635	182.32	211.47
14	4072.3	68.464	-59.588	0.2635	176.47	205.17
15	4214.8	78.844	-68.550	0.2635	195.78	227.74
MINIMUM	3060.2	53.677	-68.550	0.2635	147.62	170.58
Pile N.	1	5	15	1	5	5
MAXIMUM	4214.8	78.844	-47.015	0.2635	195.78	227.74
Pile N.	15	15	5	1	15	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.8530E-03	4.9566E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
2	1.9399E-03	4.9549E-04	-4.4084E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
3	2.0219E-03	4.9528E-04	-4.4005E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
4	1.9903E-03	4.9649E-04	-4.4142E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
5	2.0723E-03	4.9628E-04	-4.4063E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
6	2.1544E-03	4.9607E-04	-4.3984E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
7	2.1225E-03	4.9728E-04	-4.4121E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
8	2.2048E-03	4.9706E-04	-4.4042E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
9	2.2871E-03	4.9686E-04	-4.3963E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
10	2.2552E-03	4.9806E-04	-4.4100E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
11	2.3373E-03	4.9785E-04	-4.4021E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
12	2.4194E-03	4.9764E-04	-4.3942E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
13	2.3877E-03	4.9885E-04	-4.4079E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
14	2.4698E-03	4.9864E-04	-4.4000E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
15	2.5566E-03	4.9847E-04	-4.3921E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
MINIMUM	1.8530E-03	4.9528E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	1	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 268 di 294

MAXIMUM 2.5566E-03 4.9885E-04 -4.3921E-04 1.8137E-07 -2.3720E-05 -2.5248E-05  
Pile N. 15 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3060.2	61.817	-54.419	0.2635	165.03	189.45
2	3202.7	56.965	-50.038	0.2635	154.77	178.20
3	3337.4	70.465	-61.855	0.2635	181.39	208.81
4	3285.4	58.078	-50.977	0.2635	157.08	180.99
5	3420.1	53.677	-47.015	0.2635	147.62	170.58
6	3554.8	67.358	-58.966	0.2635	174.99	202.11
7	3502.4	57.738	-50.549	0.2635	156.07	180.37
8	3637.5	53.879	-47.072	0.2635	147.74	171.23
9	3772.6	67.571	-59.004	0.2635	175.06	202.78
10	3720.2	59.098	-51.613	0.2635	158.53	183.72
11	3854.9	55.125	-48.044	0.2635	150.04	174.37
12	3989.6	69.029	-60.133	0.2635	177.55	206.21
13	3937.6	71.303	-62.176	0.2635	182.32	211.47
14	4072.3	68.464	-59.588	0.2635	176.47	205.17
15	4214.8	78.844	-68.550	0.2635	195.78	227.74
MINIMUM	3060.2	53.677	-68.550	0.2635	147.62	170.58
Pile N.	1	5	15	1	5	5
MAXIMUM	4214.8	78.844	-47.015	0.2635	195.78	227.74
Pile N.	15	15	5	1	15	15

PILE GROUP	STRESS, KN/ M**2
1	2485.5
2	2520.4
3	2718.3
4	2578.1
5	2612.1
6	2813.6
7	2697.5
8	2736.9
9	2938.5
10	2833.2
11	2871.5
12	3074.0
13	3065.9
14	3116.3
15	3286.0
MINIMUM	2485.5
Pile N.	1
MAXIMUM	3286.0
Pile N.	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.2250E-05	-4.4163E-04	-189.45	-64.088	-11.048	-54.427	-3.3172	-9.6819	1731.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.4400	11.280	0.0000	18.720	4.0800	24.000	0.0000	0.0000
2	-1.1949E-05	-4.4084E-04	-178.20	-60.896	-10.238	-50.046	-3.3836	-8.7036	1812.3	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
3	-1.2606E-05	-4.4005E-04	-208.81	-69.307	-12.510	-61.864	-3.0573	-11.443	1888.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
4	-1.2038E-05	-4.4142E-04	-180.99	-61.617	-10.425	-50.985	-3.3831	-8.9090	1859.2	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
5	-1.1695E-05	-4.4063E-04	-170.58	-58.635	-9.6940	-47.023	-3.3978	-8.0371	1935.4	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
6	-1.2527E-05	-4.3984E-04	-202.11	-67.288	-11.991	-58.976	-3.1759	-10.765	2011.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
7	-1.2036E-05	-4.4121E-04	-180.37	-61.306	-10.372	-50.557	-3.3941	-8.8169	1981.9	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
8	-1.1729E-05	-4.4042E-04	-171.23	-58.682	-9.7316	-47.081	-3.4050	-8.0532	2058.4	7.8500E+06	7.8500E+06
x( M)	14.640	0.0000	0.0000	7.9200	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
9	-1.2556E-05	-4.3963E-04	-202.78	-67.317	-12.030	-59.014	-3.1790	-10.779	2134.8	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
10	-1.2140E-05	-4.4100E-04	-183.72	-62.091	-10.601	-51.622	-3.3873	-9.0588	2105.2	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	7.6800	11.520	0.0000	18.720	4.3200	24.000	0.0000	0.0000
11	-1.1841E-05	-4.4021E-04	-174.37	-59.398	-9.9418	-48.053	-3.4129	-8.2715	2181.4	7.8500E+06	7.8500E+06
x( M)	14.400	0.0000	0.0000	7.6800	11.760	0.0000	18.720	4.3200	24.000	0.0000	0.0000
12	-1.2634E-05	-4.3942E-04	-206.21	-68.095	-12.272	-60.143	-3.1404	-11.049	2257.6	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
13	-1.2715E-05	-4.4079E-04	-211.47	-69.597	-12.657	-62.187	-3.0745	-11.517	2228.2	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.2000	10.800	0.0000	18.720	4.0800	24.000	0.0000	0.0000
14	-1.2635E-05	-4.4000E-04	-205.17	-67.747	-12.181	-59.599	-3.1728	-10.915	2304.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	7.4400	11.040	0.0000	18.720	4.0800	24.000	0.0000	0.0000
15	-1.2900E-05	-4.3921E-04	-227.74	-73.861	-13.932	-68.563	-2.7434	-13.082	2385.1	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 269 di 294

x( M)	13.200	0.0000	0.0000	6.9600	10.560	0.0000	18.720	3.8400	24.000	0.0000	0.0000
Min. Pile N.	-1.2900E-05	-4.4163E-04	-227.74	-73.861	-13.932	-68.563	-3.4129	-13.082	1731.7	7.8500E+06	7.8500E+06
	15	1	15	15	15	15	11	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	4.9566E-04	1.0927E-05	71.971	165.03	61.826	9.8301	10.953	2.9276	2485.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.6800	0.0000	0.0000	11.280	4.3200	18.720	0.0000	0.0000	0.0000
2	4.9549E-04	1.0653E-05	68.474	154.77	56.973	9.0969	9.8666	2.9835	2520.4	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
3	4.9528E-04	1.1208E-05	78.039	181.39	70.475	11.100	12.985	2.6855	2718.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
4	4.9649E-04	1.0720E-05	69.344	157.08	58.087	9.2546	10.107	2.9802	2578.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
5	4.9628E-04	1.0411E-05	66.092	147.62	53.686	8.5944	9.1334	2.9908	2612.1	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
6	4.9607E-04	1.1124E-05	75.961	174.99	67.369	10.614	12.246	2.7842	2813.6	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
7	4.9728E-04	1.0699E-05	69.133	156.07	57.748	9.1887	10.027	2.9829	2697.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
8	4.9706E-04	1.0419E-05	66.285	147.74	53.888	8.6092	9.1735	2.9899	2736.9	7.8500E+06	7.8500E+06
x( M)	0.0000	14.640	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
9	4.9685E-04	1.1127E-05	76.155	175.06	67.582	10.625	12.290	2.7801	2938.5	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
10	4.9806E-04	1.0777E-05	70.178	158.53	59.108	9.3696	10.326	2.9691	2833.2	7.8500E+06	7.8500E+06
x( M)	0.0000	14.160	7.6800	0.0000	0.0000	11.520	4.3200	18.720	0.0000	0.0000	0.0000
11	4.9785E-04	1.0506E-05	67.243	150.04	55.136	8.7741	9.4444	2.9890	2871.5	7.8500E+06	7.8500E+06
x( M)	0.0000	14.400	7.9200	0.0000	0.0000	11.760	4.3200	18.720	0.0000	0.0000	0.0000
12	4.9764E-04	1.1168E-05	77.194	177.55	69.042	10.821	12.627	2.7389	3074.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
13	4.9885E-04	1.1249E-05	78.805	182.32	71.316	11.167	13.152	2.6827	3065.9	7.8500E+06	7.8500E+06
x( M)	0.0000	13.440	7.2000	0.0000	0.0000	10.800	4.0800	18.720	0.0000	0.0000	0.0000
14	4.9864E-04	1.1163E-05	76.862	176.47	68.477	10.727	12.484	2.7652	3116.3	7.8500E+06	7.8500E+06
x( M)	0.0000	13.680	7.4400	0.0000	0.0000	11.040	4.0800	18.720	0.0000	0.0000	0.0000
15	4.9847E-04	1.1370E-05	83.865	195.78	78.858	12.252	14.979	2.3822	3286.0	7.8500E+06	7.8500E+06
x( M)	0.0000	13.200	6.9600	0.0000	0.0000	10.560	3.8400	18.720	0.0000	0.0000	0.0000
Max. Pile N.	4.9885E-04	1.1370E-05	83.865	195.78	78.858	12.252	14.979	2.9908	3286.0	7.8500E+06	7.8500E+06
	13	15	15	15	15	15	15	5	15	1	1

LOAD CASE : 29  
CASE NAME : 29-9 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.8441	1.0000
2	0.7772	1.0000
3	0.8654	1.0000
4	0.5565	1.0000
5	0.4963	1.0000
6	0.6326	1.0000
7	0.5223	1.0000
8	0.4698	1.0000
9	0.6030	1.0000
10	0.5193	1.0000
11	0.4687	1.0000
12	0.6095	1.0000
13	0.5649	1.0000
14	0.5097	1.0000
15	0.6600	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
49984.9	235.727	1216.67
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>								

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
 2.01886E-03      1.75176E-04      6.26390E-04  
  
 ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
 9.99502E-07      2.65157E-05      -2.02217E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	2.0885E-03	1.6746E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
2	2.2022E-03	1.6649E-04	6.2406E-04	9.9950E-07	2.6516E-05	-2.0222E-05
3	2.3212E-03	1.6532E-04	6.2841E-04	9.9950E-07	2.6516E-05	-2.0222E-05
4	1.9918E-03	1.7200E-04	6.2088E-04	9.9950E-07	2.6516E-05	-2.0222E-05
5	2.1108E-03	1.7083E-04	6.2523E-04	9.9950E-07	2.6516E-05	-2.0222E-05
6	2.2293E-03	1.6967E-04	6.2957E-04	9.9950E-07	2.6516E-05	-2.0222E-05
7	1.9001E-03	1.7634E-04	6.2204E-04	9.9950E-07	2.6516E-05	-2.0222E-05
8	2.0189E-03	1.7518E-04	6.2639E-04	9.9950E-07	2.6516E-05	-2.0222E-05
9	2.1376E-03	1.7402E-04	6.3074E-04	9.9950E-07	2.6516E-05	-2.0222E-05
10	1.8085E-03	1.8068E-04	6.2321E-04	9.9950E-07	2.6516E-05	-2.0222E-05
11	1.9270E-03	1.7952E-04	6.2755E-04	9.9950E-07	2.6516E-05	-2.0222E-05
12	2.0460E-03	1.7835E-04	6.3190E-04	9.9950E-07	2.6516E-05	-2.0222E-05
13	1.7166E-03	1.8503E-04	6.2437E-04	9.9950E-07	2.6516E-05	-2.0222E-05
14	1.8356E-03	1.8386E-04	6.2872E-04	9.9950E-07	2.6516E-05	-2.0222E-05
15	1.9492E-03	1.8289E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 271 di 294

MAXIMUM 2.3212E-03 1.8503E-04 6.3307E-04 9.9950E-07 2.6516E-05 -2.0222E-05  
Pile N. 3 13 15 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	3446.6	18.750	99.221	1.4523	-295.21	36.729
2	3633.1	17.471	94.927	1.4523	-286.84	33.893
3	3828.4	18.685	102.42	1.4523	-304.03	36.104
4	3287.8	14.420	76.360	1.4523	-244.21	28.593
5	3483.1	13.073	71.573	1.4523	-233.72	25.386
6	3677.6	15.489	84.174	1.4523	-263.94	30.444
7	3137.5	14.363	73.518	1.4523	-237.72	29.330
8	3332.3	13.117	69.284	1.4523	-228.39	26.318
9	3527.2	15.611	81.838	1.4523	-258.79	31.619
10	2987.0	14.911	73.422	1.4523	-237.68	31.402
11	3181.5	13.667	69.343	1.4523	-228.71	28.386
12	3376.8	16.405	82.590	1.4523	-260.71	34.239
13	2836.2	16.502	77.632	1.4523	-247.75	35.795
14	3031.5	15.143	73.307	1.4523	-238.39	32.549
15	3218.1	18.121	87.058	1.4523	-271.09	38.891

MINIMUM 2836.2 13.073 69.284 1.4523 -304.03 25.386  
Pile N. 13 5 8 1 3 5  
MAXIMUM 3828.4 18.750 102.42 1.4523 -228.39 38.891  
Pile N. 3 1 3 1 8 15

PILE GROUP	STRESS, KN/ M**2
1	2842.8
2	2922.4
3	3084.9
4	2598.2
5	2676.3
6	2878.2
7	2494.0
8	2575.4
9	2778.1
10	2409.5
11	2491.8
12	2699.7
13	2356.0
14	2437.3
15	2642.7

MINIMUM 2356.0  
Pile N. 13  
MAXIMUM 3084.9  
Pile N. 3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-4.5661E-06	-1.5952E-05	-36.729	-295.21	-4.5928	-17.060	-0.7952	-3.6143	1950.4	7.8500E+06	7.8500E+06
x( M)	12.480	0.0000	0.0000	9.8400	10.560	18.720	24.000	0.0000	0.0000	0.0000	0.0000
2	-4.5447E-06	-1.5955E-05	-33.893	-286.84	-4.3576	-16.352	-0.7384	-3.8621	2055.9	7.8500E+06	7.8500E+06
x( M)	12.720	13.440	0.0000	9.8400	10.800	13.200	18.720	24.000	0.0000	0.0000	0.0000
3	-4.5199E-06	-1.6227E-05	-36.104	-304.03	-4.6108	-17.586	-0.8027	-3.6003	2166.4	7.8500E+06	7.8500E+06
x( M)	12.480	13.200	0.0000	9.6000	10.560	12.960	18.720	24.000	0.0000	0.0000	0.0000
4	-4.6083E-06	-1.5059E-05	-28.593	-244.21	-3.6898	-13.280	-0.9155	-4.3299	1860.5	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	10.560	11.520	18.720	18.720	24.000	0.0000	0.0000	0.0000
5	-4.5490E-06	-1.4752E-05	-25.386	-233.72	-3.4346	-12.492	-0.9340	-4.3913	1971.0	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.560	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
6	-4.5926E-06	-1.5653E-05	-30.444	-263.94	-3.9293	-14.563	-0.8497	-4.2840	2081.1	7.8500E+06	7.8500E+06
x( M)	13.200	13.920	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
7	-4.6648E-06	-1.4852E-05	-29.330	-237.72	-3.6366	-12.805	-0.9668	-4.3618	1775.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
8	-4.6006E-06	-1.4527E-05	-26.318	-228.39	-3.4025	-12.114	-0.9764	-4.3880	1885.7	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000	0.0000
9	-4.6727E-06	-1.5559E-05	-31.619	-258.79	-3.9098	-14.164	-0.9037	-4.3471	1996.0	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
10	-4.7478E-06	-1.4848E-05	-31.402	-237.68	-3.7026	-12.784	-1.0025	-4.3715	1690.3	7.8500E+06	7.8500E+06
x( M)	13.680	14.400	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
11	-4.6756E-06	-1.4538E-05	-28.386	-228.71	-3.4714	-12.118	-1.0107	-4.3956	1800.4	7.8500E+06	7.8500E+06
x( M)	13.920	14.800	0.0000	10.800	12.000	18.720	18.720	24.000	0.0000	0.0000	0.0000
12	-4.7618E-06	-1.5612E-05	-34.239	-260.71	-4.0221	-14.283	-0.9334	-4.3448	1910.9	7.8500E+06	7.8500E+06
x( M)	13.200	14.160	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000	0.0000
13	-4.8687E-06	-1.5169E-05	-35.795	-247.75	-3.9760	-13.469	-1.0138	-4.3476	1605.0	7.8500E+06	7.8500E+06
x( M)	13.440	14.400	0.0000	10.560	11.520	18.720	18.720	24.000	0.0000	0.0000	0.0000
14	-4.8023E-06	-1.4913E-05	-32.549	-238.39	-3.7231	-12.758	-1.0316	-4.4174	1715.5	7.8500E+06	7.8500E+06
x( M)	13.680	14.640	0.0000	10.800	11.760	18.720	18.720	24.000	0.0000	0.0000	0.0000
15	-4.8760E-06	-1.5849E-05	-38.891	-271.09	-4.3129	-15.007	-0.9321	-4.2514	1821.1	7.8500E+06	7.8500E+06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>				
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 272 di 294

x( M)	13.200	13.920	0.0000	0.0000	10.320	11.280	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-4.8760E-06 15	-1.6227E-05 3	-38.891 15	-304.03 3	-4.6108 3	-17.586 3	-1.0316 14	-4.4174 14	1605.0 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.6746E-04	6.1971E-04	28.489	103.34	18.752	99.237	4.0225	18.552	2842.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
2	1.6649E-04	6.2406E-04	27.507	100.63	17.473	94.943	3.7134	17.477	2922.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.2400	7.4400	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
3	1.6532E-04	6.2841E-04	28.443	105.87	18.687	102.44	4.0387	19.228	3084.9	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.0000	7.2000	0.0000	0.0000	3.6000	4.0800	0.0000	0.0000	0.0000
4	1.7200E-04	6.2088E-04	25.019	87.685	14.422	76.372	2.8984	13.196	2598.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
5	1.7083E-04	6.2523E-04	23.869	84.459	13.074	71.585	2.5958	12.095	2676.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
6	1.6967E-04	6.2957E-04	25.916	93.607	15.491	84.189	3.1803	14.888	2878.2	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
7	1.7634E-04	6.2204E-04	24.965	85.724	14.364	73.529	2.8378	12.549	2494.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
8	1.7518E-04	6.2639E-04	23.902	82.779	13.118	69.295	2.5611	11.583	2575.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
9	1.7402E-04	6.3074E-04	26.022	92.030	15.613	81.851	3.1592	14.345	2778.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
10	1.8068E-04	6.2321E-04	25.437	85.690	14.912	73.433	2.9195	12.516	2409.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
11	1.7952E-04	6.2755E-04	24.369	82.857	13.668	69.354	2.6437	11.585	2491.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	8.1600	0.0000	0.0000	3.8400	4.5600	0.0000	0.0000	0.0000
12	1.7835E-04	6.3190E-04	26.678	92.593	16.407	82.603	3.2989	14.503	2699.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
13	1.8503E-04	6.2437E-04	26.782	88.709	16.504	77.643	3.2459	13.445	2356.0	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.6800	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
14	1.8386E-04	6.2872E-04	25.642	85.825	15.145	73.318	2.9406	12.445	2437.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	7.9200	0.0000	0.0000	3.8400	4.3200	0.0000	0.0000	0.0000
15	1.8289E-04	6.3307E-04	28.090	95.669	18.122	87.071	3.6572	15.515	2642.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.4800	7.4400	0.0000	0.0000	3.8400	4.0800	0.0000	0.0000	0.0000
Max. Pile N.	1.8503E-04 13	6.3307E-04 15	28.489 1	105.87 3	18.752 1	102.44 3	4.0387 3	19.228 3	3084.9 3	7.8500E+06 1	7.8500E+06 1

LOAD CASE : 30  
CASE NAME : 30-10 SLE  
LOAD TYPE : Dead, DL

REDUCTION FACTORS FOR CLOSELY-SPACED PILE GROUPS, COMBINED Y AND Z DIRECTIONS  
ESTIMATED USING MOVEMENT IN THE DIRECTION OF PILE CAP DISPLACEMENTS

GROUP NO	P-FACTOR	Y-FACTOR
1	0.6006	1.0000
2	0.5771	1.0000
3	0.8536	1.0000
4	0.5088	1.0000
5	0.4939	1.0000
6	0.7781	1.0000
7	0.4990	1.0000
8	0.4926	1.0000
9	0.7762	1.0000
10	0.5028	1.0000
11	0.4984	1.0000
12	0.7896	1.0000
13	0.6218	1.0000
14	0.6034	1.0000
15	0.8573	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 55282.1	HOR. LOAD Y, KN 2642.52	HOR. LOAD Z, KN 835.000
MOMENT X, KN- M 2.67100E-10	MOMENT Y, KN- M 13677.2	MOMENT Z, KN- M -34749.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 273 di 294

VERTICAL , M      HORIZONTAL Y, M      HORIZONTAL Z, M  
2.23752E-03      1.58604E-03      4.98254E-04

ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
-1.05400E-06      3.99625E-05      -1.29460E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.6812E-03	1.5942E-03	5.0529E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
2	2.2831E-03	1.5952E-03	5.0071E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
3	2.8931E-03	1.5964E-03	4.9613E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
4	1.6513E-03	1.5894E-03	5.0406E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
5	2.2612E-03	1.5906E-03	4.9948E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
6	2.8694E-03	1.5918E-03	4.9490E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
7	1.6280E-03	1.5848E-03	5.0284E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
8	2.2375E-03	1.5860E-03	4.9825E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
9	2.8470E-03	1.5873E-03	4.9367E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
10	1.6056E-03	1.5802E-03	5.0161E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
11	2.2139E-03	1.5815E-03	4.9703E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
12	2.8238E-03	1.5827E-03	4.9245E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
13	1.5820E-03	1.5757E-03	5.0038E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
14	2.1919E-03	1.5769E-03	4.9580E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
15	2.7938E-03	1.5779E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
MINIMUM	1.5820E-03	1.5757E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.8931E-03	1.5964E-03	5.0529E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	2778.3	172.78	55.344	-1.5314	-149.26	460.49
2	3766.0	168.16	53.140	-1.5314	-143.55	450.77
3	4731.7	219.26	68.308	-1.5314	-175.69	562.47
4	2729.1	153.65	49.282	-1.5314	-135.21	416.07
5	3730.0	150.59	47.632	-1.5314	-130.69	409.69
6	4702.4	205.18	63.960	-1.5314	-166.22	531.65
7	2690.9	151.01	48.469	-1.5314	-133.10	409.07
8	3691.1	149.71	47.382	-1.5314	-129.88	406.77
9	4674.6	204.04	63.639	-1.5314	-165.26	528.20
10	2654.2	151.17	48.555	-1.5314	-133.06	408.59
11	3652.3	150.30	47.599	-1.5314	-130.15	407.27
12	4645.8	205.60	64.162	-1.5314	-166.10	530.50
13	2615.4	174.06	55.905	-1.5314	-149.51	459.54
14	3616.3	170.57	54.031	-1.5314	-144.56	452.50
15	4604.0	216.45	67.592	-1.5314	-173.06	552.30
MINIMUM	2615.4	149.71	47.382	-1.5314	-175.69	406.77
Pile N.	13	8	8	1	3	8
MAXIMUM	4731.7	219.26	68.308	-1.5314	-129.88	562.47
Pile N.	3	3	3	1	8	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.6812E-03	1.5942E-03	5.0529E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
2	2.2831E-03	1.5952E-03	5.0071E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
3	2.8931E-03	1.5964E-03	4.9613E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
4	1.6513E-03	1.5894E-03	5.0406E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
5	2.2612E-03	1.5906E-03	4.9948E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
6	2.8694E-03	1.5918E-03	4.9490E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
7	1.6280E-03	1.5848E-03	5.0284E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
8	2.2375E-03	1.5860E-03	4.9825E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
9	2.8470E-03	1.5873E-03	4.9367E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
10	1.6056E-03	1.5802E-03	5.0161E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
11	2.2139E-03	1.5815E-03	4.9703E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
12	2.8238E-03	1.5827E-03	4.9245E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
13	1.5820E-03	1.5757E-03	5.0038E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
14	2.1919E-03	1.5769E-03	4.9580E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
15	2.7938E-03	1.5779E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
MINIMUM	1.5820E-03	1.5757E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	13	13	15	1	1	1

APPALTATORE: <u>Consorzio</u> <b>HIRPINIA - ORSARA AV</b>	<u>Soci</u> <b>WEBUILD ITALIA PIZZAROTTI</b>	<h2 style="text-align: center;">ITINERARIO NAPOLI – BARI</h2> <h3 style="text-align: center;">RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</h3>
PROGETTAZIONE: <u>Mandatario</u> <b>ROCKSOIL S.P.A.</b>	<u>Mandanti</u> <b>NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A         LOTTO 02         CODIFICA E ZZ CL         DOCUMENTO VI0103 003         REV. A         FOGLIO 274 di 294	

MAXIMUM 2.8931E-03 1.5964E-03 5.0529E-04 -1.0540E-06 3.9963E-05 -1.2946E-04  
 Pile N. 3 3 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2778.3	172.78	55.344	-1.5314	-149.26	460.49
2	3766.0	168.16	53.140	-1.5314	-143.55	450.77
3	4731.7	219.26	68.308	-1.5314	-175.69	562.47
4	2729.1	153.65	49.282	-1.5314	-135.21	416.07
5	3730.0	150.59	47.632	-1.5314	-130.69	409.69
6	4702.4	205.18	63.960	-1.5314	-166.22	531.65
7	2690.9	151.01	48.469	-1.5314	-133.10	409.07
8	3691.1	149.71	47.382	-1.5314	-129.88	406.77
9	4674.6	204.04	63.639	-1.5314	-165.26	528.20
10	2654.2	151.17	48.555	-1.5314	-133.06	408.59
11	3652.3	150.30	47.599	-1.5314	-130.15	407.27
12	4645.8	205.60	64.162	-1.5314	-166.10	530.50
13	2615.4	174.06	55.905	-1.5314	-149.51	459.54
14	3616.3	170.57	54.031	-1.5314	-144.56	452.50
15	4604.0	216.45	67.592	-1.5314	-173.06	552.30
MINIMUM	2615.4	149.71	47.382	-1.5314	-175.69	406.77
Pile N.	13	8	8	1	3	8
MAXIMUM	4731.7	219.26	68.308	-1.5314	-129.88	562.47
Pile N.	3	3	3	1	8	3

PILE GROUP	STRESS, KN/ M**2
1	3024.4
2	3550.4
3	4445.4
4	2856.8
5	3400.8
6	4332.1
7	2813.3
8	3369.8
9	4305.6
10	2791.1
11	3349.5
12	4296.7
13	2929.8
14	3471.5
15	4341.7
MINIMUM	2791.1
Pile N.	10
MAXIMUM	4445.4
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT KN- M	MOMENT y-Dir KN- M	SHEAR KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
1	-4.0388E-05	-1.2767E-05	-460.49	-149.26	-35.191	-11.154	-9.5664	-3.0567	1572.2	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	10.800	10.800	11.040	18.720	18.720	24.000	0.0000	0.0000
2	-4.0272E-05	-1.2623E-05	-450.77	-143.55	-34.451	-10.815	-9.6894	-3.0565	2131.1	7.8500E+06	7.8500E+06
x( M)	13.920	0.0000	0.0000	11.040	11.040	11.040	18.720	18.720	24.000	0.0000	0.0000
3	-4.1787E-05	-1.2982E-05	-562.47	-175.69	-43.702	-13.583	-7.7661	-2.4199	2677.6	7.8500E+06	7.8500E+06
x( M)	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	18.720	24.000	0.0000	0.0000
4	-3.9275E-05	-1.2418E-05	-416.07	-135.21	-31.778	-10.078	-9.8643	-3.1512	1544.3	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
5	-3.9195E-05	-1.2280E-05	-409.69	-130.69	-31.306	-9.8295	-9.9070	-3.1250	2110.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
6	-4.1464E-05	-1.2886E-05	-531.65	-166.22	-41.216	-12.814	-8.3565	-2.6049	2661.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	18.720	24.000	0.0000	0.0000
7	-3.9041E-05	-1.2345E-05	-409.07	-133.10	-31.321	-9.9369	-9.8462	-3.1469	1522.7	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
8	-3.9072E-05	-1.2246E-05	-406.77	-129.88	-31.164	-9.7892	-9.8725	-3.1158	2088.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
9	-4.1345E-05	-1.2854E-05	-528.20	-165.26	-41.035	-12.762	-8.3382	-2.6006	2645.3	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	18.720	24.000	0.0000	0.0000
10	-3.8991E-05	-1.2335E-05	-408.59	-133.06	-31.370	-9.9574	-9.8031	-3.1351	1502.0	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
11	-3.9056E-05	-1.2247E-05	-407.27	-130.15	-31.290	-9.8335	-9.8270	-3.1034	2066.8	7.8500E+06	7.8500E+06
x( M)	14.160	0.0000	0.0000	11.280	11.280	18.720	18.720	18.720	24.000	0.0000	0.0000
12	-4.1250E-05	-1.2830E-05	-530.50	-166.10	-41.348	-12.866	-8.1988	-2.5587	2629.0	7.8500E+06	7.8500E+06
x( M)	13.200	0.0000	0.0000	10.320	10.320	18.720	18.720	18.720	24.000	0.0000	0.0000
13	-4.0123E-05	-1.2711E-05	-459.54	-149.51	-35.525	-11.281	-9.3089	-2.9829	1480.0	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	18.720	24.000	0.0000	0.0000
14	-4.0098E-05	-1.2584E-05	-452.50	-144.56	-34.966	-10.992	-9.4190	-2.9785	2066.4	7.8500E+06	7.8500E+06
x( M)	13.680	0.0000	0.0000	10.800	10.800	18.720	18.720	18.720	24.000	0.0000	0.0000
15	-4.1321E-05	-1.2858E-05	-552.30	-173.06	-43.286	-13.478	-7.6090	-2.3768	2605.4	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 275 di 294

x( M)	12.960	12.960	0.0000	0.0000	10.320	10.320	18.720	18.720	24.000	0.0000	0.0000
Min. Pile N.	-4.1787E-05 3	-1.2982E-05 3	-562.47 3	-175.69 3	-43.702 3	-13.583 3	-9.9070 5	-3.1512 4	1480.0 13	7.8500E+06 1	7.8500E+06 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.5942E-03	5.0529E-04	231.60	73.372	172.80	55.350	32.194	10.271	3024.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
2	1.5952E-03	5.0071E-04	228.32	71.636	168.19	53.149	31.147	9.8175	3550.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
3	1.5964E-03	4.9612E-04	266.41	82.782	219.31	68.321	43.441	13.521	4445.4	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
4	1.5894E-03	5.0406E-04	216.47	68.615	153.67	49.288	27.851	8.8927	2856.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
5	1.5906E-03	4.9948E-04	214.34	67.276	150.62	47.639	27.176	8.5707	3400.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
6	1.5918E-03	4.9490E-04	255.99	79.572	205.21	63.972	40.031	12.466	4332.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
7	1.5848E-03	5.0284E-04	214.28	67.946	151.02	48.475	27.291	8.7193	2813.3	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
8	1.5860E-03	4.9825E-04	213.52	67.047	149.73	47.390	27.017	8.5251	3369.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
9	1.5873E-03	4.9367E-04	255.03	79.302	204.07	63.651	39.808	12.403	4305.6	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.9600	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
10	1.5802E-03	5.0161E-04	214.29	67.979	151.19	48.560	27.371	8.7497	2791.1	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
11	1.5815E-03	4.9703E-04	213.85	67.183	150.32	47.606	27.191	8.5849	3349.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.4400	7.4400	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
12	1.5827E-03	4.9245E-04	256.08	79.658	205.63	64.174	40.246	12.546	4296.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
13	1.5756E-03	5.0038E-04	231.97	73.640	174.08	55.911	32.671	10.449	2929.8	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
14	1.5769E-03	4.9580E-04	229.63	72.176	170.60	54.039	31.881	10.070	3471.5	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.0800	4.0800	0.0000	0.0000	0.0000
15	1.5779E-03	4.9121E-04	263.81	82.114	216.49	67.604	42.978	13.406	4341.7	7.8500E+06	7.8500E+06
x( M)	0.0000	0.0000	6.7200	6.7200	0.0000	0.0000	3.8400	3.8400	0.0000	0.0000	0.0000
Max. Pile N.	1.5964E-03 3	5.0529E-04 1	266.41 3	82.782 3	219.31 3	68.321 3	43.441 3	13.521 3	4445.4 3	7.8500E+06 1	7.8500E+06 1

\*\*\*\*\* SUMMARY FOR LOAD CASES AND COMBINATIONS \*\*\*\*\*

\*\*\*\*\* LOAD CASES RESULTS \*\*\*\*\*

LOAD CASE : 1

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
56801.9	-235.727	1825.00	1.53200E-11	27335.6	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X, RAD	ROT Y, RAD	ROT Z, RAD
2.29580E-03	-8.01228E-05	9.27793E-04	-6.54388E-08	3.56588E-05	-6.61929E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	1.9308E-03	-8.0768E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.6608E-03	-7.9478E-05	9.2823E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3187.9	-19.161	103.86	-0.095082	-460.24	-71.479
Pile N.	13	3	11	1	3	1
MAXIMUM	4385.7	-13.722	153.25	-0.095082	-347.66	-58.491
Pile N.	3	8	3	1	11	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	1.9308E-03	-8.0768E-05	9.2736E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.6608E-03	-7.9478E-05	9.2823E-04	-6.5439E-08	3.5659E-05	-6.6193E-06
Pile N.	3	3	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 276 di 294

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3187.9	-19.161	103.86	-0.095082	-460.24	-71.479
Pile N.	13	3	11	1	3	1
MAXIMUM	4385.7	-13.722	153.25	-0.095082	-347.66	-58.491
Pile N.	3	8	3	1	11	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-8.3768E-05	-2.3965E-05	-14.873	-460.24	-19.166	-26.027	-3.2735	-6.5956	1804.0
Pile N.	14	3	1	3	3	3	3	5	13
Max.	2.1846E-06	9.2823E-04	71.479	156.52	2.5174	153.28	0.7857	28.658	3879.1
Pile N.	1	1	1	3	3	3	13	3	3

LOAD CASE : 2

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
81231.3	-3954.86	1248.30	-2.90400E-10	18929.6	45738.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.46890E-03	-2.36360E-03	5.20298E-04	2.92402E-06	-4.49115E-06	1.90361E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.2319E-03	-2.3924E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	4.7058E-03	-2.3348E-03	5.3983E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3682.0	-334.69	72.512	4.2486	-331.88	-863.16
Pile N.	15	1	8	1	13	1
MAXIMUM	6978.1	-222.26	98.362	4.2486	-272.55	-607.60
Pile N.	1	11	13	1	5	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.2319E-03	-2.3924E-03	5.0077E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	4.7058E-03	-2.3348E-03	5.3983E-04	2.9240E-06	-4.4912E-06	1.9036E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3682.0	-334.69	72.512	4.2486	-331.88	-863.16
Pile N.	15	1	8	1	13	1
MAXIMUM	6978.1	-222.26	98.362	4.2486	-272.55	-607.60
Pile N.	1	11	13	1	5	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-2.3924E-03	-1.3464E-05	-402.39	-331.88	-334.79	-14.789	-66.542	-4.3676	2083.6
Pile N.	3	13	1	13	1	13	1	15	15
Max.	6.2700E-05	5.3983E-04	863.16	88.513	66.544	98.393	14.866	17.595	6719.5
Pile N.	1	15	1	13	1	13	6	1	1

LOAD CASE : 3

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	1825.00	2.17900E-11	27336.7	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.84408E-03	2.68217E-04	9.61518E-04	1.48211E-06	4.57382E-05	-3.40064E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 277 di 294

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.3244E-03	2.5360E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	3.3638E-03	2.8283E-04	9.7142E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	3	13	15	1	1	1

* PILE TOP REACTIONS, GLOBAL *						
	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3833.7	18.490	103.77	2.1535	-449.99	30.002
Pile N.	13	5	8	1	3	5
MAXIMUM	5315.0	26.864	153.90	2.1535	-335.87	49.822
Pile N.	3	1	3	1	8	15

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.3244E-03	2.5360E-04	9.5162E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	3.3638E-03	2.8283E-04	9.7142E-04	1.4821E-06	4.5738E-05	-3.4006E-05
Pile N.	3	13	15	1	1	1

* PILE TOP REACTIONS, LOCAL *						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3833.7	18.490	103.77	2.1535	-449.99	30.002
Pile N.	13	5	8	1	3	5
MAXIMUM	5315.0	26.864	153.90	2.1535	-335.87	49.822
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-7.6369E-06	-2.4991E-05	-49.822	-449.99	-7.1564	-26.970	-1.5135	-6.6806	2169.5
Pile N.	15	3	15	3	3	3	14	14	13
Max.	2.8283E-04	9.7142E-04	44.373	162.24	26.867	153.94	5.9768	29.107	4364.5
Pile N.	13	15	1	3	1	3	3	3	3

LOAD CASE : 4

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	-2.99900E-16	2.17700E-11	-3.62069E-05	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.81885E-03	1.98819E-04	9.41979E-06	1.85260E-08	2.68482E-06	-1.56575E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 278 di 294

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-5.2046E-06	-6.9196E-07	-72.662	-0.1475	-5.5306	-0.4418	-1.2497	-0.073107	2550.7
Pile N.	15	7	15	4	15	15	8	15	1
Max.	1.9900E-04	9.5435E-06	33.520	3.2976	28.099	0.1360	5.5678	0.1433	2902.5
Pile N.	13	15	15	4	15	15	15	15	15

LOAD CASE : 5

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
81932.4	3573.18	1399.50	2.46900E-10	23393.5	-40423.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.50865E-03	2.23253E-03	8.46748E-04	-1.49244E-06	6.99897E-05	-1.99201E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.4162E-03	2.2178E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.6011E-03	2.2473E-03	8.5672E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3984.3	201.62	79.237	-2.1685	-292.32	522.08
Pile N.	13	8	8	1	3	8
MAXIMUM	6848.3	297.75	114.77	-2.1685	-214.46	736.38
Pile N.	3	3	3	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.4162E-03	2.2178E-03	8.3678E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.6011E-03	2.2473E-03	8.5672E-04	-1.4924E-06	6.9990E-05	-1.9920E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3984.3	201.62	79.237	-2.1685	-292.32	522.08
Pile N.	13	8	8	1	3	8
MAXIMUM	6848.3	297.75	114.77	-2.1685	-214.46	736.38
Pile N.	3	3	3	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-5.9314E-05	-2.2195E-05	-736.38	-292.32	-61.745	-23.171	-13.616	-5.3020	2254.7
Pile N.	3	3	3	3	3	3	5	4	13
Max.	2.2472E-03	8.5672E-04	376.00	141.00	297.82	114.80	59.843	22.842	6252.2
Pile N.	3	1	3	3	3	3	3	3	3

LOAD CASE : 6

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1825.00	1.53200E-11	27335.6	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.94533E-04	9.37915E-04	1.32182E-06	3.89528E-05	-2.55933E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.5831E-03	1.8150E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.4546E-03	2.0757E-04	9.4674E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2617.2	12.826	103.98	1.9206	-457.61	18.437

<b>APPALDATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 279 di 294

Pile N.	13	5	8	1	3	5
MAXIMUM	4047.4	18.710	153.79	1.9206	-343.88	33.871
Pile N.	3	1	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.5831E-03	1.8150E-04	9.2908E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.4546E-03	2.0757E-04	9.4674E-04	1.3218E-06	3.8953E-05	-2.5593E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2617.2	12.826	103.98	1.9206	-457.61	18.437
Pile N.	13	5	8	1	3	5
MAXIMUM	4047.4	18.710	153.79	1.9206	-343.88	33.871
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.6326E-06	-2.4296E-05	-33.871	-457.61	-5.1698	-26.351	-1.0966	-6.6262	1481.0
Pile N.	13	3	15	3	1	3	14	14	13
Max.	2.0757E-04	9.4674E-04	32.260	158.56	18.711	153.81	4.2246	28.853	3665.9
Pile N.	13	15	1	3	1	3	1	3	3

LOAD CASE : 7

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
69480.1	335.863	-2.99900E-16	2.17700E-11	-3.62069E-05	-3743.41

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.81885E-03	1.98819E-04	9.41979E-06	1.85260E-08	2.68482E-06	-1.56575E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.7350E-03	1.9864E-04	9.2960E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.9027E-03	1.9900E-04	9.5435E-06	1.8526E-08	2.6848E-06	-1.5658E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	4507.5	19.050	-0.075013	0.026918	2.9332	52.721
Pile N.	1	5	7	1	15	5
MAXIMUM	4743.7	28.094	0.1362	0.026918	3.2976	72.662
Pile N.	15	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.2046E-06	-6.9196E-07	-72.662	-0.1475	-5.5306	-0.4418	-1.2497	-0.073107	2550.7
Pile N.	15	7	15	4	15	15	8	15	1
Max.	1.9900E-04	9.5435E-06	33.520	3.2976	28.099	0.1360	5.5678	0.1433	2902.5
Pile N.	13	15	15	4	15	15	15	15	15

LOAD CASE : 8

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 280 di 294

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
76117.4	1376.48	-1240.00	9.28000E-11	-36241.7	-15463.2

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.17870E-03	7.51386E-04	-6.92614E-04	1.93431E-07	-4.50349E-05	-4.50596E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.5300E-03	7.4948E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	3.8274E-03	7.5329E-04	-6.9132E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	4171.2	77.629	-102.94	0.2811	209.24	237.64
Pile N.	1	5	15	1	5	5
MAXIMUM	5889.5	114.60	-69.964	0.2811	282.65	321.03
Pile N.	15	15	5	1	15	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.5300E-03	7.4948E-04	-6.9391E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	3.8274E-03	7.5329E-04	-6.9132E-04	1.9343E-07	-4.5035E-05	-4.5060E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	4171.2	77.629	-102.94	0.2811	209.24	237.64
Pile N.	1	5	15	1	5	5
MAXIMUM	5889.5	114.60	-69.964	0.2811	282.65	321.03
Pile N.	15	15	5	1	15	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.9561E-05	-6.9391E-04	-321.03	-116.14	-20.995	-102.97	-5.0203	-19.975	2360.4
Pile N.	15	1	15	15	15	15	11	15	1
Max.	7.5329E-04	1.7995E-05	126.57	282.65	114.63	19.248	22.068	4.5528	4615.9
Pile N.	13	15	15	15	15	15	15	5	15

LOAD CASE : 9

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
56801.9	235.727	1825.00	1.53200E-11	27335.6	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.29580E-03	1.94601E-04	9.38207E-04	1.32253E-06	3.89558E-05	-2.55962E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.8600E-03	1.8156E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.7316E-03	2.0764E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3071.6	12.825	103.98	1.9216	-457.79	18.474
Pile N.	13	5	8	1	3	5
MAXIMUM	4502.0	18.711	153.79	1.9216	-344.03	33.914
Pile N.	3	1	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.8600E-03	1.8156E-04	9.2937E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.7316E-03	2.0764E-04	9.4704E-04	1.3225E-06	3.8956E-05	-2.5596E-05
Pile N.	3	13	15	1	1	1



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 281 di 294

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3071.6	12.825	103.98	1.9216	-457.79	18.474
Pile N.	13	5	8	1	3	5
MAXIMUM	4502.0	18.711	153.79	1.9216	-344.03	33.914
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-5.6403E-06	-2.4324E-05	-33.914	-457.79	-5.1750	-26.376	-1.0974	-6.6309	1738.2
Pile N.	13	3	15	3	1	3	14	14	13
Max.	2.0764E-04	9.4704E-04	32.275	158.63	18.713	153.82	4.2262	28.861	3923.6
Pile N.	13	15	1	3	1	3	1	3	3

LOAD CASE : 10

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
77161.1	3825.72	1248.30	3.86900E-10	20395.5	-50313.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
3.28767E-03	2.42876E-03	7.79455E-04	-1.59147E-06	6.93778E-05	-2.24521E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.1501E-03	2.4131E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.4253E-03	2.4444E-03	7.9009E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3547.6	215.78	70.583	-2.3124	-252.38	545.42
Pile N.	13	8	8	1	3	8
MAXIMUM	6630.4	318.95	102.47	-2.3124	-182.96	774.83
Pile N.	3	3	3	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.1501E-03	2.4131E-03	7.6882E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	4.4253E-03	2.4444E-03	7.9009E-04	-1.5915E-06	6.9378E-05	-2.2452E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3547.6	215.78	70.583	-2.3124	-252.38	545.42
Pile N.	13	8	8	1	3	8
MAXIMUM	6630.4	318.95	102.47	-2.3124	-182.96	774.83
Pile N.	3	3	3	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-6.4697E-05	-2.0491E-05	-774.83	-252.38	-67.138	-21.315	-14.648	-4.7870	2007.6
Pile N.	3	3	3	3	3	3	5	4	13
Max.	2.4445E-03	7.9009E-04	409.33	129.86	319.03	102.50	64.456	20.618	6196.8
Pile N.	3	1	3	3	3	3	3	3	3

LOAD CASE : 11

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	13267.6	3851.50	5196.70	51545.5	-1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.39401E-03	8.25718E-03	2.40305E-03	3.68687E-05	1.89525E-04	-6.32852E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6		COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 282 di 294

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-7.5307E-04	7.8937E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.5411E-03	8.6207E-03	2.6493E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	3	13	15	1	1	1

* PILE TOP REACTIONS, GLOBAL *						
	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1158.1	733.38	195.74	53.570	-985.84	2073.3
Pile N.	13	5	4	1	15	5
MAXIMUM	7640.3	1139.1	357.41	53.570	-520.49	3107.2
Pile N.	3	15	15	1	4	15

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-7.5307E-04	7.8937E-03	2.1568E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.5411E-03	8.6207E-03	2.6493E-03	3.6869E-05	1.8953E-04	-6.3285E-04
Pile N.	3	13	15	1	1	1

* PILE TOP REACTIONS, LOCAL *						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1158.1	733.38	195.74	53.570	-985.84	2073.3
Pile N.	13	5	4	1	15	5
MAXIMUM	7640.3	1139.1	357.41	53.570	-520.49	3107.2
Pile N.	3	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-2.1840E-04	-6.7689E-05	-3107.2	-985.84	-232.21	-72.061	-54.301	-15.621	324.10
Pile N.	15	15	15	15	15	15	15	11	1
Max.	8.6207E-03	2.6493E-03	1402.2	434.95	1139.5	357.52	238.36	74.461	1.3989E+04
Pile N.	13	15	15	15	15	15	15	15	15

LOAD CASE : 12

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
48530.9	-14238.2	3830.50	-5196.70	51784.8	1.53466E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.16187E-03	-8.73005E-03	1.67094E-03	-3.13227E-05	-2.11427E-05	6.02930E-04

* PILE TOP DISPLACEMENTS, GLOBAL *						
	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.7025E-03	-9.0389E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	15	13	15	1	1	1
MAXIMUM	6.0262E-03	-8.4212E-03	1.8802E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	1	3	1	1	1	1

* PILE TOP REACTIONS, GLOBAL *						
	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-2602.5	-1204.0	200.25	-45.511	-1219.9	-3409.2
Pile N.	15	13	12	1	1	13
MAXIMUM	7895.6	-797.88	353.24	-45.511	-781.07	-2369.0
Pile N.	1	5	1	1	12	6

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. X, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.7025E-03	-9.0389E-03	1.4617E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	15	13	15	1	1	1
MAXIMUM	6.0262E-03	-8.4212E-03	1.8802E-03	-3.1323E-05	-2.1143E-05	6.0293E-04
Pile N.	1	3	1	1	1	1

* PILE TOP REACTIONS, LOCAL *						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-2602.5	-1204.0	200.25	-45.511	-1219.9	-3409.2
Pile N.	15	13	12	1	1	13
MAXIMUM	7895.6	-797.88	353.24	-45.511	-781.07	-2369.0
Pile N.	1	5	1	1	12	6

\* EFFECTS FOR LATERALLY LOADED PILE \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 283 di 294

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-9.0389E-03	-4.8771E-05	-1456.2	-1219.9	-1204.3	-55.054	-244.36	-14.424	121.39
Pile N.	13	1	13	1	13	1	13	2	6
Max.	2.2652E-04	1.8808E-03	3409.2	325.26	240.69	353.39	59.376	66.919	1.4780E+04
Pile N.	13	1	13	1	13	1	14	1	1

LOAD CASE : 13

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
54777.3	3567.66	12875.8	1559.54	1.71305E+05	-38094.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.37714E-03	2.60595E-03	6.85954E-03	2.35611E-05	3.02229E-04	-2.77842E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.1641E-03	2.3736E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.9184E-03	2.8383E-03	7.0169E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1783.4	192.78	727.36	34.234	-3274.8	412.16
Pile N.	13	5	8	1	3	5
MAXIMUM	7838.8	286.89	1091.9	34.234	-2410.6	680.06
Pile N.	3	15	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.1641E-03	2.3736E-03	6.7021E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.9184E-03	2.8383E-03	7.0169E-03	2.3561E-05	3.0223E-04	-2.7784E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1783.4	192.78	727.36	34.234	-3274.8	412.16
Pile N.	13	5	8	1	3	5
MAXIMUM	7838.8	286.89	1091.9	34.234	-2410.6	680.06
Pile N.	3	15	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-7.1436E-05	-1.7794E-04	-680.06	-3274.8	-65.794	-192.82	-16.502	-48.672	150.25
Pile N.	15	3	15	3	3	3	14	14	10
Max.	2.8383E-03	7.0169E-03	419.70	1155.5	286.93	1092.3	59.069	210.87	1.4399E+04
Pile N.	13	15	15	3	15	3	15	3	3

LOAD CASE : 14

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
48515.8	4336.25	-12833.8	1559.54	-1.71778E+05	-46842.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.04291E-03	2.19448E-03	-6.54161E-03	5.13974E-06	-2.25686E-04	-7.25238E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.8385E-04	2.1438E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2697E-03	2.2452E-03	-6.5073E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-284.35	242.13	-1069.5	7.4680	2480.4	829.67

<b>APPALDATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 284 di 294

Pile N.	1	5	15	1	5	5
MAXIMUM	6437.6	370.26	-726.33	7.4680	3281.7	1143.1
Pile N.	15	15	8	1	15	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.8385E-04	2.1438E-03	-6.5759E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2697E-03	2.2452E-03	-6.5073E-03	5.1397E-06	-2.2569E-04	-7.2524E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-284.35	242.13	-1069.5	7.4680	2480.4	829.67
Pile N.	1	5	15	1	5	5
MAXIMUM	6437.6	370.26	-726.33	7.4680	3281.7	1143.1
Pile N.	15	15	8	1	15	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.7553E-05	-6.5759E-03	-1143.1	-1090.8	-62.623	-1069.8	-16.145	-203.32	31.389
Pile N.	13	1	15	15	15	15	11	15	3
Max.	2.2452E-03	1.6792E-04	374.87	3281.7	370.37	182.07	70.217	47.352	1.4068E+04
Pile N.	13	13	15	15	15	15	15	11	15

LOAD CASE : 15

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
61951.9	3566.55	3892.45	1559.13	50994.3	-38092.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.56480E-03	2.19270E-03	2.04569E-03	1.12542E-05	1.05130E-04	-1.85383E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1537E-03	2.0817E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.9759E-03	2.3037E-03	2.1209E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	1912.6	197.63	220.82	16.352	-938.37	520.70
Pile N.	13	5	8	1	3	5
MAXIMUM	6073.5	293.02	323.91	16.352	-694.63	759.76
Pile N.	3	15	3	1	7	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.1537E-03	2.0817E-03	1.9705E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.9759E-03	2.3037E-03	2.1209E-03	1.1254E-05	1.0513E-04	-1.8538E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	1912.6	197.63	220.82	16.352	-938.37	520.70
Pile N.	13	5	8	1	3	5
MAXIMUM	6073.5	293.02	323.91	16.352	-694.63	759.76
Pile N.	3	15	3	1	7	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.9386E-05	-5.4434E-05	-759.76	-938.37	-58.896	-57.527	-14.005	-14.095	1082.3
Pile N.	15	15	15	3	15	3	11	14	13
Max.	2.3037E-03	2.1209E-03	366.04	346.53	293.08	324.00	57.139	61.471	6916.0
Pile N.	13	15	15	3	15	3	15	3	3

LOAD CASE : 16

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 285 di 294

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
39735.4	4287.03	3850.45	1559.13	51525.2	-46135.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
1.60658E-03	2.54528E-03	2.01023E-03	1.03344E-05	1.01745E-04	-1.99296E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.0080E-04	2.4434E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.0124E-03	2.6472E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	336.38	239.26	218.70	15.016	-925.69	656.93
Pile N.	13	5	8	1	3	5
MAXIMUM	4879.5	351.76	318.98	15.016	-687.21	932.38
Pile N.	3	15	3	1	7	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.0080E-04	2.4434E-03	1.9412E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	3.0124E-03	2.6472E-03	2.0793E-03	1.0334E-05	1.0174E-04	-1.9930E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	336.38	239.26	218.70	15.016	-925.69	656.93
Pile N.	13	5	8	1	3	5
MAXIMUM	4879.5	351.76	318.98	15.016	-687.21	932.38
Pile N.	3	15	3	1	7	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-6.8063E-05	-5.3345E-05	-932.38	-925.69	-68.689	-56.371	-16.392	-13.860	190.35
Pile N.	15	15	15	3	15	3	10	11	13
Max.	2.6472E-03	2.0793E-03	424.99	340.05	351.81	319.05	68.180	60.417	6550.6
Pile N.	13	15	15	3	15	3	15	3	3

LOAD CASE : 17

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	3816.62	12833.8	1559.54	1.71757E+05	-40908.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.29889E-03	2.75323E-03	6.84425E-03	2.36922E-05	3.03171E-04	-2.87753E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.2716E-03	2.5196E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.8694E-03	2.9868E-03	7.0025E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1947.0	207.04	724.81	34.424	-3261.3	454.64
Pile N.	13	5	8	1	3	5
MAXIMUM	7813.1	305.68	1087.9	34.424	-2400.3	733.43
Pile N.	3	15	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.2716E-03	2.5196E-03	6.6860E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.8694E-03	2.9868E-03	7.0025E-03	2.3692E-05	3.0317E-04	-2.8775E-04
Pile N.	3	13	15	1	1	1

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 286 di 294

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1947.0	207.04	724.81	34.424	-3261.3	454.64
Pile N.	13	5	8	1	3	5
MAXIMUM	7813.1	305.68	1087.9	34.424	-2400.3	733.43
Pile N.	3	15	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-7.5087E-05	-1.7752E-04	-733.43	-3261.3	-69.732	-192.32	-17.469	-48.535	250.87
Pile N.	15	3	15	3	3	3	14	14	10
Max.	2.9868E-03	7.0025E-03	442.23	1152.7	305.71	1088.2	63.120	210.26	1.4375E+04
Pile N.	13	15	15	3	15	3	3	3	3

LOAD CASE : 18

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
47825.5	4430.81	-12813.8	1559.54	-1.74385E+05	-47762.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01311E-03	2.24536E-03	-6.54017E-03	5.06933E-06	-2.27824E-04	-7.49397E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-2.4629E-04	2.1954E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2725E-03	2.2953E-03	-6.5063E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-380.92	247.48	-1067.8	7.3657	2473.4	847.15
Pile N.	1	5	15	1	5	5
MAXIMUM	6441.1	378.05	-725.08	7.3657	3273.9	1166.2
Pile N.	15	15	8	1	15	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-2.4629E-04	2.1954E-03	-6.5740E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	4.2725E-03	2.2953E-03	-6.5063E-03	5.0693E-06	-2.2782E-04	-7.4940E-05
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-380.92	247.48	-1067.8	7.3657	2473.4	847.15
Pile N.	1	5	15	1	5	5
MAXIMUM	6441.1	378.05	-725.08	7.3657	3273.9	1166.2
Pile N.	15	15	8	1	15	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-5.8825E-05	-6.5740E-03	-1166.2	-1090.5	-64.017	-1068.1	-16.498	-203.12	71.645
Pile N.	13	1	15	15	15	15	11	15	3
Max.	2.2953E-03	1.6784E-04	383.23	3273.9	378.16	182.00	71.740	47.298	1.4071E+04
Pile N.	13	13	15	15	15	15	15	11	15

LOAD CASE : 19

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
53059.7	-13267.6	3851.50	5196.70	51545.5	1.42439E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.35220E-03	-7.92198E-03	1.68852E-03	5.24107E-05	-1.42354E-05	5.58539E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

<b>APPALTATORE:</b> Consorzio <u>Soci</u> <b>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</b>			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
<b>PROGETTAZIONE:</b> Mandataria <u>Mandanti</u> <b>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF</b> <b>ELETTRI-FER, M-INGEGNERIA</b>								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6</b>			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 287 di 294

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.2689E-03	-8.4388E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	5.9733E-03	-7.4052E-03	2.0386E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1942.9	-1175.8	216.37	76.152	-1102.8	-3280.4
Pile N.	15	1	5	1	15	1
MAXIMUM	7867.8	-727.51	300.09	76.152	-831.19	-2110.9
Pile N.	1	11	15	1	5	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.2689E-03	-8.4388E-03	1.3384E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	5.9733E-03	-7.4052E-03	2.0386E-03	5.2411E-05	-1.4235E-05	5.5854E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1942.9	-1175.8	216.37	76.152	-1102.8	-3280.4
Pile N.	15	1	5	1	15	1
MAXIMUM	7867.8	-727.51	300.09	76.152	-831.19	-2110.9
Pile N.	1	11	15	1	5	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-8.4387E-03	-4.7730E-05	-1382.5	-1102.8	-1176.2	-45.425	-242.07	-16.513	82.228
Pile N.	3	15	1	15	1	15	1	15	9
Max.	2.1368E-04	2.0386E-03	3280.4	296.63	230.17	300.06	53.910	54.051	1.4633E+04
Pile N.	1	15	1	15	1	15	6	13	1

LOAD CASE : 20

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
47969.5	14220.4	3830.50	5196.70	51986.8	-1.54095E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.17563E-03	9.10504E-03	2.48902E-03	3.9341E-05	1.97475E-04	-6.79767E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.1446E-03	8.7171E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.4959E-03	9.4929E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-1753.8	786.51	193.22	57.162	-993.04	2271.2
Pile N.	13	5	4	1	15	5
MAXIMUM	7616.5	1217.1	356.76	57.162	-514.39	3380.5
Pile N.	3	15	15	1	4	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.1446E-03	8.7171E-03	2.2262E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	13	3	1	1	1	1
MAXIMUM	5.4959E-03	9.4929E-03	2.7518E-03	3.9341E-05	1.9747E-04	-6.7977E-04
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-1753.8	786.51	193.22	57.162	-993.04	2271.2
Pile N.	13	5	4	1	15	5
MAXIMUM	7616.5	1217.1	356.76	57.162	-514.39	3380.5
Pile N.	3	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 288 di 294

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-2.3619E-04	-6.9069E-05	-3380.5	-993.04	-252.93	-73.992	-60.576	-16.271	730.82
Pile N.	15	15	15	15	15	15	10	11	1
Max.	9.4929E-03	2.7518E-03	1522.1	445.18	1217.5	356.87	249.24	72.996	1.4789E+04
Pile N.	13	15	15	15	15	15	15	15	15

LOAD CASE : 21

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	-235.727	1216.67	1.53100E-11	18223.7	2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	-9.90914E-05	6.15798E-04	-2.48430E-07	2.32192E-05	-1.24938E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7874E-03	-1.0154E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.2503E-03	-9.6642E-05	6.1746E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2952.5	-19.135	69.193	-0.3610	-307.62	-64.646
Pile N.	13	1	11	1	1	1
MAXIMUM	3712.2	-13.598	102.19	-0.3610	-232.05	-52.039
Pile N.	3	8	1	1	11	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7874E-03	-1.0154E-04	6.1414E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	13	13	15	1	1	1
MAXIMUM	2.2503E-03	-9.6642E-05	6.1746E-04	-2.4843E-07	2.3219E-05	-1.2494E-06
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2952.5	-19.135	69.193	-0.3610	-307.62	-64.646
Pile N.	13	1	11	1	1	1
MAXIMUM	3712.2	-13.598	102.19	-0.3610	-232.05	-52.039
Pile N.	3	8	1	1	11	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.0163E-04	-1.5921E-05	-16.930	-307.62	-19.139	-17.279	-3.4057	-4.3873	1670.8
Pile N.	13	1	1	1	1	1	7	13	13
Max.	2.5445E-06	6.1746E-04	64.646	104.06	2.8385	102.20	0.8304	19.072	3039.0
Pile N.	1	1	1	1	1	1	13	1	3

LOAD CASE : 22

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
50089.1	-2731.59	835.000	-2.00600E-10	12666.2	31593.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.35482E-03	-1.54748E-03	3.51788E-04	1.92015E-06	-1.82997E-06	1.07716E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6494E-03	-1.5664E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	3.0602E-03	-1.5286E-03	3.6461E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2726.0	-230.07	48.475	2.7900	-220.43	-621.05



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 289 di 294

Pile N.	15	1	8	1	13	1
MAXIMUM	4938.9	-154.15	65.814	2.7900	-180.75	-447.63
Pile N.	1	11	13	1	5	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.6494E-03	-1.5664E-03	3.3896E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	15	3	1	1	1	1
MAXIMUM	3.0602E-03	-1.5286E-03	3.6461E-04	1.9202E-06	-1.8300E-06	1.0772E-04
Pile N.	1	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2726.0	-230.07	48.475	2.7900	-220.43	-621.05
Pile N.	15	1	8	1	13	1
MAXIMUM	4938.9	-154.15	65.814	2.7900	-180.75	-447.63
Pile N.	1	11	13	1	5	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.5664E-03	-9.0641E-06	-262.90	-220.43	-230.11	-9.9406	-44.919	-2.9209	1542.6
Pile N.	3	13	1	13	1	13	1	15	15
Max.	4.0691E-05	3.6461E-04	621.05	59.640	43.562	65.829	10.076	11.810	4769.8
Pile N.	1	15	1	13	1	13	6	1	1

LOAD CASE : 23

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.75176E-04	6.26390E-04	9.99502E-07	2.65157E-05	-2.02217E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-4.8760E-06	-1.6227E-05	-38.891	-304.03	-4.6108	-17.586	-1.0316	-4.4174	1605.0
Pile N.	15	3	15	3	3	3	14	13	13
Max.	1.8503E-04	6.3307E-04	28.489	105.87	18.752	102.44	4.0387	19.228	3084.9
Pile N.	13	15	1	3	1	3	3	3	3

LOAD CASE : 24

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 290 di 294

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	-2.10400E-16	1.52900E-11	-1.79506E-05	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.34066E-04	5.76689E-06	1.39119E-08	1.64528E-06	-9.46191E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-3.4876E-06	-4.2462E-07	-52.634	-0.090460	-3.7321	-0.2700	-0.8643	-0.044670	1838.8
Pile N.	15	7	15	4	15	15	8	15	1
Max.	1.3420E-04	5.8598E-06	22.564	2.0332	19.656	0.086380	3.8427	0.088164	2090.6
Pile N.	13	15	15	4	15	15	15	15	15

LOAD CASE : 25

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
58572.7	2468.36	940.000	1.70600E-10	15755.6	-27928.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.37598E-03	1.44947E-03	5.43211E-04	-9.81472E-07	3.99099E-05	-1.11641E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7569E-03	1.4398E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.9950E-03	1.4591E-03	5.4977E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2902.5	139.93	53.403	-1.4261	-203.90	391.11
Pile N.	13	8	8	1	3	8
MAXIMUM	4858.0	204.61	76.825	-1.4261	-152.28	536.35
Pile N.	3	3	3	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7569E-03	1.4398E-03	5.3666E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.9950E-03	1.4591E-03	5.4977E-04	-9.8147E-07	3.9910E-05	-1.1164E-04
Pile N.	3	3	1	1	1	1

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 291 di 294

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2902.5	139.93	53.403	-1.4261	-203.90	391.11
Pile N.	13	8	8	1	3	8
MAXIMUM	4858.0	204.61	76.825	-1.4261	-152.28	536.35
Pile N.	3	3	3	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-3.8098E-05	-1.4108E-05	-536.35	-203.90	-40.008	-14.850	-9.1924	-3.5041	1642.5
Pile N.	3	3	3	3	3	3	5	4	13
Max.	1.4591E-03	5.4977E-04	243.33	90.203	204.65	76.840	40.244	15.044	4470.5
Pile N.	3	1	3	3	3	3	3	3	3

LOAD CASE : 26

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.75176E-04	6.26390E-04	9.99502E-07	2.65157E-05	-2.02217E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-4.8760E-06	-1.6227E-05	-38.891	-304.03	-4.6108	-17.586	-1.0316	-4.4174	1605.0
Pile N.	15	3	15	3	3	3	14	14	13
Max.	1.8503E-04	6.3307E-04	28.489	105.87	18.752	102.44	4.0387	19.228	3084.9
Pile N.	13	15	1	3	1	3	3	3	3

LOAD CASE : 27

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	-2.10400E-16	1.52900E-11	-1.79506E-05	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.34066E-04	5.76689E-06	1.39119E-08	1.64528E-06	-9.46191E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 292 di 294

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

* PILE TOP REACTIONS, GLOBAL *						
	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9684E-03	1.3393E-04	5.6740E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	1	3	1	1	1	1
MAXIMUM	2.0694E-03	1.3420E-04	5.8598E-06	1.3912E-08	1.6453E-06	-9.4619E-06
Pile N.	15	13	15	1	1	1

* PILE TOP REACTIONS, LOCAL *						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3249.4	13.408	-0.047863	0.020214	1.7926	38.780
Pile N.	1	5	4	1	15	5
MAXIMUM	3415.2	19.653	0.086474	0.020214	2.0332	52.634
Pile N.	15	15	15	1	4	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-3.4876E-06	-4.2462E-07	-52.634	-0.090460	-3.7321	-0.2700	-0.8643	-0.044670	1838.8
Pile N.	15	7	15	4	15	15	8	15	1
Max.	1.3420E-04	5.8598E-06	22.564	2.0332	19.656	0.086380	3.8427	0.088164	2090.6
Pile N.	13	15	15	4	15	15	15	15	15

LOAD CASE : 28

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
54562.1	949.411	-830.000	6.40100E-11	-24616.3	-10666.3

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.20481E-03	4.97065E-04	-4.40420E-04	1.81373E-07	-2.37196E-05	-2.52482E-05

* PILE TOP DISPLACEMENTS, GLOBAL *						
	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.8530E-03	4.9528E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.5566E-03	4.9885E-04	-4.3921E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	15	13	15	1	1	1

* PILE TOP REACTIONS, GLOBAL *						
	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	3060.2	53.677	-68.550	0.2635	147.62	170.58
Pile N.	1	5	15	1	5	5
MAXIMUM	4214.8	78.844	-47.015	0.2635	195.78	227.74
Pile N.	15	15	5	1	15	15

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.8530E-03	4.9528E-04	-4.4163E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	1	3	1	1	1	1
MAXIMUM	2.5566E-03	4.9885E-04	-4.3921E-04	1.8137E-07	-2.3720E-05	-2.5248E-05
Pile N.	15	13	15	1	1	1

* PILE TOP REACTIONS, LOCAL *						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	3060.2	53.677	-68.550	0.2635	147.62	170.58
Pile N.	1	5	15	1	5	5
MAXIMUM	4214.8	78.844	-47.015	0.2635	195.78	227.74
Pile N.	15	15	5	1	15	15

\* EFFECTS FOR LATERALLY LOADED PILE \*

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 293 di 294

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.2900E-05	-4.4163E-04	-227.74	-73.861	-13.932	-68.563	-3.4129	-13.082	1731.7
Pile N.	15	1	15	15	15	15	11	15	1
Max.	4.9885E-04	1.1370E-05	83.865	195.78	78.858	12.252	14.979	2.9908	3286.0
Pile N.	13	15	15	15	15	15	5	15	15

LOAD CASE : 29

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
49984.9	235.727	1216.67	1.53100E-11	18223.7	-2627.62

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.01886E-03	1.75176E-04	6.26390E-04	9.99502E-07	2.65157E-05	-2.02217E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.7166E-03	1.6532E-04	6.1971E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3212E-03	1.8503E-04	6.3307E-04	9.9950E-07	2.6516E-05	-2.0222E-05
Pile N.	3	13	15	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2836.2	13.073	69.284	1.4523	-304.03	25.386
Pile N.	13	5	8	1	3	5
MAXIMUM	3828.4	18.750	102.42	1.4523	-228.39	38.891
Pile N.	3	1	3	1	8	15

\* EFFECTS FOR Laterally LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-4.8760E-06	-1.6227E-05	-38.891	-304.03	-4.6108	-17.586	-1.0316	-4.4174	1605.0
Pile N.	15	3	15	3	3	3	14	14	13
Max.	1.8503E-04	6.3307E-04	28.489	105.87	18.752	102.44	4.0387	19.228	3084.9
Pile N.	13	15	1	3	1	3	3	3	3

LOAD CASE : 30

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
55282.1	2642.52	835.000	2.67100E-10	13677.2	-34749.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.23752E-03	1.58604E-03	4.98254E-04	-1.05400E-06	3.99625E-05	-1.29460E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.5820E-03	1.5757E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.8931E-03	1.5964E-03	5.0529E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2615.4	149.71	47.382	-1.5314	-175.69	406.77

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<b>RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI PILE P4, P5, P6	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 003	REV. A	FOGLIO 294 di 294

Pile N.	13	8	8	1	3	8
MAXIMUM	4731.7	219.26	68.308	-1.5314	-129.88	562.47
Pile N.	3	3	3	1	8	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.5820E-03	1.5757E-03	4.9121E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	13	13	15	1	1	1
MAXIMUM	2.8931E-03	1.5964E-03	5.0529E-04	-1.0540E-06	3.9963E-05	-1.2946E-04
Pile N.	3	3	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2615.4	149.71	47.382	-1.5314	-175.69	406.77
Pile N.	13	8	8	1	3	8
MAXIMUM	4731.7	219.26	68.308	-1.5314	-129.88	562.47
Pile N.	3	3	3	1	8	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-4.1787E-05	-1.2982E-05	-562.47	-175.69	-43.702	-13.583	-9.9070	-3.1512	1480.0
Pile N.	3	3	3	3	3	3	5	4	13
Max.	1.5964E-03	5.0529E-04	266.41	82.782	219.31	68.321	43.441	13.521	4445.4
Pile N.	3	1	3	3	3	3	3	3	3