

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 SPALLA A E SPALLA B

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. Miazzone

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

IF3A	02	E	ZZ	CL	VI0103	001	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 24/06/2022
B	C 08.01 - A valle del contraddittorio	L.Rampin	24/06/2022	L.Rampin	24/06/2022	L.Rampin	24/06/2022	

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n. Elab.:

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PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. B	FOGLIO 2 di 271

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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 della spalla SPA e della spalla SPB del Viadotto VI01 denominato Viadotto Cervaro.

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 33mm
- 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

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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

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 9 di 271

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

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 10 di 271

- 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;

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 11 di 271

3 Materiali

Il progetto strutturale delle fondazioni prevede l'uso dei materiali con le caratteristiche meccaniche minime riportate nei paragrafi seguenti.

3.1 ACCIAIO

- **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: $1.15 \leq f_{tk}/f_{yk} < 1.35$

- **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

- **Calcestruzzo magro per getti di livellamento**

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

- **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: $C_{f,min} \geq 60 \text{ mm}$

- **Calcestruzzo per fondazioni pile e spalle**

- Classe di resistenza: C28/35
- classe di consistenza: S4
- classe di esposizione: XC2

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA																	
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<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 001</td> <td>A</td> <td>12 di 271</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	12 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 001	A	12 di 271													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B																		

- dimensione massima dell'inerte:

$D_{max} = 25 \text{ mm}$

- copriferro minimo:

$C_{f,min} \geq 40 \text{ mm}$

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 13 di 271

4 DESCRIZIONE DELLE FONDAZIONI E STRATIGRAFIA DI PROGETTO

4.1 SPALLA A

4.2 DESCRIZIONE DEL SISTEMA FONDAZIONALE

La fondazione della spalla A è costituita da: un plinto a sezione rettangolare di dimensioni 7.70 m x 25.0 m² e altezza di 2.5 m posto su n.12 pali trivellati di diametro $\varnothing = 1500$ mm e lunghezza L = 15.0 m.

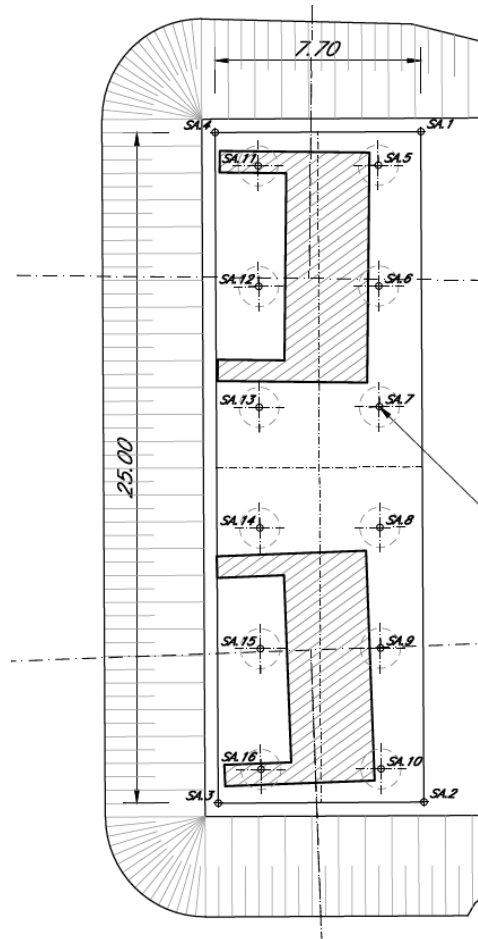


Figura 1 - Pianta Fondazioni Spalla A

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 14 di 271

4.3 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 diaframmi.

La quota piano campagna di riferimento è ca. 360.80 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 6.6 m.

STRATIGRAFIA da Quota testa Palo				PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA	A	ΔH	UNITA' DI RIFERIMENTO	γ	φ	σ_c	qs	qb
[m]	[m]	[m]		[kN/m ³]	[°]	[MPa]	[kPa]	[kPa]
0	5.5	5.5	RPL1a	20	37		22.6	950
							45.2	1900
5.5	...	...	FAEc	25		50-60	300	6000

Tabella 4-1 Stratigrafia e parametri geotecnici di riferimento

La falda è assunta a quota piano campagna.

APPALTATORE: Conorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatara Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 15 di 271

4.4 SPALLA B

4.5 DESCRIZIONE DEL SISTEMA FONDAZIONALE

La fondazione della spalla B è costituita da: un plinto a sezione rettangolare di dimensioni 12.0 m x 16.5 m² e altezza di 2.5 m posto su n.12 pali trivellati di diametro $\varnothing = 1500$ mm e lunghezza L = 22.0 m.

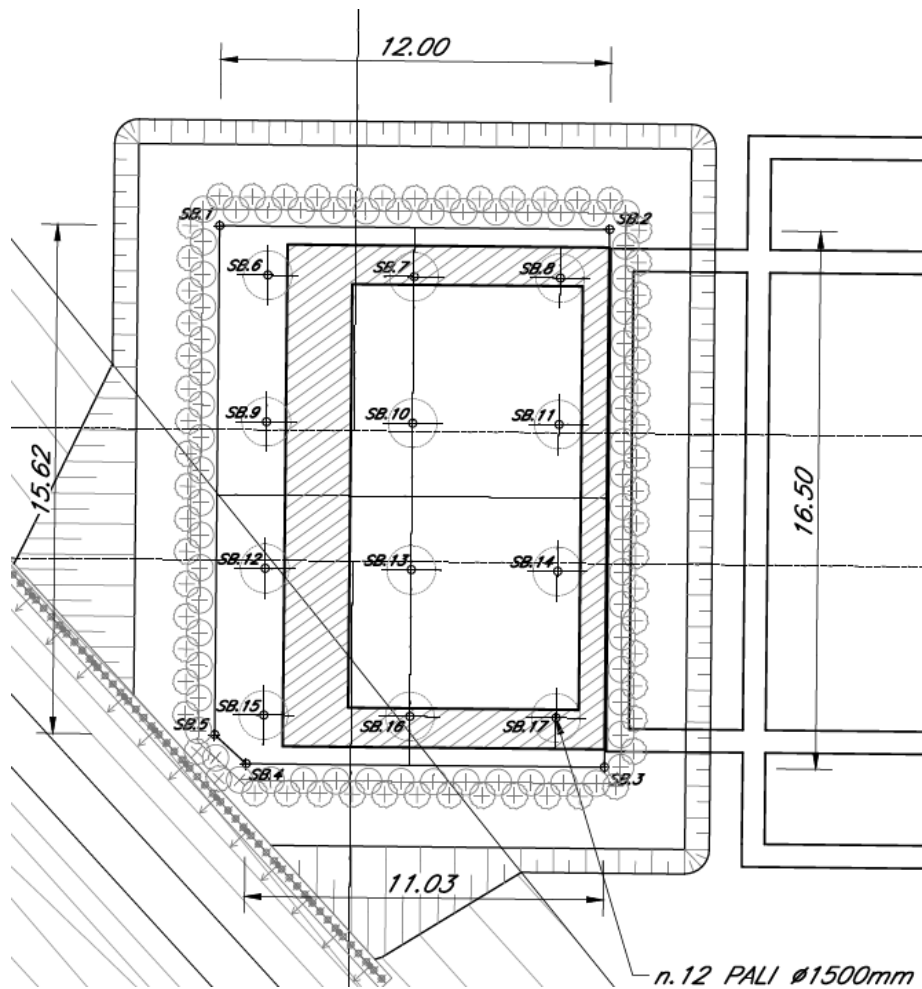


Figura 2 - Pianta Fondazioni Spalla B

APPALTATORE: Conorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatara <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 16 di 271

4.6 STRATIGRAFIA DI RIFERIMENTO

In accordo con quanto riportato nella Relazione Geotecnica Generale, la stratigrafia e i parametri geotecnici di riferimento sono riportati nella seguente

STRATIGRAFIA da Quota testa Palo (q. 346.14m s.l.m.)			UNITA' DI RIFERIMENTO	PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA [m]	A [m]	ΔH [m]		γ [kN/m ³]	φ [°]	σ_c [MPa]	qs [kPa]	qb [kPa]
0	13	13	RPL1a	19	36		10 60	428 2650
13	16	3	FAEam	19		5-10	120	3000
16	...	...	FAEc	25		50-60	300	6000

Tabella 4-2 unitamente alla portanza limite laterale e di base dei pali.

La stratigrafia viene ricostruita sulla base dei dati riferiti al sondaggio BOS1 con quota b.f. 353.45m s.l.m.. La quota piano campagna di riferimento è ca. 350.0 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 4.4 m (ovvero ca. 7m da quota testa sondaggio).

STRATIGRAFIA da Quota testa Palo (q. 346.14m s.l.m.)			UNITA' DI RIFERIMENTO	PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA [m]	A [m]	ΔH [m]		γ [kN/m ³]	φ [°]	σ_c [MPa]	qs [kPa]	qb [kPa]
0	13	13	RPL1a	19	36		10 60	428 2650
13	16	3	FAEam	19		5-10	120	3000
16	...	...	FAEc	25		50-60	300	6000

Tabella 4-2 Stratigrafia e parametri geotecnici di riferimento

La falda è assunta a quota piano campagna.

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 17 di 271

4.7 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 ³ (500 pci)	55 MN/m ³ (200 pci)
100-200 kPa (2,000-4,000 psf)	270 MN/m ³ (1,000 pci)	110 MN/m ³ (400 pci)
200-400 kPa (4,000-6,000 psf)	540 MN/m ³ (2,000 pci)	220 MN/m ³ (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 ³ (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 ³ (pci)	6.8 (25.0)	24.4 (90.0)	61.0 (225.0)

Tabella 4-6 Coefficiente k per terreni sabbiosi sopra falda

APPALTATORE: <u>Conorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 18 di 271

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.

APPALTATORE: <u>Consortio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 19 di 271

6 SCARICHI DI FONDAZIONE SPALLA A

Di seguito si esaminano gli scarichi della spalla A a quota testa pali, derivanti dall'analisi strutturale complessiva del viadotto, 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.01.0.4.001.A Spalla A: Relazione di calcolo strutture in elevazione

6.1 SCARICHI A INTRADOSSO PLINTO

Nella Figura 6-1 la convenzione dei segni assunta nell'analisi dei carichi.

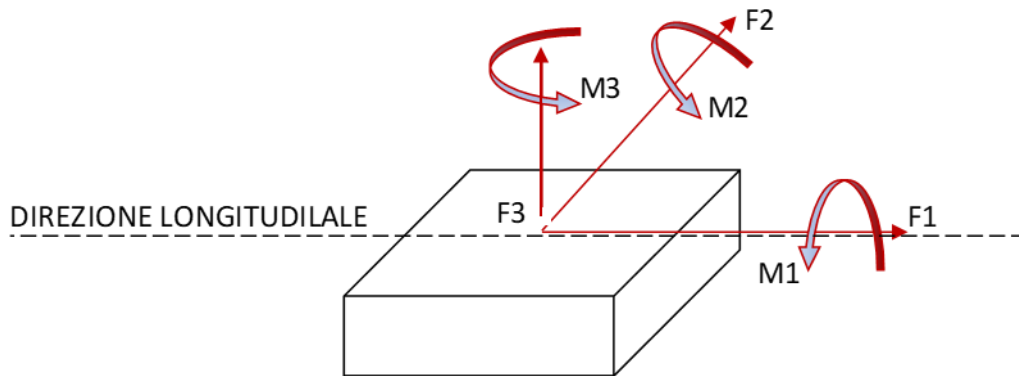


Figura 6-1: Sistema di riferimento proprio della fondazione

APPALTATORE: Consortio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 20 di 271

6.1.1 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE ULTIMI SISMICI (SLV)

Nella

Sollecitazioni intradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	3605	-13664	-38547	14992	-3863	1835
MIN F1	20989	-21	-29666	535	52184	222
MAX F2	3572	-13685	-29602	49852	-396	5761
MIN F2	20815	0	-28708	-66	51381	58
MAX F3	3540	-4093	-38608	15295	-4343	1823
MIN F3	8646	0	-23926	-218	16623	17
MAX M1	8706	-22	-38062	3683	11309	455
MIN M1	3491	-13665	-33280	52663	-2474	6009
MAX M2	8646	0	-37589	215	11062	17
MIN M2	20907	-16	-29630	16	52269	-368

Tabella 6-1 si riportano le combinazioni di carico agli stati limite ultimi (SLV) in presenza dell'azione sismica.

Sollecitazioni intradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	3605	-13664	-38547	14992	-3863	1835
MIN F1	20989	-21	-29666	535	52184	222
MAX F2	3572	-13685	-29602	49852	-396	5761
MIN F2	20815	0	-28708	-66	51381	58
MAX F3	3540	-4093	-38608	15295	-4343	1823
MIN F3	8646	0	-23926	-218	16623	17
MAX M1	8706	-22	-38062	3683	11309	455
MIN M1	3491	-13665	-33280	52663	-2474	6009
MAX M2	8646	0	-37589	215	11062	17
MIN M2	20907	-16	-29630	16	52269	-368

Tabella 6-1: Combinazioni sismiche SLV: azioni agenti ad intradosso plinto

6.1.2 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE ULTIMI STATICI (SLU)

Nella Tabella 6-2 si riportano gli scarichi per gli stati limite ultimi statici (SLU).

Sollecitazioni intradosso fondazione SLU						
--	--	--	--	--	--	--

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
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sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	3431	-540	-30757	7496	-1888	-240
MIN F1	6372	-153	-50061	7920	3233	1188
MAX F2	3431	-900	-43114	7494	-2585	-399
MIN F2	5110	0	-43114	-3	-2585	0
MAX F3	6136	-305	-50281	9258	1507	1369
MIN F3	3431	-540	-30757	7496	-1888	-240
MAX M1	6181	-153	-49415	-1048	3275	-74
MIN M1	5546	-700	-46543	29635	-790	2936
MAX M2	5110	0	-43114	7494	-2585	0
MIN M2	5773	-117	-49797	5096	3853	-3090

Tabella 6-2: Combinazioni di statiche SLU-A1: azioni agenti ad intradosso plinto

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 22 di 271

6.1.3 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE DI ESERCIZIO (SLE)

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

Sollecitazioni intradosso fondazione SLE RARA						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	3431	0	-30757	4997	-1888	0
MIN F1	4302	-105	-35548	5354	2126	819
MAX F2	3431	-600	-30757	4997	-1888	-266
MIN F2	3431	0	-30757	-2	-1888	0
MAX F3	4138	-570	-35701	3284	927	785
MIN F3	3431	-600	-30757	-2	-1888	-266
MAX M1	4170	-105	-35103	-728	2154	-52
MIN M1	3731	-470	-33123	20338	-654	2026
MAX M2	3431	-600	-30757	-2	-1888	-266
MIN M2	3888	-440	-35367	408	2553	-2291

Tabella 6-3: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 23 di 271

7 SCARICHI DI FONDAZIONE SPALLA B

Di seguito si esaminano gli scarichi della spalla B a quota testa pali, derivanti dall'analisi strutturale complessiva del viadotto, 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.01.0.4.002.A Spalla B: Relazione di calcolo strutture in elevazione

7.1 SCARICHI A INTRADOSSO PLINTO

Le convenzioni sono illustrate in Figura 6-1.

7.1.1 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE ULTIMI SISMICI (SLV)

Nella Tabella 7-1 si riportano le combinazioni di carico agli stati limite ultimi (SLV) in presenza dell'azione sismica:

Sollecitazioni intradosso fondazione SLV						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	115	15505	-36714	-39559	23932	4663
MIN F1	19813	-31	-48152	821	197457	3456
MAX F2	19530	-63	-48128	1327	193809	3471
MIN F2	598	15527	-43307	-132328	32529	4482
MAX F3	6438	-31	-53582	829	85113	1045
MIN F3	19221	0	-46800	63	188152	3445
MAX M1	598	15527	-43307	-132328	32529	4482
MIN M1	19373	-11	-42748	1524	189569	3580
MAX M2	115	15505	-46800	-39553	25331	4663
MIN M2	19813	-31	-48152	821	197457	3456

Tabella 7-1: Combinazioni sismiche SLV: azioni agenti ad intradosso plinto

APPALTATORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 24 di 271

7.1.2 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE ULTIMI STATICI (SLU)

Nella Tabella 7-2 si riportano gli scarichi per gli stati limite ultimi statici (SLU).

Sollecitazioni intradosso fondazione SLU						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	115	-868	-44472	20373	24632	-972
MIN F1	4452	-1098	-70886	5606	102288	-892
MAX F2	164	-1446	-44472	20397	30482	-1620
MIN F2	3665	159	-69513	-2335	97150	-1308
MAX F3	4452	-230	-70886	17795	102288	80
MIN F3	115	-1446	-44472	12248	24632	-1620
MAX M1	3665	159	-69513	-2335	97150	-1308
MIN M1	1267	-948	-65458	22911	55321	8
MAX M2	115	-1446	-45334	12248	28984	-1620
MIN M2	4452	-1098	-70886	17795	102288	-892

Tabella 7-2: Combinazioni di statiche SLU-A1: azioni agenti ad intradosso plinto

7.1.3 COMBINAZIONI DELLE AZIONI AGLI STATI LIMITE DI ESERCIZIO (SLE)

Nella Tabella 7-3 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio.

Sollecitazioni intradosso fondazione SLE RARA						
sollecitazione	F1	F2	F3	M1	M2	M3
	KN	KN	KN	KN-m	KN-m	kN-m
MAX F1	115	-964	-44472	60	15521	-1080
MIN F1	3072	-736	-51232	3852	62045	-594
MAX F2	115	-964	-44472	13602	15521	-1080
MIN F2	1549	126	-47297	774	40470	355
MAX F3	3072	-157	-51232	11977	62045	55
MIN F3	115	-964	-44472	60	15521	-1080
MAX M1	2529	110	-50285	-1610	58501	-904
MIN M1	871	-634	-47488	15523	29589	26
MAX M2	115	0	-44472	8185	15521	0
MIN M2	3072	-157	-51232	11977	62045	55

Tabella 7-3: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 25 di 271

8 ANALISI DELL'INTERAZIONE FONDAZIONE-TERRENO SPALLA A

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).

8.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 26 di 271



Figura 8-1: Vista frontale del modello GROUPv2016

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 27 di 271

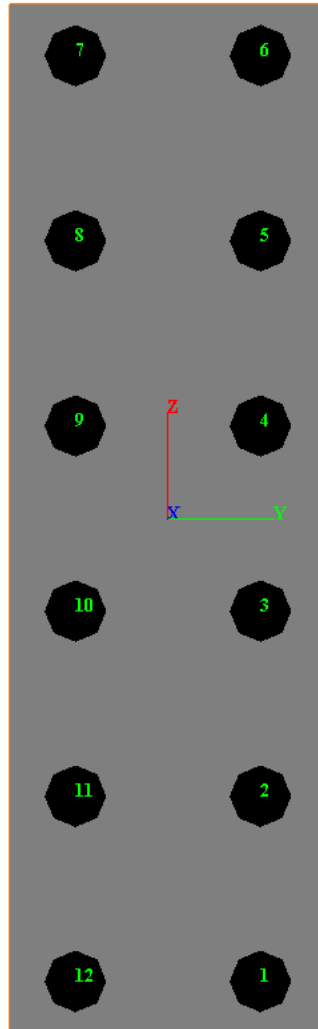


Figura 8-2: Vista in pianta del modello GROUPv2016

In accordo al § 4.3 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	5.5	1: Sand (Reese, et al.)
2	Stiff Clay with Free Water (Reese)	5.5	50	2: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

Figura 8-3: Modello stratigrafico GROUP V2016

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 28 di 271

1=Top, 2=Bottom	Effective Unit Weight (kN/m ³)	Friction Angle, (DEG.)	p-y Modulus, k (kN/m ³)	Ultimate Unit Side Friction (kN/m ²)	Ultimate Unit Tip Resistance (kN/m ²)
1	10	37	16667	22.6	950
2	10	37	53333	45.2	1900

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)

1=Top, 2=Bottom	Effective Unit Weight (kN/m ³)	Undrained Cohesion, c (kN/m ²)	p-y Modulus, k (kN/m ³)	Strain Factor E50	Ultimate Unit Side Friction (kN/m ²)	Ultimate Unit Tip Resistance (kN/m ²)
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 8-5: Layer no.2 (FAEc)

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandataria ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 29 di 271

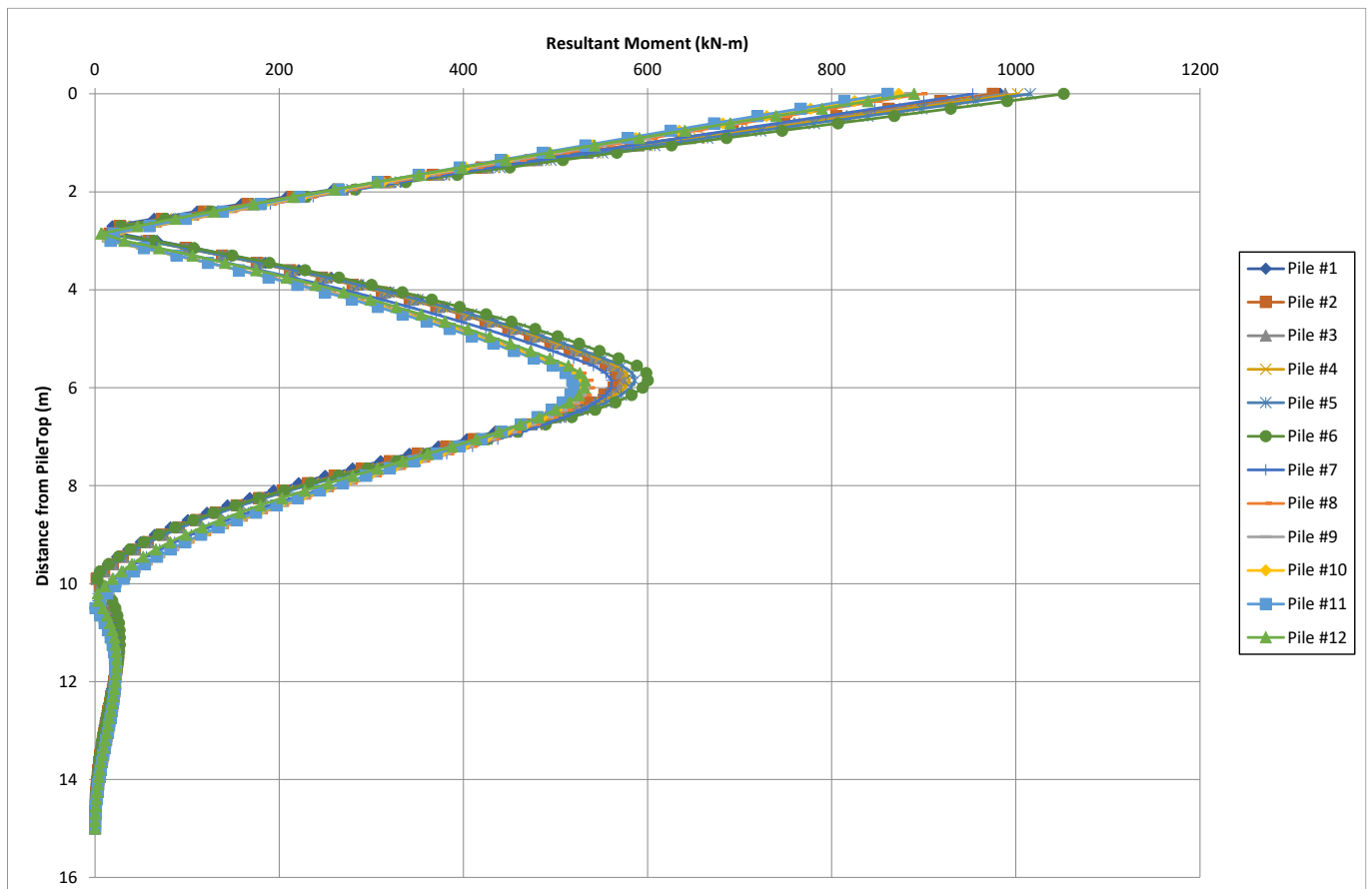
8.2 SINTESI DEI RISULTATI AGLI STATI LIMITE DI ESERCIZIO (SLE)

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

ID Combo	SLE-RARA		
	N	M	H
	[kN]	[kNm]	[kN]
SLE-RARA_28	4169	863	379
SLE-RARA_28	1347	613	274
SLE-RARA_22	3671	1052	409
SLE-RARA_22	3671	1052	409

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.



APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 30 di 271

Figura 8-6: Combinazioni SLE: Andamento con la profondità del momento (combo SLE 22).

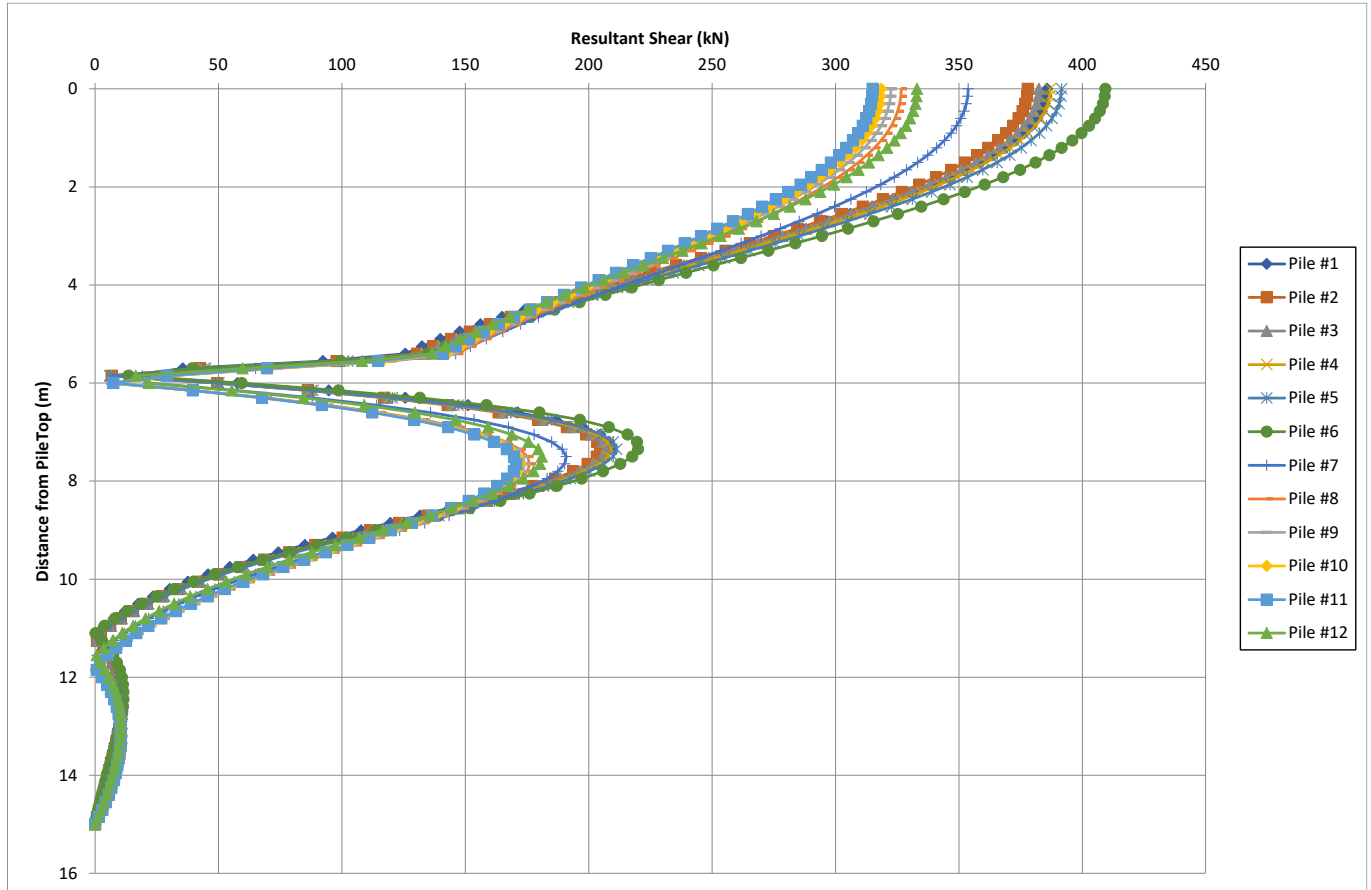


Figura 8-7: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE 22).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 31 di 271

8.3 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 spalla porta una trave appoggiata di luce $L=31.65m$; si ottiene $L_{med}/1000=31.65mm > 1.5mm$, 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)
0.0008797	0.0011105	0.0000074	-9.535E-09	2.442E-06	-8.049E-05	1.424	0.017	1.289
0.0010191	0.0013783	0.0000354	-2.903E-06	2.773E-06	-9.616E-05	1.753	0.046	1.494
0.0008797	0.0011112	0.0001617	6.422E-07	3.328E-06	-8.051E-05	1.425	0.175	1.289
0.0008797	0.0010314	0.0000000	3.824E-12	-9.775E-10	-5.429E-05	1.243	0.000	1.289
0.0010236	0.0012967	0.0001521	-2.993E-06	2.448E-06	-8.273E-05	1.619	0.162	1.500
0.0008797	0.0010321	0.0001544	6.536E-07	8.845E-07	-5.431E-05	1.244	0.158	1.289
0.0010062	0.0012423	0.0000259	1.199E-07	-2.009E-07	-6.219E-05	1.485	0.025	1.475
0.0009488	0.0014437	0.0001521	-7.272E-06	1.059E-05	-1.655E-04	2.089	0.193	1.391
0.0008797	0.0010321	0.0001544	6.536E-07	8.845E-07	-5.431E-05	1.244	0.158	1.289
0.0010139	0.0011759	0.0001125	7.699E-06	8.459E-07	-6.369E-05	1.424	0.116	1.486

$\delta_{max}(mm)$ 1.500

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

DATI FONDAZIONE

Larghezza plinto	24	m
Profondità plinto	6	m
Diametro palo	1.5	m
Lunghezza palo	15	m
interasse palo	4.5	m
numero pali	12	-
Coefficiente R	1.90	-
Coefficiente RG	0.12	-
Coeff. amplificazione cedimento del gruppo EG	1.47	-

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

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
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8.4 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.

	STR		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLU-STR_8	5945	1285	563
SLU-STR_8	1812	919	408
SLU-STR_2	5222	1559	606
SLU-STR_2	5222	1559	606

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.

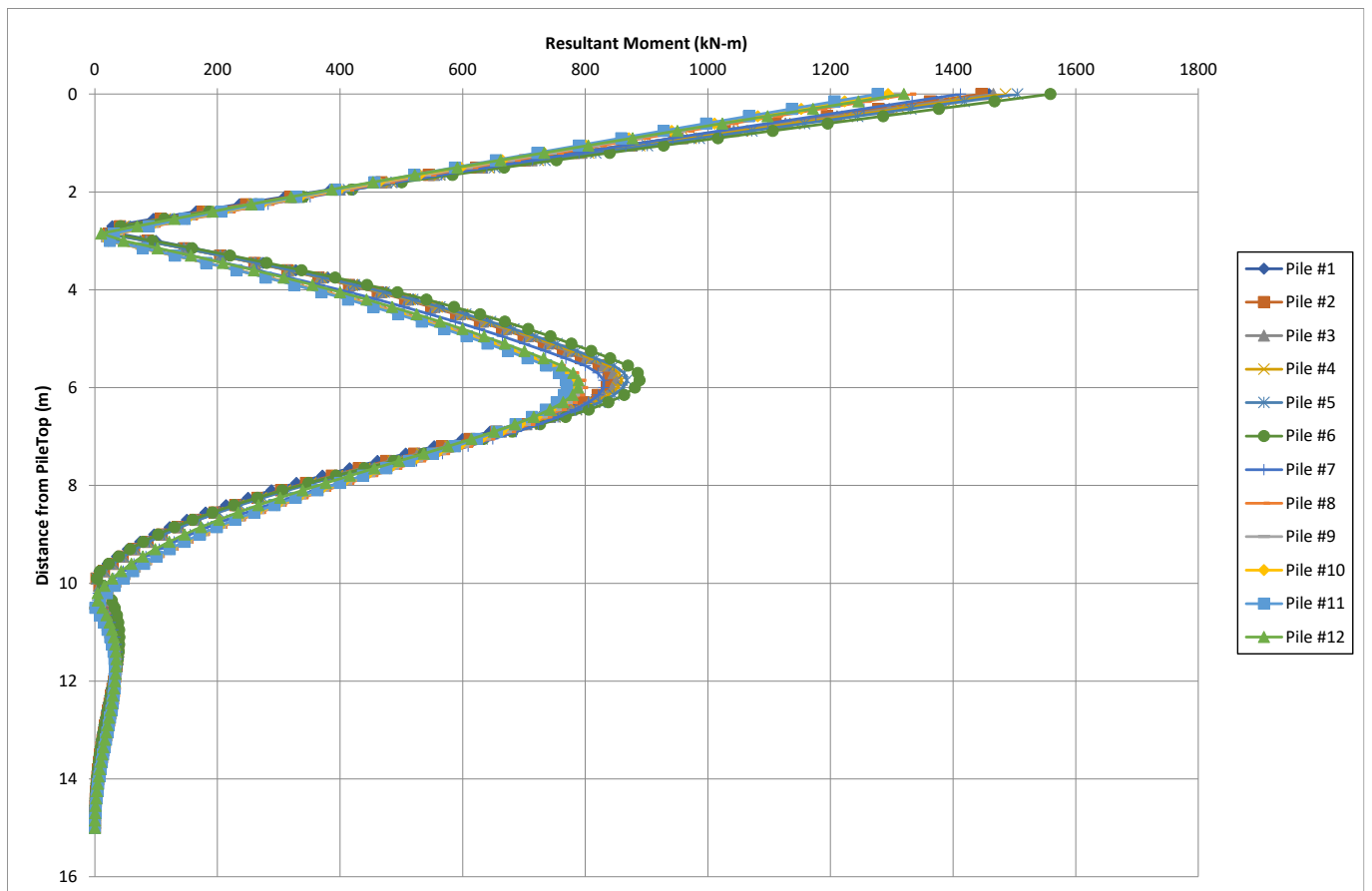


Figura 8-8: Combinazioni statica SLU: Andamento con la profondità del momento (combo SLU-STR_2).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
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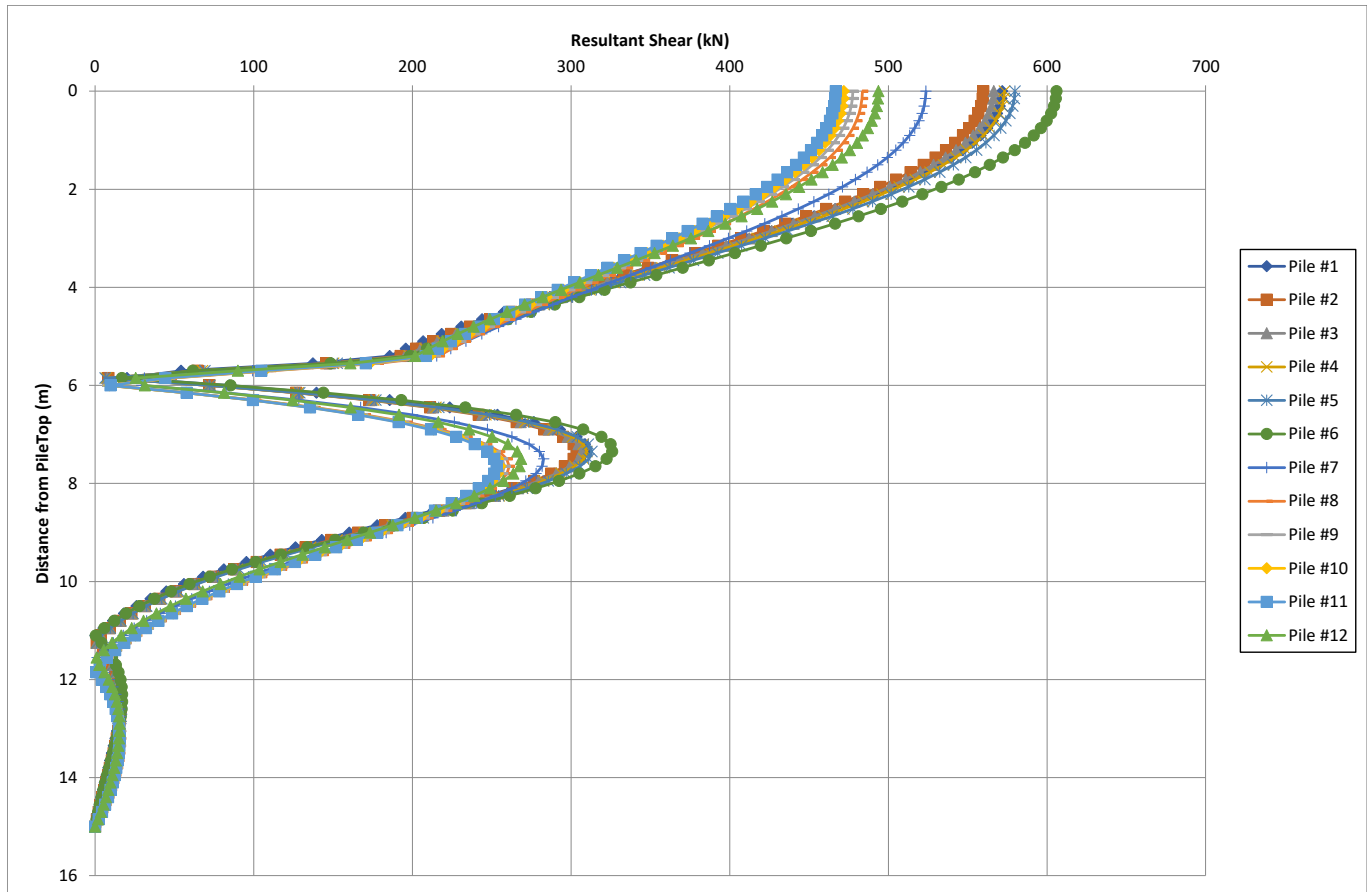


Figura 8-9: Combinazioni statica SLU: Andamento con la profondità del taglio (combo SLU-STR_2).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 34 di 271

8.5 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)		
	N	M	H
	[kN]	[kNm]	[kN]
SLV-SISMA_18	6428	3913	1373
SLV-SISMA_13	-1062	3530	1149
SLV-SISMA_12	4859	5749	1960
SLV-SISMA_12	4859	5749	1960

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.

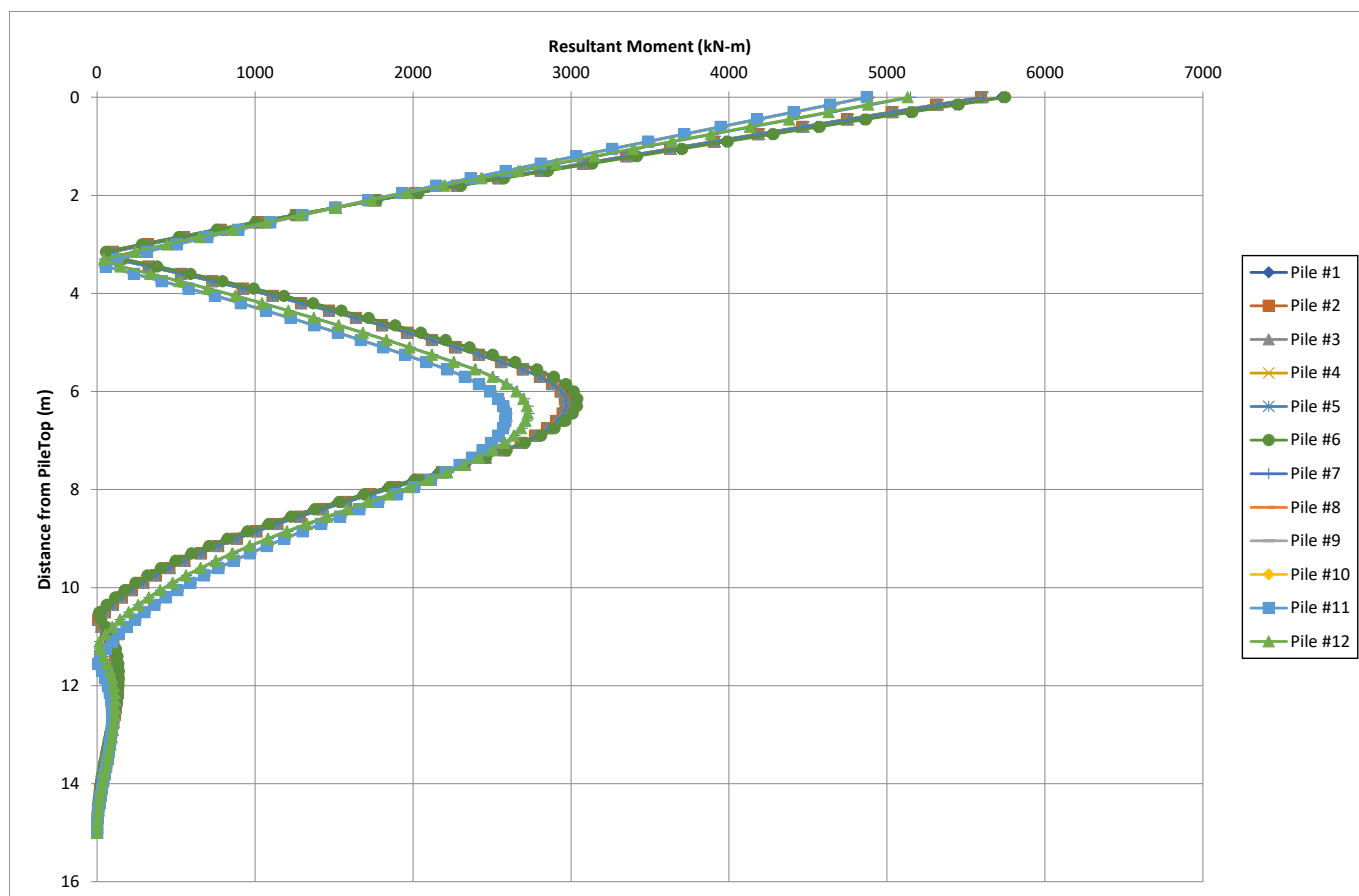


Figura 8-10: Combinazioni sismica SLV: Andamento con la profondità del momento (combo SLU-SISMA_12).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 35 di 271

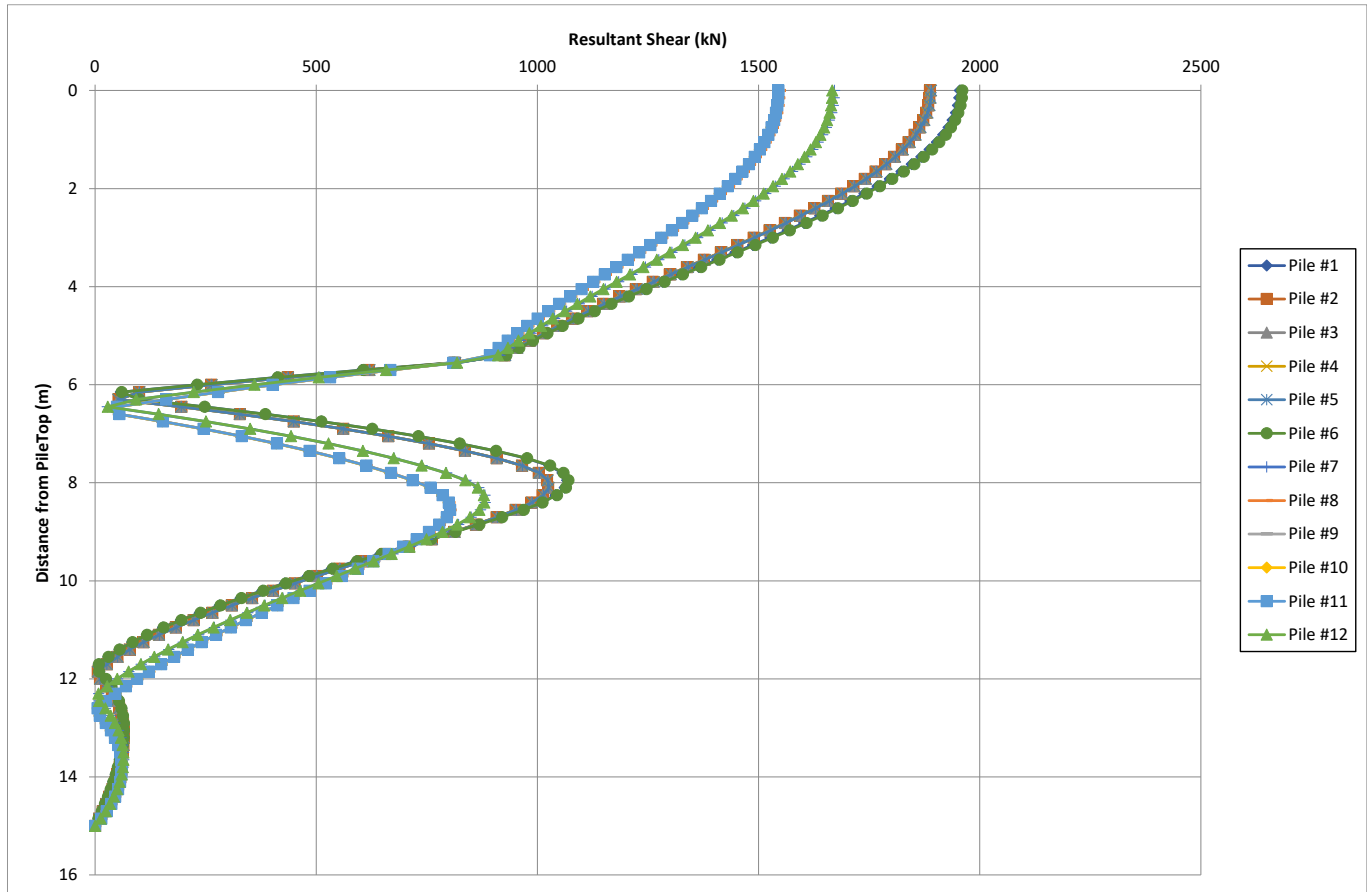


Figura 8-11: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo SLU-SISMA_12).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 36 di 271

9 VERIFICA DEI PALI DI FONDAZIONE SPALLA A

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**.

	SLV (q=1)		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLV-SISMA_18	6428	3913	1373
SLV-SISMA_13	-1062	3530	1149
SLV-SISMA_12	4859	5749	1960
SLV-SISMA_12	4859	5749	1960

	SLE-RARA		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLE-RARA_28	4169	863	379
SLE-RARA_28	1347	613	274
SLE-RARA_22	3671	1052	409
SLE-RARA_22	3671	1052	409

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 L15m. Per le verifiche si considerano le sollecitazioni risultanti. I pali risultano sempre compressi. Si riportano le verifiche in presenza di minima compressione.

In riferimento all'andamento dei momenti lungo il fusto del palo, sono state previste n. 2 ordini di armature principali:

1. L'armatura massima:
 - ferri correnti: corona esterna n.32 \varnothing 30;
 - ferri correnti: corona interna n.32 \varnothing 30;
 - staffatura: doppia spirale \varnothing 14 passo 15.

2. L'armatura minima:
 - ferri correnti: corona esterna n.24 \varnothing 30;
 - staffatura: spirale \varnothing 14 passo 20.

Le verifiche strutturali del palo sono soddisfatte; di seguito la scheda di calcolo.

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PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 37 di 271

geometria				
sezione trasversale				
D	c	d	passo	interferro
[cm]	[cm]	[cm]	[cm]	[cm]
150	6.0	141.1	13.0	10.0
armatura longitudinale				
nbarre	ϕ	r_i	A_{sl}	C_i
	[mm]	[cm]	[cm ²]	[cm]
32	30	66.1	226.19	8.90
32	30	60.60	226.19	14.40
armatura a taglio				
Tipo	ϕ	ρ	A_{sw}	
	[mm]	[cm]	[cm ²]	
spirale	14	7.5	3.08	

sollecitazioni e risultati	
SLE	SLU
M_{Ek} 1052.0 [kNm]	M_{Ed} 3530.4 [kNm]
N_{Ek} -1346.7 [kN]	N_{Ed} 1061.6 [kN]
momento di cracking	V_{Ed} 1960.2 [kN]
M_{cr} 1376.8 [kNm]	presso-flessione
quota asse neutro	M_{Rd} 8366.9 [kNm]
y_n 79.25 [cm]	FS 2.37
tensioni e fessure	taglio
$\sigma_{c,min}$ -3.1 [MPa]	V_{Rdc} 662.5 [kN]
$\sigma_{s,min}$ -40.7 [MPa]	predisporre armatura a taglio
$\sigma_{s,max}$ 35.8 [MPa]	
	V_{Rds} 2569.0 [kN]
k_2 0.5	V_{Rdmax} 4480.7 [kN]
$\epsilon_{sm}-\epsilon_{cm}$ - [%]	θ 30.0 [°]
$s_{r,max}$ - [cm]	sezione duatile
w_k - [mm]	a_l 92.6 [cm]

materiali			
calcestruzzo		acciaio	
R_{ck}	30 [MPa]	f_{yk}	450 [MPa]
f_{ck}	24.9 [MPa]	γ_s	1.15
γ_c	1.5	f_{yd}	391.3 [MPa]
α_{cc}	0.85	E_s	200000 [MPa]
f_{cd}	14.1 [MPa]	ϵ_{uk}	75 [%]
ν	0.5		
ϵ_{c2}	2.0 [%]		
ϵ_{cu2}	3.5 [%]		
α_e	15.0		
k_t	0.6		
k_1	0.8		
k_3	3.4		
k_4	0.425		
		valori limite	
		0.55	13.7 [MPa]
		0.75	337.5 [MPa]
		$w_{k,lim}$	0.2 [mm]

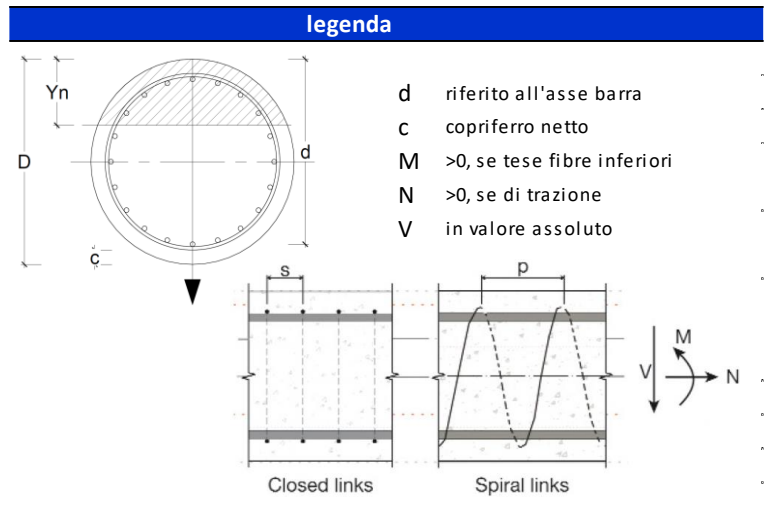


Tabella 9-2: Verifica del palo D=1500mm; trazione e armatura massima

APPALTATORE: Conorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatara Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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9.1 INCIDENZA DEL PALO SPALLA A

Nella Tabella 9-3 si 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 245kg/m³.

Incidenze acciaio								
SPA - Pali Φ 1500 L=15m								
Volume calcestruzzo				incidenza				
d	1.5 m			kg acciaio		5991.13 kg		
A	1.767146 m			Vcls		26.51 m ³		
L	15 m			incidenza di calcolo		226.02 kg/m ³		
V	26.50719 m ³			incidenza di progetto		245.00 kg/m ³		
Armature longitudinali								
	parti	n	ϕ	L	Area	peso		incidenza
long	1	64	30	12	452.39	4261.51		160.77
	1	24	30	6.6	169.65	878.94		33.16
					0.00	0.00		0.00
					0.00	0.00		0.00
					0.00	0.00		0.00
					0.00	0.00		0.00
TOTALE						5140.44		193.93
Staffe								
	parti	n	ϕ	L	Area	peso		incidenza
8	1	107	14	4.29	164.20	552.97		20.86
3	1	30	14	4.29	46.18	155.52		5.87
4	1	20	14	4.29	30.79	103.68		3.91
	1	1	16	4.29	2.01	6.77		0.26
	1	3	20	4.29	9.42	31.74		1.20
TOTALE						850.69		32.09

Schema riassuntivo						
	kg acc	Vcls	i	n	kg acc	Vcls
SPA - Pali F1500 L=15m	5991.13	26.51	226.02	2	11982.26	53.01

Tabella 9-3 Incidenza armatura

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 39 di 271

10 VERIFICHE ALLO SLU DI TIPO GEOTECNICO SPALLA A

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 Relazione sui criteri di calcolo delle fondazioni

Di seguito si riporta, per i pali di fondazione di lunghezza $L = 15$ 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]	6428 (SLV)
Massima trazione, N_{dt} , max [kN]	-1062 (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]	4169 (SLE)
--	------------

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

10.2 CAPACITÀ PORTANTE VERTICALE DEL PALO SINGOLO

Stratigrafia e parametri geotecnici

Dati di input		
Diametro Palo	1.5	m
Sovraccarico efficace	25.0	kPa
H_w da testa palo	0	m
γ acqua	10	kN/m ³
Δz palo da p.c. originario	2.5	m
N° diametri per qb	3	(-)
L palo fuori terra	0	(m)
Peso calcestruzzo	25	kN/m ³
Pressione max sul cls.	11.34	MPa

Caratteristiche del terreno													
Profondità (m)		Strato	Terreno	γ_{tot}	Nspt		c_u (kPa)		Δz	ϕ°		Nq	
da	a	No.	(S,SL,G,A)	kN/m ³	da	a	da	a	(m)	da	a	da	a
0.00	5.50	1	S	20.0					0.50	37	37	19	19
5.50	50.0	2	G	25.0					0.50				

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PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
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Verticali di indagine	ξ_3	ξ_4
5	1.50	1.34

Scelta di ξ	ξ
3	1.5

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PROGETTAZIONE: Mandatara Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 41 di 271

Combinazione SLE						
L palo	τ_s calcolo	q_{ub} calcolo	$R_{c,s,k}$	$R_{c,b,k}$	ΔW palo	$Q_{c,s,k}/1.25$
m	kPa	kPa	kN	kN	kN	kN
0.5	11.3	190	26.6	335.8	4.4	16.9
1.0	13.6	380	58.6	671.5	8.8	38.0
1.5	15.8	570	95.9	1007.3	13.3	63.4
2.0	18.1	760	138.5	1343.0	17.7	93.1
2.5	20.3	855	186.4	1510.9	22.1	127.1
3.0	22.6	950	239.7	1678.8	26.5	165.2
3.5	24.9	1045	298.3	1846.7	30.9	207.7
4.0	27.1	1140	362.2	2014.5	35.3	254.4
4.5	29.4	1235	431.5	2182.4	39.8	305.4
5.0	31.6	1330	506.0	2350.3	44.2	360.6
5.5	33.9	1425	585.9	2518.2	48.6	420.1
5.5	36.2	1520	585.9	2686.1	53.0	415.7
6.0	300.0	2440	1292.8	4311.8	57.4	976.8
6.5	300.0	2885	1999.6	5098.2	61.9	1537.9
7.0	300.0	3330	2706.5	5884.6	66.3	2098.9
7.5	300.0	3775	3413.4	6671.0	70.7	2660.0
8.0	300.0	4220	4120.2	7457.4	75.1	3221.1
8.5	300.0	4665	4827.1	8243.7	79.5	3782.1
9.0	300.0	5110	5533.9	9030.1	83.9	4343.2
9.5	300.0	5555	6240.8	9816.5	88.4	4904.3
10.0	300.0	6000	6947.6	10602.9	92.8	5465.3
10.5	300.0	6000	7654.5	10602.9	97.2	6026.4
11.0	300.0	6000	8361.4	10602.9	101.6	6587.5
11.5	300.0	6000	9068.2	10602.9	106.0	7148.5
12.0	300.0	6000	9775.1	10602.9	110.4	7709.6
12.5	300.0	6000	10481.9	10602.9	114.9	8270.7
13.0	300.0	6000	11188.8	10602.9	119.3	8831.8
13.5	300.0	6000	11895.7	10602.9	123.7	9392.8
14.0	300.0	6000	12602.5	10602.9	128.1	9953.9
14.5	300.0	6000	13309.4	10602.9	132.5	10515.0
15.0	300.0	6000	14016.2	10602.9	137.0	11076.0
15.5	300.0	6000	14723.1	10602.9	141.4	11637.1
16.0	300.0	6000	15429.9	10602.9	145.8	12198.2
16.5	300.0	6000	16136.8	10602.9	150.2	12759.2
17.0	300.0	6000	16843.7	10602.9	154.6	13320.3
17.5	300.0	6000	17550.5	10602.9	159.0	13881.4
18.0	300.0	6000	18257.4	10602.9	163.5	14442.4
18.5	300.0	6000	18964.2	10602.9	167.9	15003.5
19.0	300.0	6000	19671.1	10602.9	172.3	15564.6
19.5	300.0	6000	20378.0	10602.9	176.7	16125.6
20.0	300.0	6000	21084.8	10602.9	181.1	16686.7
20.5	300.0	6000	21791.7	10602.9	185.6	17247.8
21.0	300.0	6000	22498.5	10602.9	190.0	17808.9
21.5	300.0	6000	23205.4	10602.9	194.4	18369.9
22.0	300.0	6000	23912.2	10602.9	198.8	18931.0
22.5	300.0	6000	24619.1	10602.9	203.2	19492.1
23.0	300.0	6000	25326.0	10602.9	207.6	20053.2
23.5	300.0	6000	26032.8	10602.9	212.1	20614.3
24.0	300.0	6000	26739.7	10602.9	216.5	21175.4
24.5	300.0	6000	27446.5	10602.9	220.9	21736.5
25.0	300.0	6000	28153.4	10602.9	225.3	22297.6
25.5	300.0	6000	28860.3	10602.9	229.7	22858.7
26.0	300.0	6000	29567.1	10602.9	234.1	23419.8
26.5	300.0	6000	30274.0	10602.9	238.6	23980.9
27.0	300.0	6000	30980.8	10602.9	243.0	24542.0
27.5	300.0	6000	31687.7	10602.9	247.4	25103.1
28.0	300.0	6000	32394.5	10602.9	251.8	25664.2
28.5	300.0	6000	33101.4	10602.9	256.2	26225.3
29.0	300.0	6000	33808.3	10602.9	260.7	26786.4
29.5	300.0	6000	34515.1	10602.9	265.1	27347.5
30.0	300.0	6000	35222.0	10602.9	269.5	27908.6

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 42 di 271

Combinazione SLU A1+M1+R1 (metodo AGI)						
L_palo	Q I-lim	Q b-lim	Q I-calc	Q b-calc	ΔW_palo	Q_tot
m	kN	kN	kN	kN	kN	kN
0.5	26.6	335.8	15.4	165.8	4.4	176.8
1.0	58.6	671.5	34.0	331.6	8.8	356.7
1.5	95.9	1007.3	55.6	497.4	13.3	539.7
2.0	138.5	1343.0	80.3	663.2	17.7	725.8
2.5	186.4	1510.9	108.1	746.1	22.1	832.1
3.0	239.7	1678.8	139.0	829.0	26.5	941.5
3.5	298.3	1846.7	172.9	911.9	30.9	1053.9
4.0	362.2	2014.5	210.0	994.8	35.3	1169.5
4.5	431.5	2182.4	250.1	1077.7	39.8	1288.1
5.0	506.0	2350.3	293.3	1160.6	44.2	1409.8
5.5	585.9	2518.2	339.7	1243.5	48.6	1534.6
5.5	585.9	2686.1	339.7	1326.5	53.0	1613.1
6.0	1292.8	4311.8	749.4	2129.3	57.4	2821.3
6.5	1999.6	5098.2	1159.2	2517.6	61.9	3615.0
7.0	2706.5	5884.6	1569.0	2906.0	66.3	4408.7
7.5	3413.4	6671.0	1978.8	3294.3	70.7	5202.4
8.0	4120.2	7457.4	2388.5	3682.6	75.1	5996.1
8.5	4827.1	8243.7	2798.3	4071.0	79.5	6789.8
9.0	5533.9	9030.1	3208.1	4459.3	83.9	7583.5
9.5	6240.8	9816.5	3617.8	4847.7	88.4	8377.1
10.0	6947.6	10602.9	4027.6	5236.0	92.8	9170.8
10.5	7654.5	10602.9	4437.4	5236.0	97.2	9576.2
11.0	8361.4	10602.9	4847.2	5236.0	101.6	9981.5
11.5	9068.2	10602.9	5256.9	5236.0	106.0	10386.9
12.0	9775.1	10602.9	5666.7	5236.0	110.4	10792.3
12.5	10481.9	10602.9	6076.5	5236.0	114.9	11197.6
13.0	11188.8	10602.9	6486.3	5236.0	119.3	11603.0
13.5	11895.7	10602.9	6896.0	5236.0	123.7	12008.3
14.0	12602.5	10602.9	7305.8	5236.0	128.1	12413.7
14.5	13309.4	10602.9	7715.6	5236.0	132.5	12819.0
15.0	14016.2	10602.9	8125.4	5236.0	137.0	13224.4
15.5	14723.1	10602.9	8535.1	5236.0	141.4	13629.7
16.0	15429.9	10602.9	8944.9	5236.0	145.8	14035.1
16.5	16136.8	10602.9	9354.7	5236.0	150.2	14440.5
17.0	16843.7	10602.9	9764.4	5236.0	154.6	14845.8
17.5	17550.5	10602.9	10174.2	5236.0	159.0	15251.2
18.0	18257.4	10602.9	10584.0	5236.0	163.5	15656.5
18.5	18964.2	10602.9	10993.8	5236.0	167.9	16061.9
19.0	19671.1	10602.9	11403.5	5236.0	172.3	16467.2
19.5	20378.0	10602.9	11813.3	5236.0	176.7	16872.6
20.0	21084.8	10602.9	12223.1	5236.0	181.1	17277.9
20.5	21791.7	10602.9	12632.9	5236.0	185.6	17683.3
21.0	22498.5	10602.9	13042.6	5236.0	190.0	18088.6
21.5	23205.4	10602.9	13452.4	5236.0	194.4	18494.0
22.0	23912.2	10602.9	13862.2	5236.0	198.8	18899.4
22.5	24619.1	10602.9	14271.9	5236.0	203.2	19304.7
23.0	25326.0	10602.9	14681.7	5236.0	207.6	19710.1
23.5	26032.8	10602.9	15091.5	5236.0	212.1	20039.4
24.0	26739.7	10602.9	15501.3	5236.0	216.5	20039.4
24.5	27446.5	10602.9	15911.0	5236.0	220.9	20039.4
25.0	28153.4	10602.9	16320.8	5236.0	225.3	20039.4
25.5	28860.3	10602.9	16730.6	5236.0	229.7	20039.4
26.0	29567.1	10602.9	17140.4	5236.0	234.1	20039.4
26.5	30274.0	10602.9	17550.1	5236.0	238.6	20039.4
27.0	30980.8	10602.9	17959.9	5236.0	243.0	20039.4
27.5	31687.7	10602.9	18369.7	5236.0	247.4	20039.4
28.0	32394.5	10602.9	18779.4	5236.0	251.8	20039.4
28.5	33101.4	10602.9	19189.2	5236.0	256.2	20039.4
29.0	33808.3	10602.9	19599.0	5236.0	260.7	20039.4
29.5	34515.1	10602.9	20008.8	5236.0	265.1	20039.4
30.0	35222.0	10602.9	20418.5	5236.0	269.5	20039.4

Comb. SLU SLV A2+M1+R3 (metodo AGI)				
L_palo	Q I-lim	Q I-calc	W' palo	Q_tot
m	kN	kN	kN	kN
0.5	22.2	11.84	13	25.1
1.0	48.8	26.04	27	52.5
1.5	79.9	42.61	40	82.4
2.0	115.4	61.55	53	114.6
2.5	155.4	82.86	66	149.1
3.0	199.7	106.53	80	186.1
3.5	248.6	132.57	93	225.3
4.0	301.8	160.98	106	267.0
4.5	359.5	191.76	119	311.0
5.0	421.7	224.90	133	357.4
5.5	488.3	260.41	146	406.2
5.5	488.3	260.41	146	406.2
6.0	1292.8	689.48	159	848.5
6.5	1999.6	1066.47	172	1238.8
7.0	2706.5	1443.46	186	1629.0
7.5	3413.4	1820.46	199	2019.3
8.0	4120.2	2197.45	212	2409.5
8.5	4827.1	2574.44	225	2799.7
9.0	5533.9	2951.43	239	3190.0
9.5	6240.8	3328.42	252	3580.2
10.0	6947.6	3705.41	265	3970.5
10.5	7654.5	4082.40	278	4360.7
11.0	8361.4	4459.39	292	4751.0
11.5	9068.2	4836.38	305	5141.2
12.0	9775.1	5213.38	318	5531.5
12.5	10481.9	5590.37	331	5921.7
13.0	11188.8	5967.36	345	6312.0
13.5	11895.7	6344.35	358	6702.2
14.0	12602.5	6721.34	371	7092.4
14.5	13309.4	7098.33	384	7482.7
15.0	14016.2	7475.32	398	7872.9
15.5	14723.1	7852.31	411	8263.2
16.0	15429.9	8229.30	424	8653.4
16.5	16136.8	8606.30	437	9043.7
17.0	16843.7	8983.29	451	9433.9
17.5	17550.5	9360.28	464	9824.2
18.0	18257.4	9737.27	477	10214.4
18.5	18964.2	10114.26	490	10604.6
19.0	19671.1	10491.25	504	10994.9
19.5	20378.0	10868.24	517	11385.1
20.0	21084.8	11245.23	530	11775.4
20.5	21791.7	11622.23	543	12165.6
21.0	22498.5	11999.22	557	12555.9
21.5	23205.4	12376.21	570	12946.1
22.0	23912.2	12753.20	583	13336.4
22.5	24619.1	13130.19	596	13726.6
23.0	25326.0	13507.18	610	14116.8
23.5	26032.8	13884.17	623	14507.1
24.0	26739.7	14261.16	636	14897.3
24.5	27446.5	14638.15	649	15287.6
25.0	28153.4	15015.15	663	15677.8
25.5	28860.3	15392.14	676	16068.1
26.0	29567.1	15769.13	689	16458.3
26.5	30274.0	16146.12	702	16848.6
27.0	30980.8	16523.11	716	17238.8
27.5	31687.7	16900.10	729	17629.0
28.0	32394.5	17277.09	742	18019.3
28.5	33101.4	17654.08	755	18409.5
29.0	33808.3	18031.07	769	18799.8
29.5	34515.1	18408.07	782	19190.0
30.0	35222.0	18785.06	795	19580.3

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 43 di 271
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B						

AV/AC Napoli Bari - Viadotto VI01 - SPA
 Capacità portante A1+M1+R3 - Palo D = 1500 mm
 Resistenza (kN)

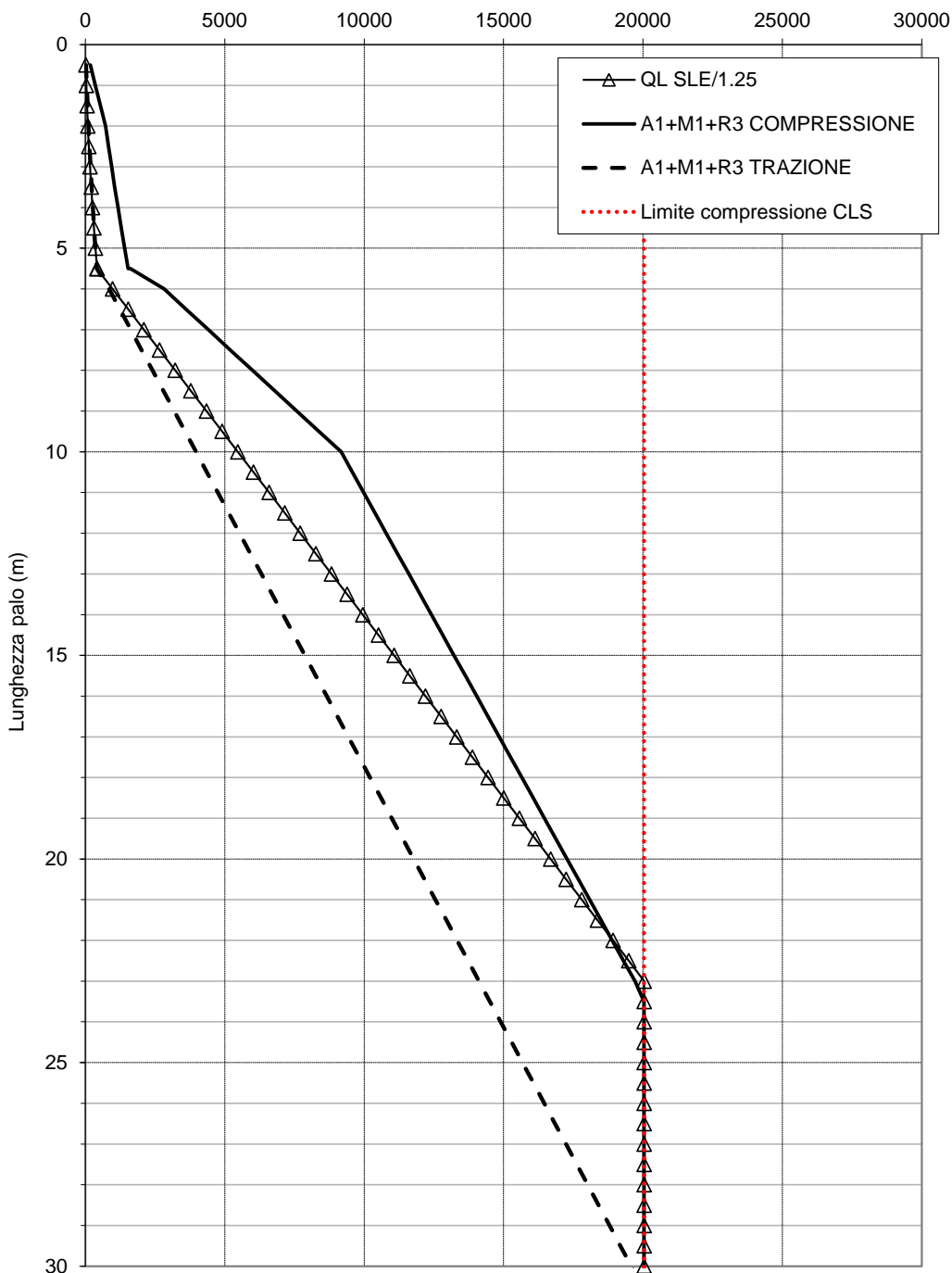


Figura 10-1: Capacità portante del palo singolo

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA																	
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<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 001</td> <td>A</td> <td>44 di 271</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	44 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 001	A	44 di 271													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B																		

10.3 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

Si individuano due condizioni di carico dei pali di fondazione della spalla: pali di valle, soggetti al carico assiale di compressione e una azione di taglio superiore; pali di monte, soggetti al carico assiale di trazione e una azione di taglio in ombra di entità inferiore.

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.

Nelle seguenti figure sono illustrate le verifiche svolte per ciascuna condizione di carico del palo.

La verifica a capacità portante orizzontale risulta soddisfatta.

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 45 di 271

palo compresso

SPALLA A

PALI DI FONDAZIONE $\Phi 1500$

Calcolo del carico trasversale limite

Terreni incoerenti (Broms 1964)

DATI GEOMETRICI:

Lunghezza del palo	L	15	[m]
Diametro del palo	D _{palo}	1.5	[m]
Momento di plasticizzazione	M _y	11823.3	[kNm]

DATI GEOTECNICI:

Peso per unità di volume	γ	10	[kN/m ³]
Angolo attrito medio	φ_{medio}	37	[°]
Coefficiente di spinta passiva medio	k _{p,medio}	4.02	[-]
Angolo attrito minimo	φ_{minimo}	36	[°]
Coefficiente di spinta passiva minimo	k _{p,minimo}	3.85	[-]

VERTICALI INDAGATE:

numero di verticali indagate	n°	5	
fattore di correlazione	ξ_3	1.50	
fattore di correlazione	ξ_4	1.34	

CARICO TRASVERSALE PER PALO CORTO H₁: (13.44)

H _{1,medio}	20365.4	[kN]	$H = 1.5k_p \gamma d^3 \left(\frac{L}{d}\right)^2$
H _{1,minimo}	19499.9	[kN]	

CARICO TRASVERSALE PER PALO INTERMEDIO H₂: (13.46)

H _{2,medio}	7576.7	[kN]	$H = \frac{1}{2}k_p \gamma d^3 \left(\frac{L}{d}\right)^2 + \frac{M_y}{L}$
H _{2,minimo}	7288.2	[kN]	

CARICO TRASVERSALE PER PALO LUNGO H₃: (13.47)

H _{3,medio}	4848.6	[kN]	$H = k_p \gamma d^3 \sqrt[3]{3.676 \frac{M_y}{k_p \gamma d^4}}$
H _{3,minimo}	4778.9	[kN]	

DEFINIZIONE DEL COMPORTAMENTO DEL PALO:

F	7.4	[m]	
H _{medio}	4848.6	[kN]	PALO
H _{minimo}	4778.9	[kN]	LUNGO

CARICO TRASVERSALE ULTIMO:

$H_k = \text{Min}\{H_{med}/\xi_3, H_{min}/\xi_4\}$

H _k	3232.4	[kN]
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$H_d = H_k / \gamma_T$

γ_T	1.3	[-]
H _d	2486.5	[kN]
H _{agente}	1960.2	[kN]

VERIFICA: VERIFICATO

<u>FS</u>	1.268
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Figura 10-2: Verifica Carico Limite trasversale (Broms) – palo in compressione

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 46 di 271

palo in trazione

SPALLA A

PALI DI FONDAZIONE $\Phi 1500$

Calcolo del carico trasversale limite

Terreni incoerenti (Broms 1964)

DATI GEOMETRICI:

Lunghezza del palo	L	15	[m]
Diametro del palo	D _{palo}	1.5	[m]
Momento di plasticizzazione	M _y	9981.6	[kNm]

DATI GEOTECNICI:

Peso per unità di volume	γ	10	[kN/m ³]
Angolo attrito medio	φ _{medio}	37	[°]
Coefficiente di spinta passiva medio	k _{p,medio}	4.02	[-]
Angolo attrito minimo	φ _{minimo}	36	[°]
Coefficiente di spinta passiva minimo	k _{p,minimo}	3.85	[-]

VERTICALI INDAGATE:

numero di verticali indagate	n°	1	
fattore di correlazione	ξ ₃	1.70	
fattore di correlazione	ξ ₄	1.70	

CARICO TRASVERSALE PER PALO CORTO H₁: (13.44)

H _{1,medio}	20365.4	[kN]	$H = 1.5k_p \gamma d^3 \left(\frac{L}{d}\right)^2$
H _{1,minimo}	19499.9	[kN]	

CARICO TRASVERSALE PER PALO INTERMEDIO H₂: (13.46)

H _{2,medio}	7453.9	[kN]	$H = \frac{1}{2}k_p \gamma d^3 \left(\frac{L}{d}\right)^2 + \frac{M_y}{L}$
H _{2,minimo}	7165.4	[kN]	

CARICO TRASVERSALE PER PALO LUNGO H₃: (13.47)

H _{3,medio}	4331.0	[kN]	$H = k_p \gamma d^3 \sqrt[3]{3.676 \frac{M_y}{k_p \gamma d^4}}$
H _{3,minimo}	4268.8	[kN]	

DEFINIZIONE DEL COMPORTAMENTO DEL PALO:

F	7.0	[m]	
H _{medio}	4331.0	[kN]	PALO
H _{minimo}	4268.8	[kN]	LUNGO

CARICO TRASVERSALE ULTIMO:

$H_k = \text{Min}\{H_{med}/\xi_3, H_{min}/\xi_4\}$

H _k	2511.0	[kN]	
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$H_d = H_k / \gamma_T$

γ _T	1.3	[-]	
H _d	1931.6	[kN]	
H _{agente}	1149.4	[kN]	

VERIFICA: VERIFICATO

<u>FS</u>	1.681	
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Figura 10-3: Verifica Carico Limite trasversale (Broms) – palo in trazione

APPALTATORE: <u>Consortio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 47 di 271

11 ANALISI DELL'INTERAZIONE FONDAZIONE-TERRENO SPALLA B

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).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 48 di 271

11.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

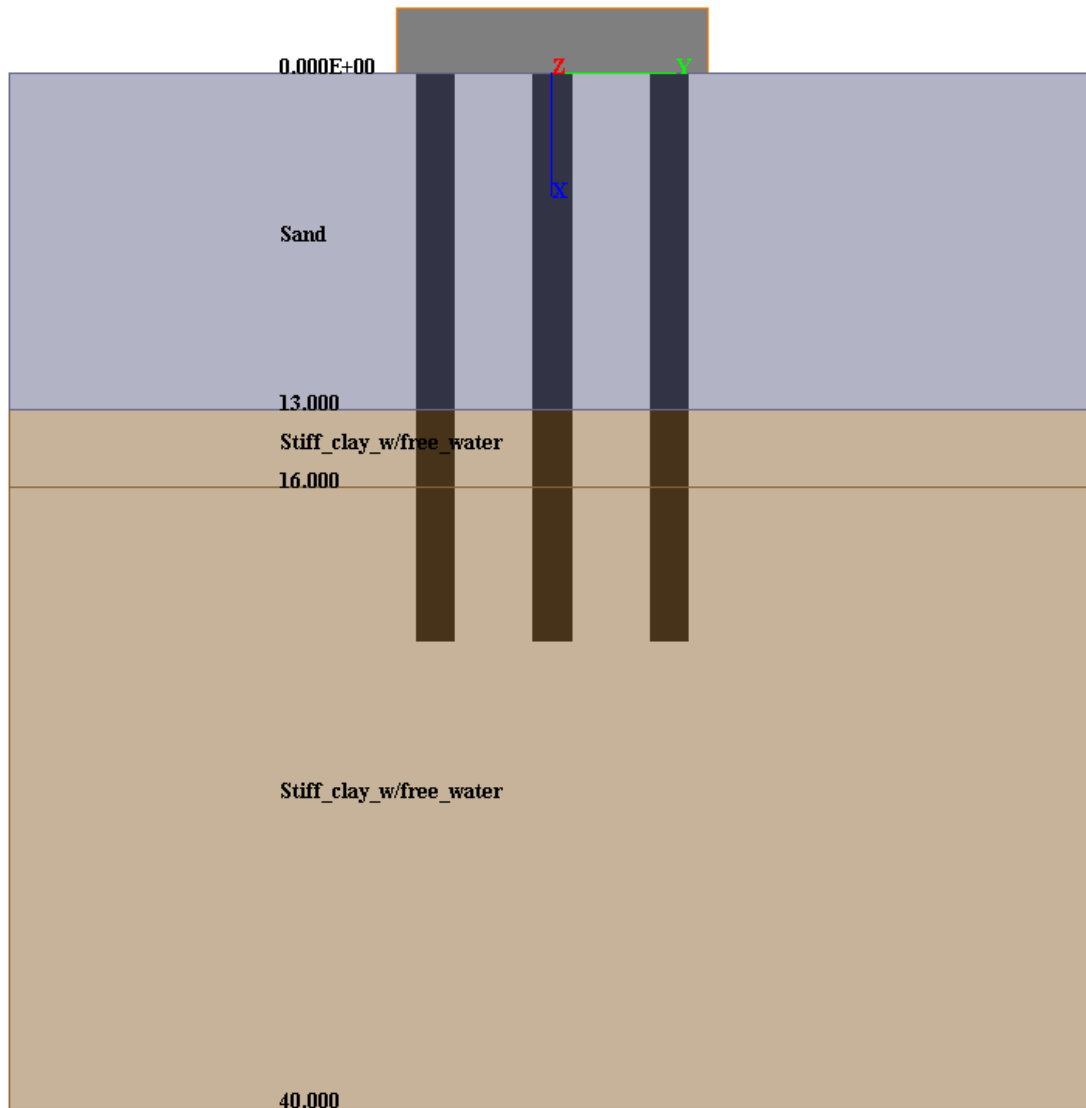


Figura 11-1: Vista frontale del modello GROUPv2016

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 49 di 271

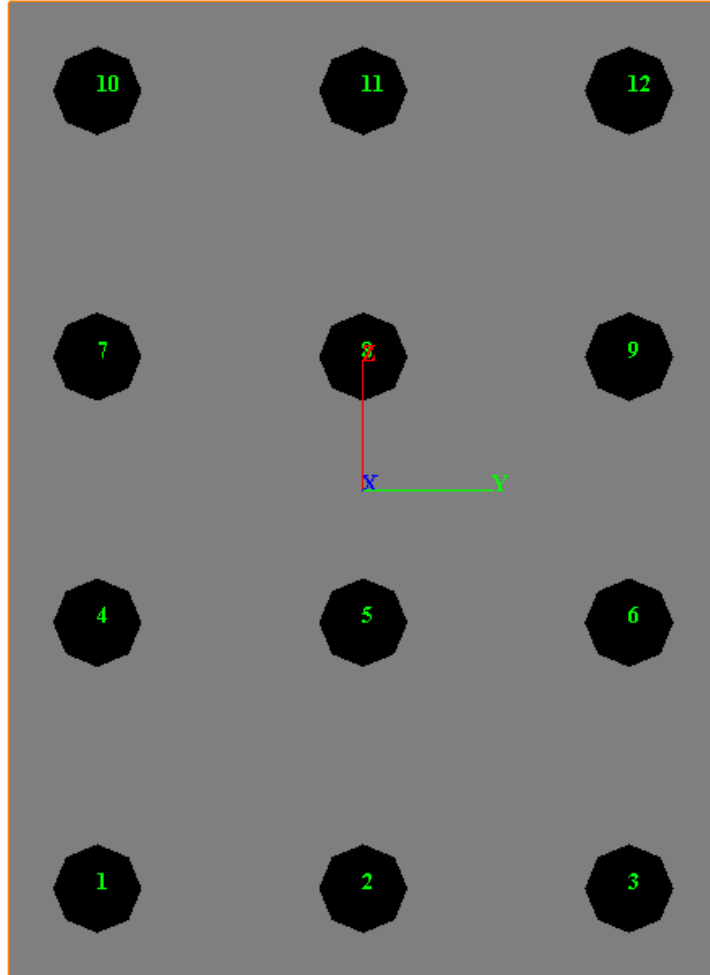


Figura 11-2: Vista in pianta del modello GROUPv2016

In accordo al §4.6 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	13	1: Sand (Reese, et al.)
2	Stiff Clay with Free Water (Reese)	13	16	2: Stiff Clay with Free Water
3	Stiff Clay with Free Water (Reese)	16	40	3: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

Figura 11-3: Modello stratigrafico GROUP V2016

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 50 di 271

Sand (Reese, et al.) 1

1=Top, 2=Bottom	Effective Unit Weight (kN/m ³)	Friction Angle, (DEG.)	p-y Modulus, k (kN/m ³)	Ultimate Unit Side Friction (kN/m ²)	Ultimate Unit Tip Resistance (kN/m ²)
1	9	36	16200	10	428
2	9	36	16200	60	2650

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 (kN/m ³)	Undrained Cohesion, c (kN/m ²)	p-y Modulus, k (kN/m ³)	Strain Factor E50	Ultimate Unit Side Friction (kN/m ²)	Ultimate Unit Tip Resistance (kN/m ²)
1	9	300	100000	0.004	120	3000
2	9	300	100000	0.004	120	3000

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 (kN/m ³)	Undrained Cohesion, c (kN/m ²)	p-y Modulus, k (kN/m ³)	Strain Factor E50	Ultimate Unit Side Friction (kN/m ²)	Ultimate Unit Tip Resistance (kN/m ²)
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: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 51 di 271

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.

ID Combo	SLE-RARA		
	N [kN]	M [kNm]	H [kN]
SLE-RARA_25	5146	947	314
SLE-RARA_23	2964	219	73
SLE-RARA_22	4518	1007	322
SLE-RARA_22	4518	1007	322

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.

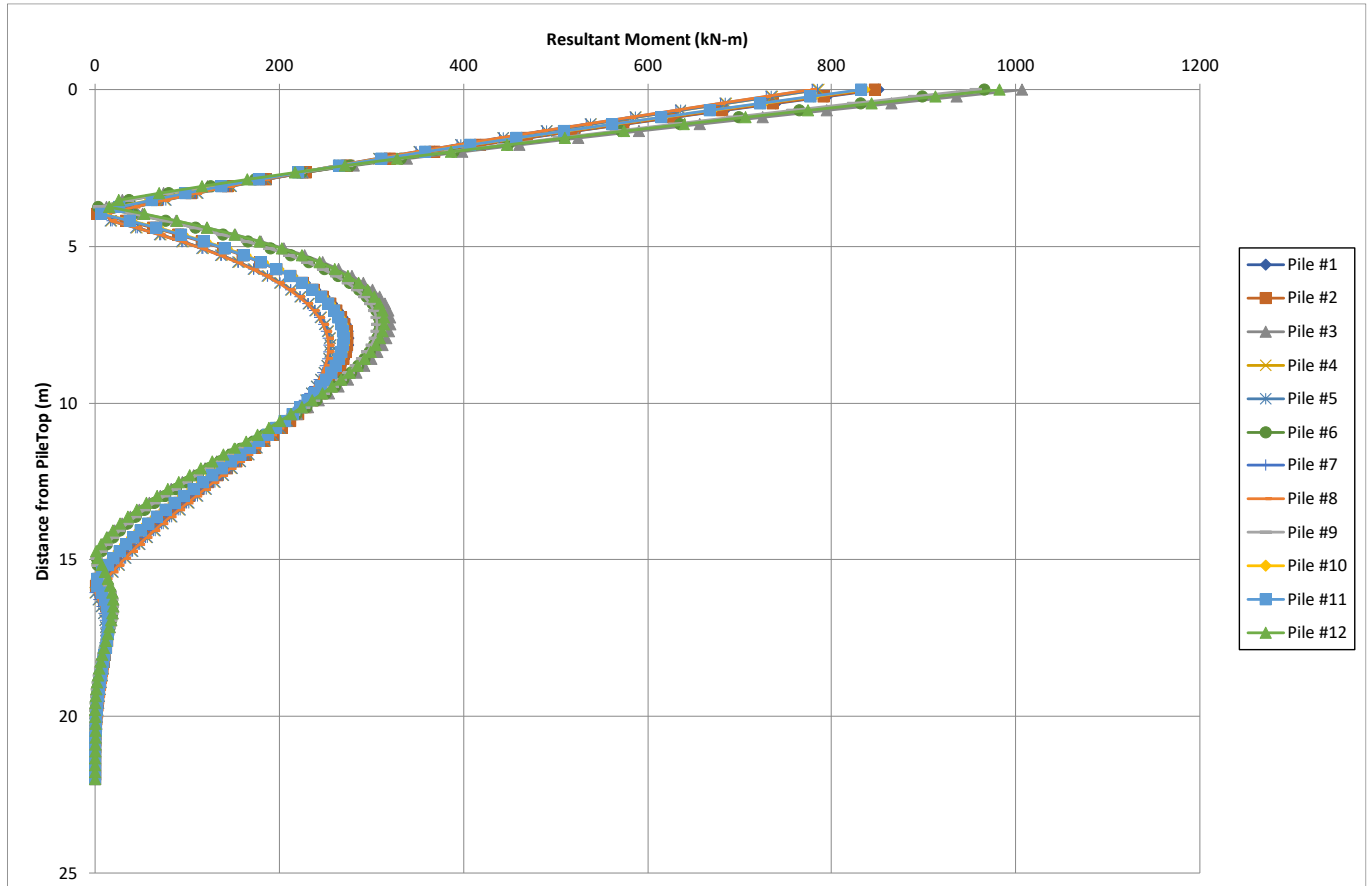


Figura 11-7: Combinazioni SLE: Andamento con la profondità del momento (combo SLE_22).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 52 di 271

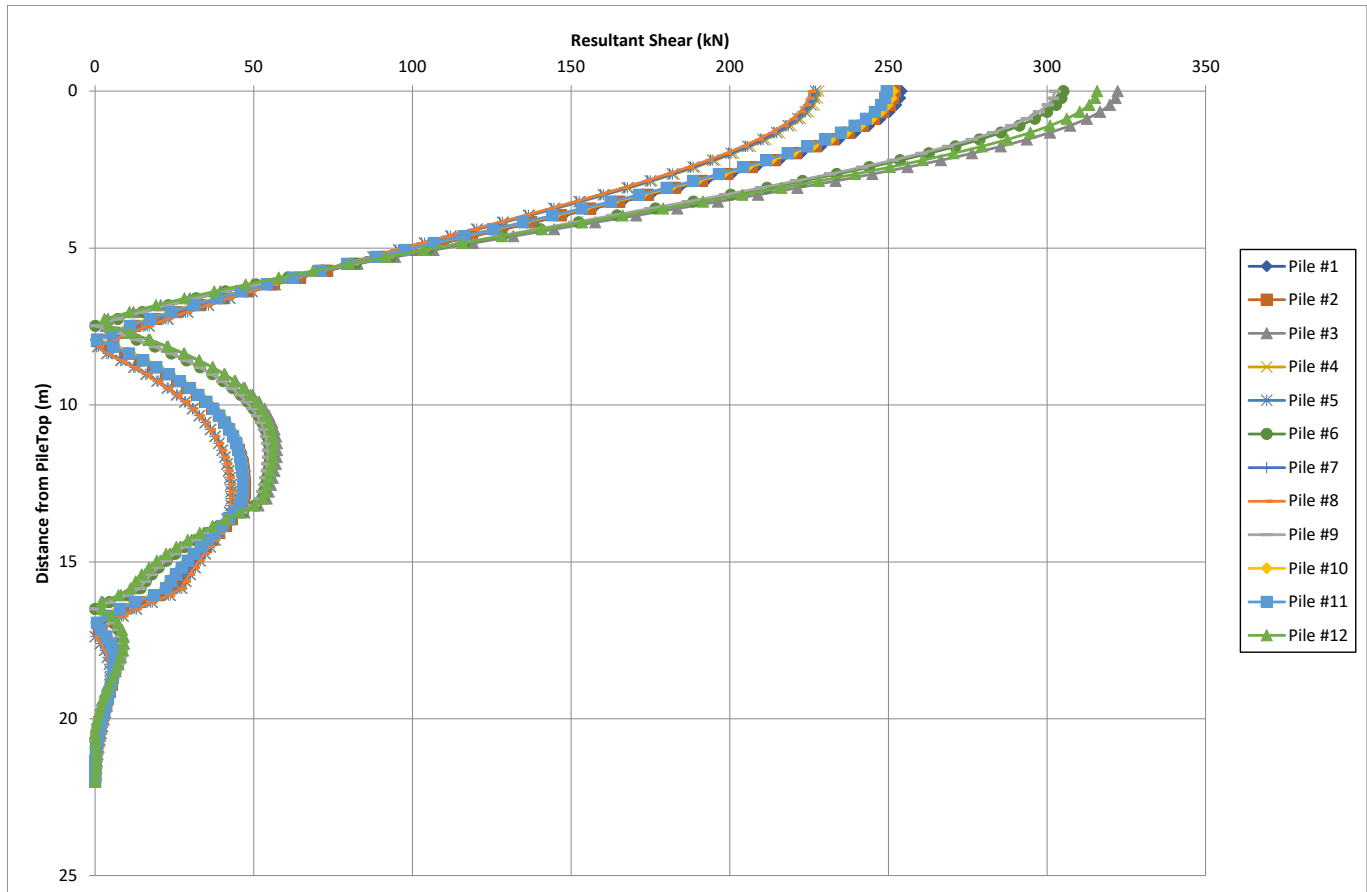


Figura 11-8: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE_22)

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 53 di 271

11.3 ANALISI DEGLI SPOSTAMENTI

Nella Tabella 11-2 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 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 una trave appoggiata di luce – appoggio-appoggio - $L=38.0m$; si ottiene $L_{med}/1000=38.0mm > 4.027mm$, 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)
0.0018394	0.0000723	0.0005398	1.112E-05	5.552E-06	-1.408E-06	0.089	0.604	3.492
0.0021212	0.0017790	0.0004247	3.778E-06	1.033E-05	-4.315E-05	2.280	0.545	4.027
0.0018394	0.0002122	0.0006138	1.100E-05	2.734E-05	-4.147E-05	0.693	0.931	3.492
0.0019572	0.0008847	-0.0000637	-3.032E-06	5.412E-07	-1.830E-05	1.097	-0.057	3.715
0.0021212	0.0018634	0.0001544	-1.254E-06	2.016E-05	-6.719E-05	2.643	0.388	4.027
0.0018394	0.0000723	0.0005398	1.112E-05	5.552E-06	-1.408E-06	0.089	0.604	3.492
0.0020818	0.0014156	-0.0000732	9.313E-06	-3.222E-06	-2.139E-05	1.664	-0.111	3.952
0.0019652	0.0006537	0.0004359	-7.732E-07	2.855E-05	-5.493E-05	1.291	0.767	3.730
0.0018394	0.0001497	0.0000460	-3.860E-08	1.317E-05	-2.540E-05	0.444	0.199	3.492
0.0021212	0.0018634	0.0001544	-1.254E-06	2.016E-05	-6.719E-05	2.643	0.388	4.027

$\delta_{max}(mm)$ 4.027

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

DATI FONDAZIONE

Larghezza plinto	15	m
Profondità plinto	10.5	m
Diametro palo	1.5	m
Lunghezza palo	22	m
interasse palo	4.5	m
numero pali	12	-
Coefficiente R	1.57	-
Coefficiente RG	0.16	-
Coeff. amplificazione cedimento del gruppo EG	1.90	-

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

APPALTATORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 54 di 271

11.4 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.

	STR		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLU-STR_10	7152	1375	460
SLU-STR_3	2594	328	110
SLU-STR_2	6268	1463	468
SLU-STR_10	6372	1411	469

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.

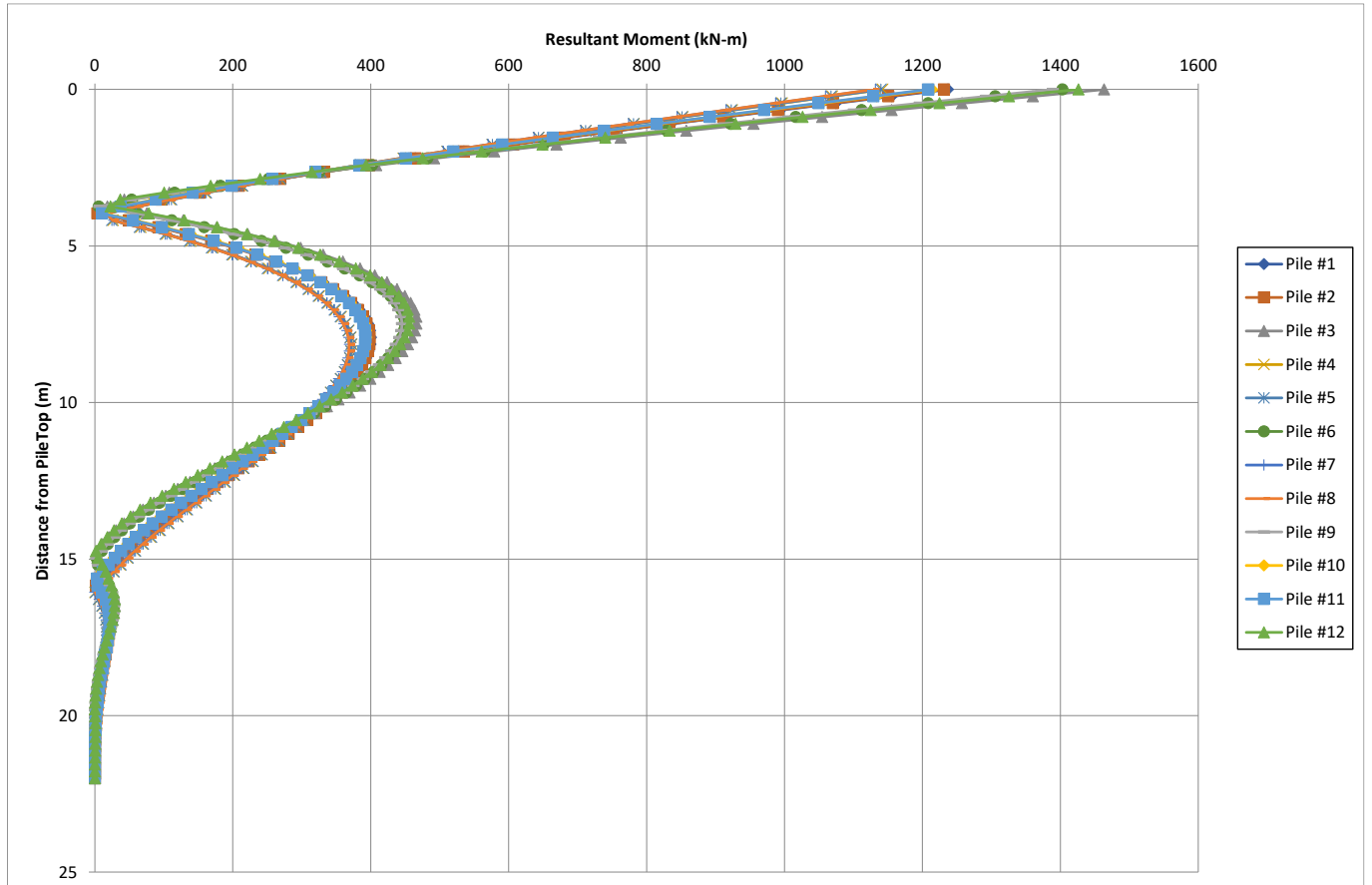


Figura 11-9: Combinazioni statica SLU: Andamento con la profondità del momento (combo SLU-STR_2).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 55 di 271

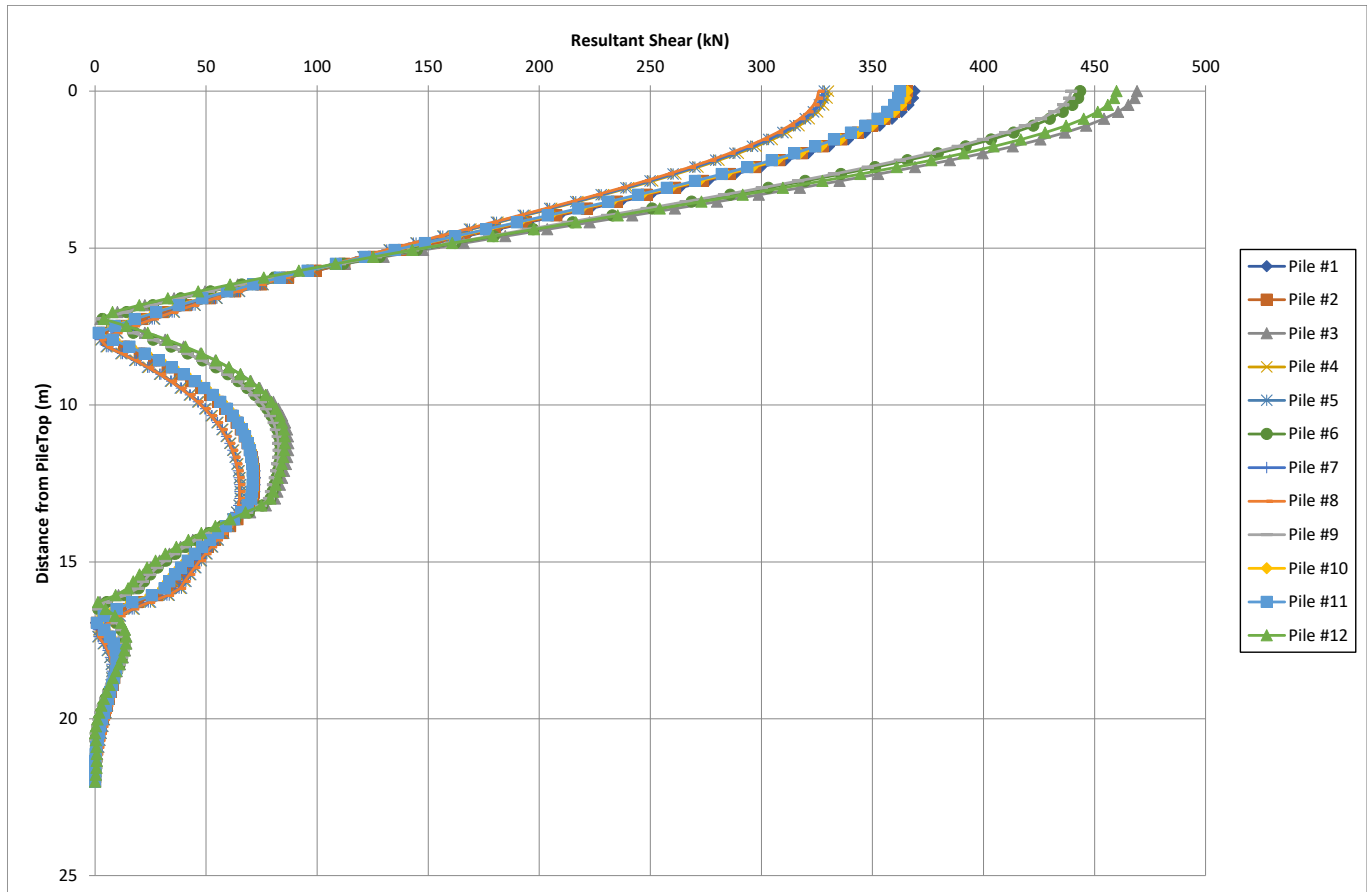


Figura 11-10: Combinazioni statica SLU: Andamento con la profondità del taglio (combo SLU-STR_10).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 56 di 271

11.5 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)		
	N [kN]	M [kNm]	H [kN]
SLV-SISMA_14	10200	5298	1597
SLV-SISMA_14	-4435	4628	1284
SLV-SISMA_12	6152	7363	2046
SLV-SISMA_12	6152	7363	2046

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.

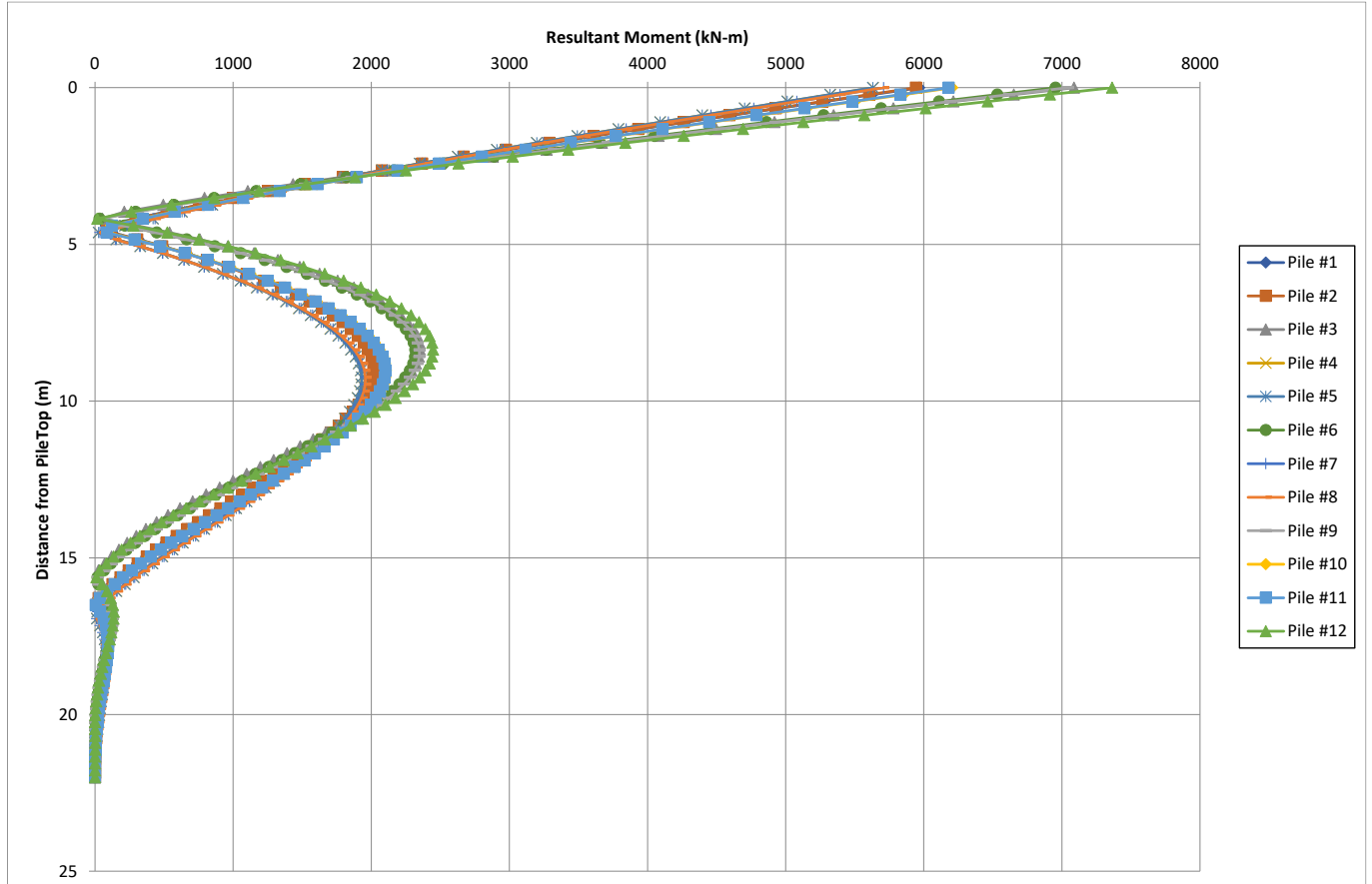


Figura 11-11: Combinazioni sismica SLV: Andamento con la profondità del momento (combo SLV-SISMA_12).

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 57 di 271

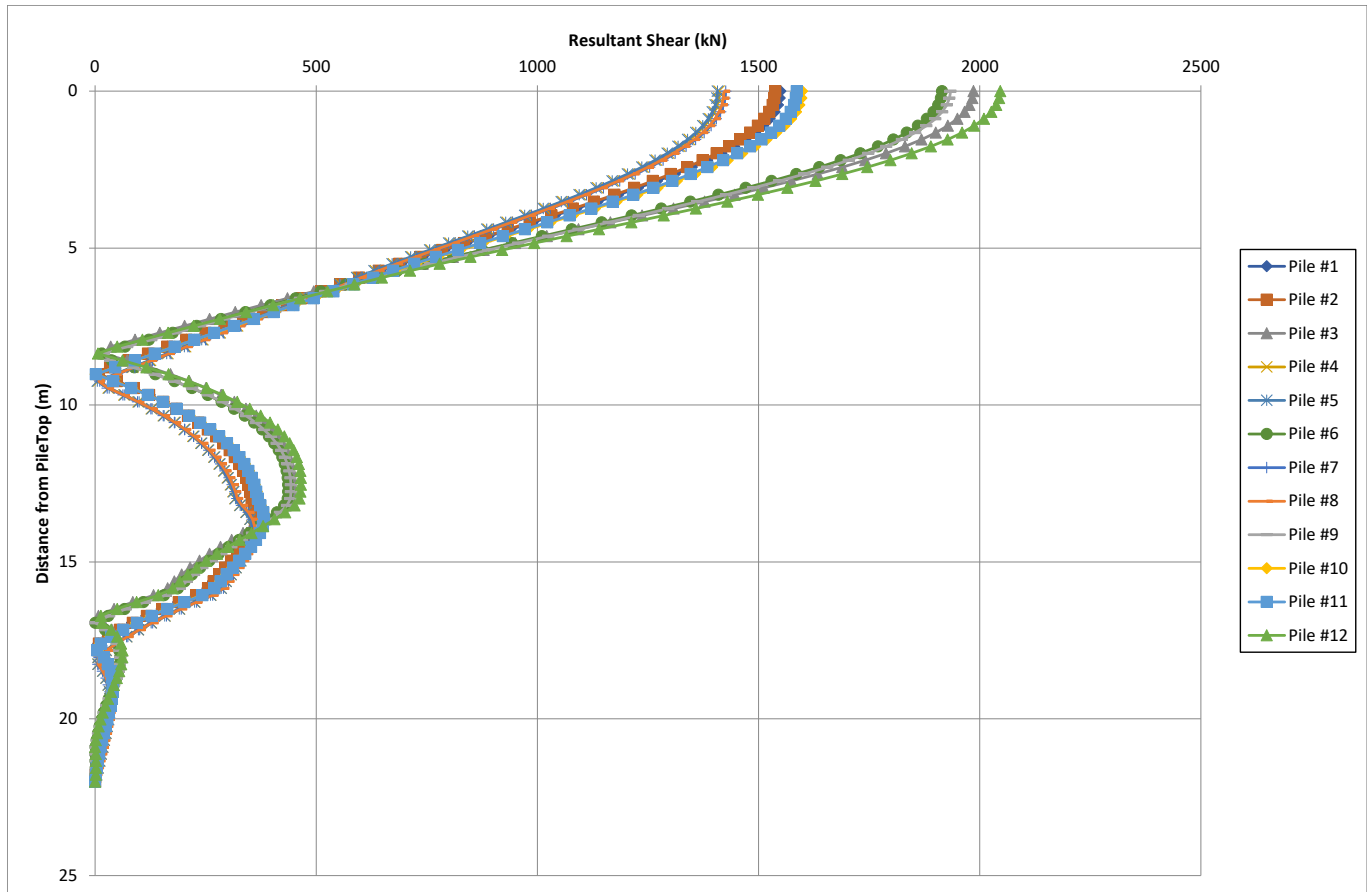


Figura 11-12: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo SLV-SISMA_12).

APPALTATORE: Conorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatara ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 58 di 271

12 VERIFICA DEI PALI DI FONDAZIONE SPALLA B

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

Le sollecitazioni massime agenti lungo il fusto del palo sono riassunte nella **Tabella 12-1: Sollecitazioni massime agenti nel palo**Tabella 12-1.

	SLV (q=1)		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLV-SISMA_14	10200	5298	1597
SLV-SISMA_14	-4435	4628	1284
SLV-SISMA_12	6152	7363	2046
SLV-SISMA_12	6152	7363	2046

	SLE-RARA		
	N	M	H
ID Combo	[kN]	[kNm]	[kN]
SLE-RARA_25	5146	947	314
SLE-RARA_23	2964	219	73
SLE-RARA_22	4518	1007	322
SLE-RARA_22	4518	1007	322

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 L22m. 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. 4 ordini di armature principali:

- L'armatura massima:
 - ferri correnti: corona esterna n.32 $\varnothing 32$;
 - ferri correnti: corona interna n.32 $\varnothing 32$;
 - staffatura: doppia spirale $\varnothing 16$ passo 10.

- L'armatura intermedia_gabbia 1:

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 59 di 271

- ferri correnti: corona esterna n.32 Ø 30;
- ferri correnti: corona interna n.16 Ø 22;
- staffatura: doppia spirale Ø14 passo 20.

3. L'armatura intermedia_gabbia 2:

- ferri correnti: corona esterna n.32 Ø 30;
- staffatura: spirale Ø14 passo 20.

4. L'armatura minima:

- ferri correnti: corona esterna n.32 Ø 24;
- staffatura: spirale Ø14 passo 20.

Le verifiche strutturali del palo sono soddisfatte; di seguito la scheda di calcolo.

geometria					sollecitazioni e risultati					
sezione trasversale					SLE		SLU			
D	c	d	passo	interferro	MEk	1007.0 [kNm]	MEd	4628.4 [kNm]		
[cm]	[cm]	[cm]	[cm]	[cm]	NEk	-2964.0 [kN]	NEd	4434.7 [kN]		
150	6.0	140.8	12.9	9.7	momento di cracking		VEd	2045.9 [kN]		
armatura longitudinale					Mcr	1768.6 [kNm]	presso-flessione			
nbarre	φ	r _i	As _l	C _i	quota asse neutro		MRd	8201.3 [kNm]		
	[mm]	[cm]	[cm ²]	[cm]	γ _n	117.46 [cm]	FS	1.77		
32	32	65.8	257.36	9.20	tensioni e fessure		taglio			
32	32	60.20	257.36	14.80	σ _{c,min}	-3.1 [MPa]	V _{Rdc}	220.9 [kN]		
					σ _{s,min}	-43.1 [MPa]	predisporre armatura a taglio			
					σ _{s,max}	9.3 [MPa]				
armatura a taglio					k ₂	0.5	V _{Rds}	2510.9 [kN]		
Tipo	φ	ρ	As _w		ε _{sm-ε_{cm}}	- [%]	V _{Rdmax}	4471.2 [kN]		
	[mm]	[cm]	[cm ²]		S _{r,max}	- [cm]	θ	30.0 [°]		
spirale	16	10	4.02		w _k	- [mm]	sezione duttile			
					al					91.9 [cm]

materiali				legenda	
calcestruzzo		acciaio			
R _{ck}	30 [MPa]	f _{yk}	450 [MPa]		d riferito all'asse barra c copriferro netto M >0, se tese fibre inferiori N >0, se di trazione V in valore assoluto
f _{ck}	24.9 [MPa]	γ _s	1.15		
γ _c	1.5	f _{yd}	391.3 [MPa]		
α _{cc}	0.85	E _s	200000 [MPa]		
f _{cd}	14.1 [MPa]	ε _{uk}	75 [‰]		
v	0.5	valori limite			
ε _{c2}	2.0 [‰]	0.55	13.7 [MPa]		
ε _{cu2}	3.5 [‰]	0.75	337.5 [MPa]		
α _e	15.0	w _{k,lim}	0.2 [mm]		
k _t	0.6				
k ₁	0.8				
k ₃	3.4				
k ₄	0.425				

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

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 60 di 271

12.1 INCIDENZA DEL PALO SPALLA B

Nella Tabella 12-3 si riporta l'incidenza di armatura valutata con una percentuale valutata con una percentuale di incremento dovuta a ganci di sollevamento, armature di confezionamento, legatura, ecc.; si considera una incidenza di progetto pari a 245kg/m³.

Incidenze acciaio								
SB - Pali ϕ 1500 L=22m								
Volume calcestruzzo			incidenza					
d	1.5 m		kg acciaio			8633.82 kg		
A	1.767146 m		Vcls			38.88 m ³		
L	22 m		incidenza di calcolo			222.08 kg/m ³ 200		
V	38.87721 m ³		incidenza di progetto			245.00 kg/m ³		
Armature longitudinali								
	parti	n	ϕ	L	Area	peso		incidenza
long	1	64	32	12	514.72	4848.65		124.72
	1	32	30	10	226.19	1775.63		45.67
	1	16	22	5	60.82	238.72		6.14
	1	32	24	5.6	144.76	636.39		16.37
					0.00	0.00		0.00
					0.00	0.00		0.00
					0.00	0.00		0.00
TOTALE						7499.39		192.90
Staffe								
	parti	n	ϕ	L	Area	peso		incidenza
8	1	106.6667	16	4.29	214.47	722.25		18.58
13.6	1	68	14	4.29	104.68	352.52		9.07
	1	1	16	4.29	2.01	6.77		0.17
	1	5	20	4.29	15.71	52.90		1.36
TOTALE						1134.44		29.18
Schema riassuntivo								
	kg acc	Vcls	i	n	kg acc	Vcls		
SB - Pali F1500 L=30m	8633.82	38.88	222.08	2	17267.64	77.75		

Tabella 12-3 Incidenza armatura

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PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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13 VERIFICHE ALLO SLU DI TIPO GEOTECNICO SPALLA B

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 nel documento di cui al ref. **Errore. L'origine riferimento non è stata trovata.**

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]	10200 (SLV)
Massima trazione, N_{dt} , max [kN]	-4435 (SLV)

Tabella 13-1: Combinazione 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]	5146 (SLE)
--	------------

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

13.2 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
γ acqua	10	kN/m ³
Δz palo da p.c. originario	2.5	m
N° diametri per qb	3	(-)
L palo fuori terra	0	(m)
Peso calcestruzzo	25	kN/m ³
Pressione max sul cls.	11.34	MPa

Caratteristiche del terreno													
Profondità (m)		Strato	Terreno	γ_{tot}	Nspt		c_u (kPa)		Δz	ϕ°		Nq	
da	a	No.	(S,SL,G,A)	kN/m ³	da	a	da	a	(m)	da	a	da	a
0.00	13.00	1	S	19.0					0.50	36	36	19	19
13.00	16.00	2	A	19.0			300	300	0.50				
16.00	40.00	3	G	25.0					0.50				

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Verticali di indagine	ξ_3	ξ_4
5	1.50	1.34

Scelta di ξ	ξ
3	1.5

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Combinazione SLE						
L palo	τ_s calcolo	q_{ub} calcolo	$R_{c,s,k}$	$R_{c,b,k}$	ΔW palo	$Q_{c,s,k}/1.25$
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
13.0	60.8	2651	2103.0	4683.8	137.8	1544.6
13.5	120.0	2995	2385.8	5291.7	143.1	1765.5
14.0	120.0	3004	2668.5	5308.5	148.4	1986.4
14.5	120.0	3014	2951.3	5325.3	153.7	2207.3
15.0	120.0	3023	3234.0	5342.1	159.0	2428.2
15.5	120.0	3033	3516.8	5358.9	164.3	2649.1
16.0	120.0	3042	3799.5	5375.7	169.6	2870.0
16.0	120.0	3052	3799.5	5392.4	169.6	2870.0
16.5	300.0	3379	4506.4	5971.4	169.6	3435.4
17.0	300.0	3707	5213.2	6550.3	169.6	4000.9
17.5	300.0	4034	5920.1	7129.3	169.6	4566.4
18.0	300.0	4362	6626.9	7708.2	169.6	5131.9
18.5	300.0	4690	7333.8	8287.1	169.6	5697.4
19.0	300.0	5017	8040.6	8866.1	169.6	6262.9
19.5	300.0	5345	8747.5	9445.0	169.6	6828.4
20.0	300.0	5672	9454.4	10023.9	169.6	7393.8
20.5	300.0	6000	10161.2	10602.9	169.6	7959.3
21.0	300.0	6000	10868.1	10602.9	169.6	8524.8
21.5	300.0	6000	11574.9	10602.9	169.6	9090.3
22.0	300.0	6000	12281.8	10602.9	169.6	9655.8
22.5	300.0	6000	12988.7	10602.9	169.6	10221.3
23.0	300.0	6000	13695.5	10602.9	169.6	10786.8
23.5	300.0	6000	14402.4	10602.9	169.6	11352.3
24.0	300.0	6000	15109.2	10602.9	169.6	11917.7
24.5	300.0	6000	15816.1	10602.9	169.6	12483.2
25.0	300.0	6000	16522.9	10602.9	169.6	13048.7
25.5	300.0	6000	17229.8	10602.9	169.6	13614.2
26.0	300.0	6000	17936.7	10602.9	169.6	14179.7
26.5	300.0	6000	18643.5	10602.9	169.6	14745.2
27.0	300.0	6000	19350.4	10602.9	169.6	15310.7
27.5	300.0	6000	20057.2	10602.9	169.6	15876.1
28.0	300.0	6000	20764.1	10602.9	169.6	16441.6
28.5	300.0	6000	21471.0	10602.9	169.6	17007.1
29.0	300.0	6000	22177.8	10602.9	169.6	17572.6
29.5	300.0	6000	22884.7	10602.9	169.6	18138.1
30.0	300.0	6000	23591.5	10602.9	169.6	18703.6

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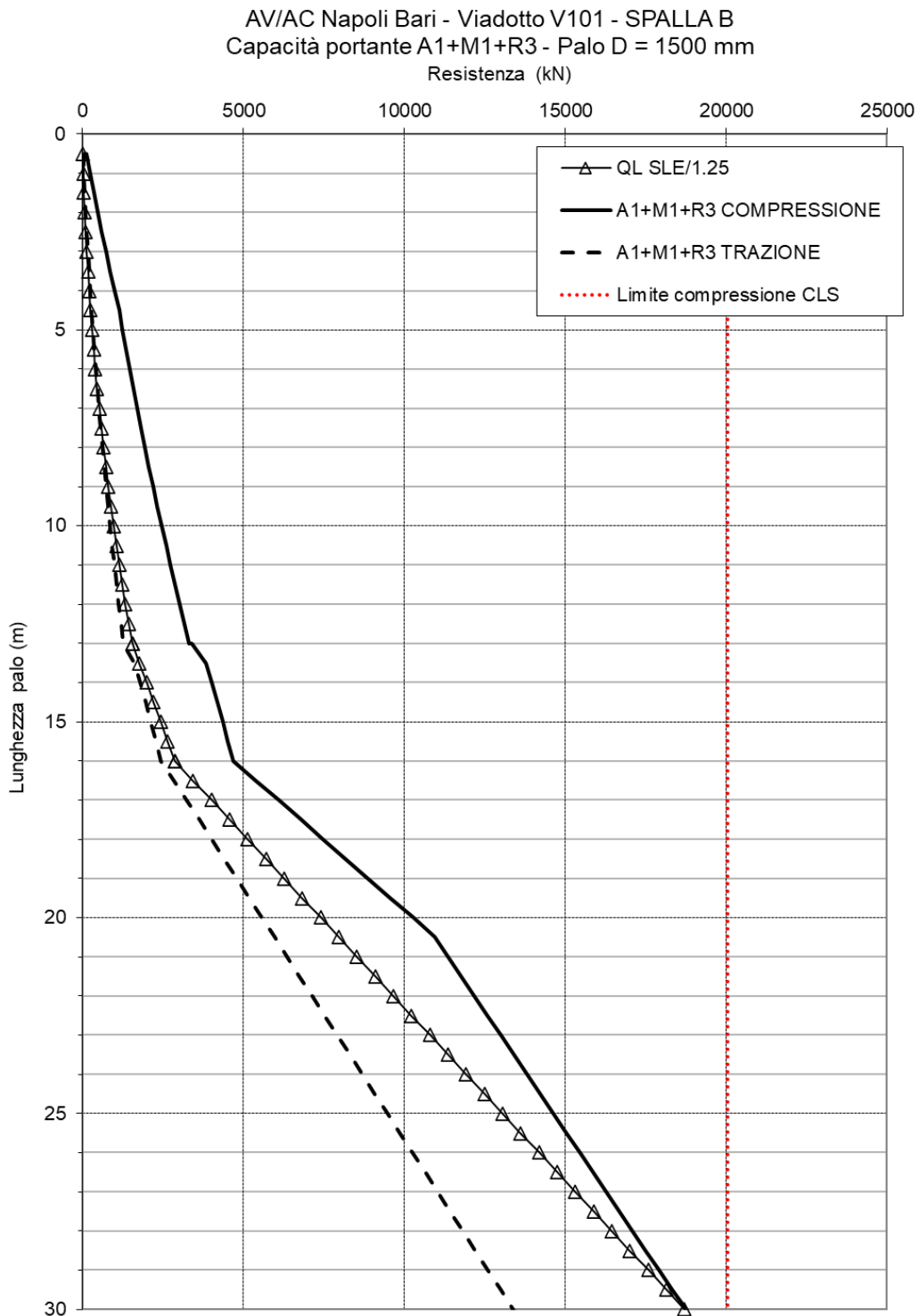


Figura 13-1: Capacità portante del palo singolo

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13.3 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. Relazione sui criteri di calcolo delle fondazioni

Si individuano due condizioni di carico dei pali di fondazione della spalla: pali di valle, soggetti al carico assiale di compressione e una azione di taglio superiore; pali di monte, soggetti al carico assiale di trazione e una azione di taglio in ombra di entità inferiore.

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.

Nelle seguenti figure sono illustrate le verifiche svolte per ciascuna condizione di carico del palo.

La verifica a capacità portante orizzontale risulta soddisfatta.

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PROGETTAZIONE: Mandatara <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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Palo in compressione

SPALLA B

PALI DI FONDAZIONE $\phi 1500$

Calcolo del carico trasversale limite

Terreni incoerenti (Broms 1964)

DATI GEOMETRICI:

Lunghezza del palo	L	22	[m]
Diametro del palo	D _{palo}	1.5	[m]
Momento di plasticizzazione	M _y	13811.4	[kNm]

DATI GEOTECNICI:

Peso per unità di volume	γ	9	[kN/m ³]
Angolo attrito medio	φ_{medio}	36	[°]
Coefficiente di spinta passiva medio	k _{p,medio}	3.85	[-]
Angolo attrito minimo	φ_{minimo}	36	[°]
Coefficiente di spinta passiva minimo	k _{p,minimo}	3.85	[-]

VERTICALI INDAGATE:

numero di verticali indagate	n°	5	
fattore di correlazione	ξ_3	1.50	
fattore di correlazione	ξ_4	1.34	

CARICO TRASVERSALE PER PALO CORTO H₁: (13.44)

H _{1,medio}	37751.9	[kN]		
H _{1,minimo}	37751.9	[kN]		$H = 1.5k_p \gamma d^3 \left(\frac{L}{d}\right)^2$

CARICO TRASVERSALE PER PALO INTERMEDIO H₂: (13.46)

H _{2,medio}	13211.8	[kN]		
H _{2,minimo}	13211.8	[kN]		$H = \frac{1}{2}k_p \gamma d^3 \left(\frac{L}{d}\right)^2 + \frac{M_y}{L}$

CARICO TRASVERSALE PER PALO LUNGO H₃: (13.47)

H _{3,medio}	5117.7	[kN]		
H _{3,minimo}	5117.7	[kN]		$H = k_p \gamma d^3 \sqrt[3]{3.676 \frac{M_y}{k_p \gamma d^4}}$

DEFINIZIONE DEL COMPORTAMENTO DEL PALO:

F	8.1	[m]		
H _{medio}	5117.7	[kN]		PALO LUNGO
H _{minimo}	5117.7	[kN]		

CARICO TRASVERSALE ULTIMO:

$H_k = \text{Min}\{H_{\text{med}}/\xi_3, H_{\text{min}}/\xi_4\}$

H _k	3411.8	[kN]		
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$H_d = H_k/\gamma_T$

γ_T	1.3	[-]		
H _d	2624.5	[kN]		
H _{agente}	2045.9	[kN]		

VERIFICA: VERIFICATO

<u>FS</u>	1.283	
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Figura 13-2: Verifica Carico Limite trasversale (Broms) – palo in compressione

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Palo in trazione

SPALLA B

PALI DI FONDAZIONE $\phi 1500$

Calcolo del carico trasversale limite

Terreni incoerenti (Broms 1964)

DATI GEOMETRICI:

Lunghezza del palo	L	22	[m]
Diametro del palo	D _{palo}	1.5	[m]
Momento di plasticizzazione	M _y	10606.8	[kNm]

DATI GEOTECNICI:

Peso per unità di volume	γ	9	[kN/m ³]
Angolo attrito medio	φ_{medio}	36	[°]
Coefficiente di spinta passiva medio	k _{p,medio}	3.85	[-]
Angolo attrito minimo	φ_{minimo}	36	[°]
Coefficiente di spinta passiva minimo	k _{p,minimo}	3.85	[-]

VERTICALI INDAGATE:

numero di verticali indagate	n°	5	
fattore di correlazione	ξ_3	1.50	
fattore di correlazione	ξ_4	1.34	

CARICO TRASVERSALE PER PALO CORTO H₁: (13.44)

H _{1,medio}	37751.9	[kN]	$H = 1.5k_p \gamma d^3 \left(\frac{L}{d}\right)^2$
H _{1,minimo}	37751.9	[kN]	

CARICO TRASVERSALE PER PALO INTERMEDIO H₂: (13.46)

H _{2,medio}	13066.1	[kN]	$H = \frac{1}{2}k_p \gamma d^3 \left(\frac{L}{d}\right)^2 + \frac{M_y}{L}$
H _{2,minimo}	13066.1	[kN]	

CARICO TRASVERSALE PER PALO LUNGO H₃: (13.47)

H _{3,medio}	4291.8	[kN]	$H = k_p \gamma d^3 \sqrt[3]{3.676 \frac{M_y}{k_p \gamma d^4}}$
H _{3,minimo}	4291.8	[kN]	

DEFINIZIONE DEL COMPORTAMENTO DEL PALO:

F	7.4	[m]	
H _{medio}	4291.8	[kN]	PALO
H _{minimo}	4291.8	[kN]	LUNGO

CARICO TRASVERSALE ULTIMO:

$H_k = \text{Min}\{H_{med}/\xi_3, H_{min}/\xi_4\}$

H _k	2861.2	[kN]	
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$H_d = H_k / \gamma_T$

γ_T	1.3	[-]	
H _d	2200.9	[kN]	
H _{agente}	1284.2	[kN]	

VERIFICA: VERIFICATO

<u>FS</u>	1.714	
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Figura 13-3: Verifica Carico Limite trasversale (Broms) – palo in trazione

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14 VERIFICA CAPACITÀ PORTANTE GRUPPO DI PALI

Nei successivi paragrafi si riportano le verifiche di capacità portante del gruppo di pali di fondazione della Spalla A e Spalla B.

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 Spalla A

Per la spalla A, in cui i pali sono interamente attestati nella formazione del Faeto, il dominio limite risulta già ampiamente soddisfatto per una lunghezza pali pari a 10 m (lunghezza minima di infissione più 3 diametri del palo).

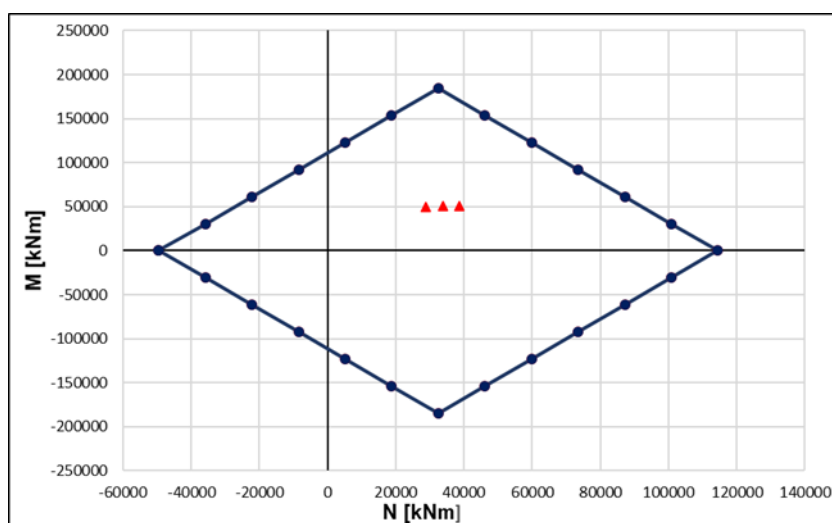


Figura 14-1. Dominio di resistenza gruppo di pali Spalla A – $L_{min} = 10$ m

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PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.	<u>Mandanti</u> NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
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14.1.2 Spalla B

Per la pila Spalla B il dominio limite si ottiene per una lunghezza pali pari a 19 m

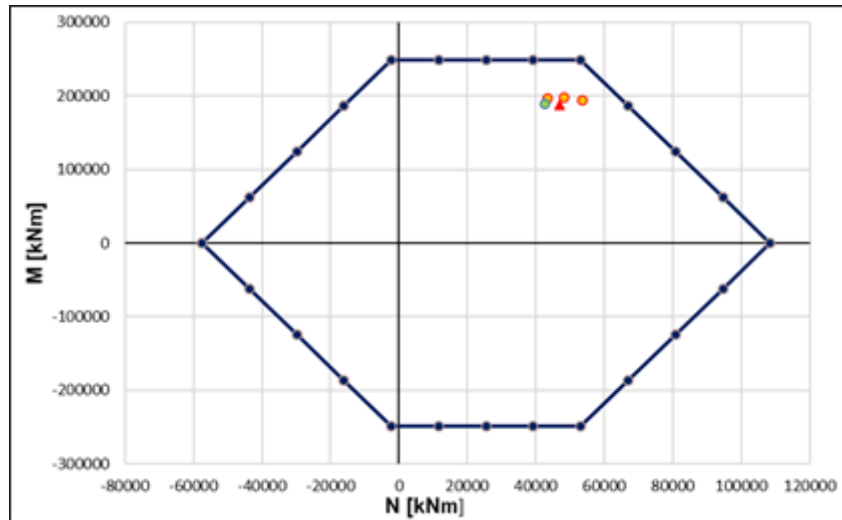


Figura 14-2. Dominio di resistenza gruppo di pali Spalla B – Lmin = 19 m

14.2 LUNGHEZZA DI PROGETTO DEL GRUPPO DI PALI PER LA SPALLA A

E B

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 al di sotto del contatto con la formazione del Flysch di Faeto.

Per la spalla A, la lunghezza pali è comunque portata a 15 m per tenere conto di possibili variazioni stratigrafiche del contatto tra alluvioni superficiali e formazione del Faeto che avviene proprio tra la spalla A e la pila P1. Per la spalla B la lunghezza dei pali è incrementata per garantire una riserva di resistenza rispetto ai carichi applicati.

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)
Spalla A	5.5	9	10	15
Spalla B	16	20	19	22

APPALTATORE: <u>Conorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA																	
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	<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 001</td> <td>A</td> <td>71 di 271</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	71 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF3A	02	E ZZ CL	VI0103 001	A	71 di 271													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B																		

15 DIMENSIONAMENTO E VERIFICA DEL PLINTO DI FONDAZIONE [SPALLA A - SPALLA B]

Si rimanda alla relazione di calcolo:

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.01.0.4.002 Spalla B: Relazione di calcolo strutture in elevazione

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 72 di 271

16 ALLEGATO: TABULATI GROUP

16.1 SPA 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
-----
Date: June 22, 2022 Time: 15:30:32

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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	0.8016	1.0000
3	0.8016	1.0000
4	0.8016	1.0000
5	0.8020	1.0000
6	0.8661	1.0000
7	0.6267	1.0000
8	0.5324	1.0000
9	0.5307	1.0000
10	0.5307	1.0000
11	0.5318	1.0000
12	0.6211	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
30757.0	3431.00	540.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
240.000	7496.00	-7496.00

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 73 di 271

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M 8.79684E-04	HORIZONTAL Y, M 1.22662E-03	HORIZONTAL Z, M 1.61417E-04
ANGLE ROT. X,RAD 5.72263E-07	ANGLE ROT. Y,RAD 4.46770E-06	ANGLE ROT. Z,RAD -9.41554E-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	1.0413E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
2	1.0614E-03	1.2305E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
3	1.0815E-03	1.2279E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
4	1.1016E-03	1.2253E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
5	1.1217E-03	1.2228E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
6	1.1418E-03	1.2202E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
7	7.1810E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
8	6.9799E-04	1.2228E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
9	6.7789E-04	1.2253E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
10	6.5778E-04	1.2279E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
11	6.3768E-04	1.2305E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
12	6.1757E-04	1.2331E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
MINIMUM	6.1757E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1418E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
Pile N.	6	1	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	3025.7	323.25	50.533	1.5155	-141.71	811.60
2	3083.3	310.59	48.811	1.5155	-138.56	787.90
3	3140.8	309.74	48.810	1.5155	-138.56	785.40
4	3198.4	308.90	48.809	1.5155	-138.56	782.91
5	3256.0	308.13	48.820	1.5155	-138.58	780.57
6	3313.5	319.63	50.641	1.5155	-141.91	800.23
7	2100.5	271.27	42.732	1.5155	-126.17	711.09
8	2042.9	250.60	39.605	1.5155	-120.04	672.22
9	1985.3	250.89	39.546	1.5155	-119.92	673.64
10	1927.8	251.60	39.547	1.5155	-119.92	675.86
11	1870.2	252.57	39.586	1.5155	-120.00	678.59
12	1812.7	273.84	42.559	1.5155	-125.82	720.37
MINIMUM	1812.7	250.60	39.546	1.5155	-141.91	672.22
Pile N.	12	8	9	1	6	8
MAXIMUM	3313.5	323.25	50.641	1.5155	-119.92	811.60
Pile N.	6	1	6	1	9	1

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	1.0413E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
2	1.0614E-03	1.2305E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
3	1.0815E-03	1.2279E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
4	1.1016E-03	1.2253E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
5	1.1217E-03	1.2228E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
6	1.1418E-03	1.2202E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
7	7.1810E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
8	6.9799E-04	1.2228E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
9	6.7789E-04	1.2253E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
10	6.5778E-04	1.2279E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
11	6.3768E-04	1.2305E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
12	6.1757E-04	1.2331E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
MINIMUM	6.1757E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06	-9.4155E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1418E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06	-9.4155E-05
Pile N.	6	1	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	3025.7	323.25	50.533	1.5155	-141.71	811.60

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 74 di 271

2	3083.3	310.59	48.811	1.5155	-138.56	787.90
3	3140.8	309.74	48.810	1.5155	-138.56	785.40
4	3198.4	308.90	48.809	1.5155	-138.56	782.91
5	3256.0	308.13	48.820	1.5155	-138.58	780.57
6	3313.5	319.63	50.641	1.5155	-141.91	800.23
7	2100.5	271.27	42.732	1.5155	-126.17	711.09
8	2042.9	250.60	39.605	1.5155	-120.04	672.22
9	1985.3	250.89	39.546	1.5155	-119.92	673.64
10	1927.8	251.60	39.547	1.5155	-119.92	675.86
11	1870.2	252.57	39.586	1.5155	-120.00	678.59
12	1812.7	273.84	42.559	1.5155	-125.82	720.37
MINIMUM	1812.7	250.60	39.546	1.5155	-141.91	672.22
Pile N.	12	8	9	1	6	8
MAXIMUM	3313.5	323.25	50.641	1.5155	-119.92	811.60
Pile N.	6	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4183.8
2	4144.7
3	4169.9
4	4195.2
5	4220.8
6	4313.2
7	3355.2
8	3204.6
9	3176.2
10	3150.1
11	3125.7
12	3219.6
MINIMUM	3125.7
Pile N.	11
MAXIMUM	4313.2
Pile N.	6

* EFFECTS FOR LATERALLY LOADED PILE *
* MINIMUM 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	-2.8818E-05	-4.0739E-06	-811.60	-141.71	-124.68	-17.595	-36.913	-5.2196	1712.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.6500	7.6500	9.3000	9.4500	15.000	0.0000	0.0000
2	-2.9382E-05	-4.1587E-06	-787.90	-138.56	-120.02	-16.952	-35.004	-4.9556	1744.8	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.6500	7.8000	9.4500	9.6000	15.000	0.0000	0.0000
3	-2.9315E-05	-4.1589E-06	-785.40	-138.56	-119.75	-16.953	-34.924	-4.9559	1777.3	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.6500	7.8000	9.4500	9.6000	15.000	0.0000	0.0000
4	-2.9248E-05	-4.1590E-06	-782.91	-138.56	-119.48	-16.954	-34.845	-4.9561	1809.9	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.6500	7.8000	9.4500	9.6000	15.000	0.0000	0.0000
5	-2.9177E-05	-4.1586E-06	-780.57	-138.58	-119.23	-16.959	-34.778	-4.9581	1842.5	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.6500	7.8000	9.4500	9.6000	15.000	0.0000	0.0000
6	-2.8456E-05	-4.0693E-06	-800.23	-141.91	-123.54	-17.642	-36.621	-5.2381	1875.1	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.6500	7.6500	9.3000	9.4500	15.000	0.0000	0.0000
7	-3.1144E-05	-4.3706E-06	-711.09	-126.17	-104.59	-14.637	-29.022	-4.0738	1188.6	7.8500E+06	7.8500E+06
x(M)	9.7500	9.9000	0.0000	0.0000	7.8000	7.9500	9.7500	9.9000	15.000	0.0000	0.0000
8	-3.2527E-05	-4.5452E-06	-672.22	-120.04	-95.941	-13.387	-25.764	-3.6010	1156.0	7.8500E+06	7.8500E+06
x(M)	10.050	10.200	0.0000	0.0000	7.9500	8.1000	10.200	10.200	15.000	0.0000	0.0000
9	-3.2629E-05	-4.5488E-06	-673.64	-119.92	-95.980	-13.361	-25.761	-3.5921	1123.5	7.8500E+06	7.8500E+06
x(M)	10.050	10.200	0.0000	0.0000	7.9500	8.1000	10.200	10.200	15.000	0.0000	0.0000
10	-3.2703E-05	-4.5486E-06	-675.86	-119.92	-96.196	-13.361	-25.819	-3.5919	1090.9	7.8500E+06	7.8500E+06
x(M)	10.050	10.200	0.0000	0.0000	7.9500	8.1000	10.050	10.200	15.000	0.0000	0.0000
11	-3.2760E-05	-4.5459E-06	-678.59	-120.00	-96.525	-13.376	-25.918	-3.5973	1058.3	7.8500E+06	7.8500E+06
x(M)	10.050	10.200	0.0000	0.0000	7.9500	8.1000	10.050	10.200	15.000	0.0000	0.0000
12	-3.1568E-05	-4.3793E-06	-720.37	-125.82	-105.17	-14.562	-29.155	-4.0456	1025.8	7.8500E+06	7.8500E+06
x(M)	9.7500	9.9000	0.0000	0.0000	7.8000	7.9500	9.7500	9.9000	15.000	0.0000	0.0000
Min.	-3.2760E-05	-4.5488E-06	-811.60	-141.91	-124.68	-17.642	-36.913	-5.2381	1025.8	7.8500E+06	7.8500E+06
Pile N.	11	9	1	6	1	6	1	6	12	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	1.2331E-03	1.6270E-04	431.11	60.767	323.27	50.537	216.46	33.270	4183.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.2305E-03	1.6270E-04	422.28	59.667	310.61	48.815	208.46	32.131	4144.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.2279E-03	1.6270E-04	421.31	59.668	309.77	48.814	207.92	32.132	4169.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.2253E-03	1.6270E-04	420.35	59.669	308.92	48.813	207.38	32.134	4195.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.2228E-03	1.6270E-04	419.44	59.677	308.16	48.825	206.89	32.144	4220.8	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 75 di 271

x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.2202E-03	1.6270E-04	426.66	60.841	319.65	50.646	214.14	33.352	4313.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.2202E-03	1.6013E-04	391.83	54.867	271.29	42.735	181.99	27.890	3355.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.2228E-03	1.6013E-04	375.14	52.364	250.61	39.607	167.00	25.547	3204.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.2253E-03	1.6013E-04	375.64	52.312	250.91	39.548	167.13	25.500	3176.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.2279E-03	1.6013E-04	376.50	52.311	251.61	39.549	167.56	25.498	3150.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.2305E-03	1.6013E-04	377.58	52.342	252.58	39.588	168.19	25.526	3125.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.2331E-03	1.6013E-04	395.40	54.729	273.85	42.561	183.50	27.753	3219.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.2331E-03	1.6270E-04	431.11	60.841	323.27	50.646	216.46	33.352	4313.2	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	6	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	0.8659	1.0000
2	0.8051	1.0000
3	0.8051	1.0000
4	0.8051	1.0000
5	0.8052	1.0000
6	0.8661	1.0000
7	0.6219	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
50061.0	6372.00	153.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1188.00	7920.00	-7920.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.44156E-03	2.04447E-03	5.18749E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-4.26200E-06	4.09862E-06	-1.42465E-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	1.7160E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
2	1.7344E-03	2.0157E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
3	1.7529E-03	2.0349E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
4	1.7713E-03	2.0540E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
5	1.7898E-03	2.0732E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
6	1.8082E-03	2.0924E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
7	1.1671E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
8	1.1487E-03	2.0732E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
9	1.1302E-03	2.0540E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
10	1.1118E-03	2.0349E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
11	1.0934E-03	2.0157E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
12	1.0749E-03	1.9965E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04

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 SPALLA A E SPALLA B	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 76 di 271	

MINIMUM	1.0749E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8082E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	6	6	7	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	4957.5	571.59	10.967	-11.287	-25.987	1458.3
2	5010.3	559.70	10.593	-11.287	-25.345	1445.9
3	5063.1	566.34	10.591	-11.287	-25.342	1465.5
4	5115.9	572.98	10.589	-11.287	-25.338	1485.2
5	5168.7	579.63	10.588	-11.287	-25.335	1504.9
6	5221.5	605.80	10.958	-11.287	-25.969	1558.4
7	3386.0	523.42	15.459	-11.287	-41.832	1411.2
8	3333.2	483.42	14.449	-11.287	-39.956	1329.7
9	3280.4	477.35	14.438	-11.287	-39.936	1311.1
10	3227.6	471.73	14.440	-11.287	-39.942	1293.3
11	3174.8	466.54	14.456	-11.287	-39.972	1276.3
12	3122.0	493.49	15.472	-11.287	-41.859	1319.0
MINIMUM	3122.0	466.54	10.588	-11.287	-41.859	1276.3
Pile N.	12	11	5	1	12	11
MAXIMUM	5221.5	605.80	15.472	-11.287	-25.335	1558.4
Pile N.	6	6	12	1	5	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	1.7160E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
2	1.7344E-03	2.0157E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
3	1.7529E-03	2.0349E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
4	1.7713E-03	2.0540E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
5	1.7898E-03	2.0732E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
6	1.8082E-03	2.0924E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
7	1.1671E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
8	1.1487E-03	2.0732E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
9	1.1302E-03	2.0540E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
10	1.1118E-03	2.0349E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
11	1.0934E-03	2.0157E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
12	1.0749E-03	1.9965E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
MINIMUM	1.0749E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8082E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	6	6	7	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	4957.5	571.59	10.967	-11.287	-25.987	1458.3
2	5010.3	559.70	10.593	-11.287	-25.345	1445.9
3	5063.1	566.34	10.591	-11.287	-25.342	1465.5
4	5115.9	572.98	10.589	-11.287	-25.338	1485.2
5	5168.7	579.63	10.588	-11.287	-25.335	1504.9
6	5221.5	605.80	10.958	-11.287	-25.969	1558.4
7	3386.0	523.42	15.459	-11.287	-41.832	1411.2
8	3333.2	483.42	14.449	-11.287	-39.956	1329.7
9	3280.4	477.35	14.438	-11.287	-39.936	1311.1
10	3227.6	471.73	14.440	-11.287	-39.942	1293.3
11	3174.8	466.54	14.456	-11.287	-39.972	1276.3
12	3122.0	493.49	15.472	-11.287	-41.859	1319.0
MINIMUM	3122.0	466.54	10.588	-11.287	-41.859	1276.3
Pile N.	12	11	5	1	12	11
MAXIMUM	5221.5	605.80	15.472	-11.287	-25.335	1558.4
Pile N.	6	6	12	1	5	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	7180.9
2	7173.5
3	7262.4
4	7351.3
5	7440.2
6	7630.5
7	6151.7
8	5877.1
9	5791.4
10	5708.2
11	5627.5

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 78 di 271

1	0.8560	1.0000
2	0.7960	1.0000
3	0.7960	1.0000
4	0.7960	1.0000
5	0.7970	1.0000
6	0.8661	1.0000
7	0.6340	1.0000
8	0.5337	1.0000
9	0.5311	1.0000
10	0.5311	1.0000
11	0.5322	1.0000
12	0.6202	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 43114.0	HOR. LOAD Y, KN 3431.00	HOR. LOAD Z, KN 900.000
MOMENT X, KN- M 399.000	MOMENT Y, KN- M 7494.00	MOMENT Z, KN- M -7494.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.23935E-03	HORIZONTAL Y, M 1.15209E-03	HORIZONTAL Z, M 2.42873E-04
ANGLE ROT. X, RAD 1.02531E-06	ANGLE ROT. Y, RAD 4.99194E-06	ANGLE ROT. Z, RAD -9.36460E-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	1.3939E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
2	1.4164E-03	1.1590E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
3	1.4388E-03	1.1544E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
4	1.4613E-03	1.1498E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
5	1.4838E-03	1.1452E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
6	1.5062E-03	1.1405E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
7	1.0848E-03	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
8	1.0624E-03	1.1452E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
9	1.0399E-03	1.1498E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
10	1.0174E-03	1.1544E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
11	9.9496E-04	1.1590E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
12	9.7249E-04	1.1636E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
MINIMUM	9.7249E-04	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.5062E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	6	1	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	4035.3	320.61	83.050	2.7154	-235.16	799.41
2	4099.6	308.46	80.555	2.7154	-230.77	776.44
3	4163.9	306.84	80.553	2.7154	-230.77	771.68
4	4228.2	305.22	80.550	2.7154	-230.77	766.92
5	4292.6	303.77	80.592	2.7154	-230.85	762.47
6	4356.9	313.94	83.447	2.7154	-235.88	778.06
7	3150.4	272.58	71.916	2.7154	-213.24	704.82
8	3086.1	253.86	67.095	2.7154	-204.17	672.09
9	3021.7	254.69	66.964	2.7154	-203.92	675.37
10	2957.4	256.07	66.967	2.7154	-203.92	679.69
11	2893.1	257.69	67.023	2.7154	-204.02	684.44
12	2828.8	277.26	71.288	2.7154	-212.05	722.38
MINIMUM	2828.8	253.86	66.964	2.7154	-235.88	672.09
Pile N.	12	8	9	1	6	8
MAXIMUM	4356.9	320.61	83.447	2.7154	-203.92	799.41
Pile N.	6	1	6	1	9	1

THE PILE COORDINATE SYSTEM (LOCAL AXES)

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 79 di 271

* PILE TOP DISPLACEMENTS *

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.3939E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
2	1.4164E-03	1.1590E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
3	1.4388E-03	1.1544E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
4	1.4613E-03	1.1498E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
5	1.4838E-03	1.1452E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
6	1.5062E-03	1.1405E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
7	1.0848E-03	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
8	1.0624E-03	1.1452E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
9	1.0399E-03	1.1498E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
10	1.0174E-03	1.1544E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
11	9.9496E-04	1.1590E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
12	9.7249E-04	1.1636E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
MINIMUM	9.7249E-04	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.5062E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	6	1	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	4035.3	320.61	83.050	2.7154	-235.16	799.41
2	4099.6	308.46	80.555	2.7154	-230.77	776.44
3	4163.9	306.84	80.553	2.7154	-230.77	771.68
4	4228.2	305.22	80.550	2.7154	-230.77	766.92
5	4292.6	303.77	80.592	2.7154	-230.85	762.47
6	4356.9	313.94	83.447	2.7154	-235.88	778.06
7	3150.4	272.58	71.916	2.7154	-213.24	704.82
8	3086.1	253.86	67.095	2.7154	-204.17	672.09
9	3021.7	254.69	66.964	2.7154	-203.92	675.37
10	2957.4	256.07	66.967	2.7154	-203.92	679.69
11	2893.1	257.69	67.023	2.7154	-204.02	684.44
12	2828.8	277.26	71.288	2.7154	-212.05	722.38
MINIMUM	2828.8	253.86	66.964	2.7154	-235.88	672.09
Pile N.	12	8	9	1	6	8
MAXIMUM	4356.9	320.61	83.447	2.7154	-203.92	799.41
Pile N.	6	1	6	1	9	1

PILE GROUP STRESS, KN/ M**2

1	4783.4
2	4749.9
3	4772.6
4	4795.3
5	4819.0
6	4904.6
7	3991.9
8	3853.6
9	3826.4
10	3802.4
11	3779.8
12	3859.4
MINIMUM	3779.8
Pile N.	11
MAXIMUM	4904.6
Pile N.	6

* 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	-1.6845E-05	-3.8961E-06	-799.41	-235.16	-176.71	-41.227	-67.704	-15.812	2283.5	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
2	-1.7050E-05	-3.9687E-06	-776.44	-230.77	-170.81	-39.925	-64.313	-15.091	2319.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.6974E-05	-3.9688E-06	-771.68	-230.77	-170.04	-39.926	-64.021	-15.091	2356.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.6897E-05	-3.9689E-06	-766.92	-230.77	-169.27	-39.926	-63.729	-15.092	2392.7	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.6814E-05	-3.9678E-06	-762.47	-230.85	-168.59	-39.951	-63.488	-15.105	2429.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.6424E-05	-3.8834E-06	-778.06	-235.88	-173.51	-41.436	-66.689	-15.926	2465.5	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
7	-1.7681E-05	-4.0969E-06	-704.82	-213.24	-151.99	-35.464	-54.453	-12.760	1782.7	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
8	-1.8449E-05	-4.2571E-06	-672.09	-204.17	-141.37	-32.819	-48.826	-11.390	1746.3	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 80 di 271

x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
9	-1.8550E-05	-4.2616E-06	-675.37	-203.92	-141.71	-32.740	-48.899	-11.351	1710.0	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
10	-1.8633E-05	-4.2615E-06	-679.69	-203.92	-142.36	-32.739	-49.123	-11.351	1673.6	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
11	-1.8709E-05	-4.2595E-06	-684.44	-204.02	-143.13	-32.770	-49.410	-11.366	1637.2	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
12	-1.8165E-05	-4.1186E-06	-722.38	-212.05	-153.98	-35.133	-54.861	-12.576	1600.8	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
Min.	-1.8709E-05	-4.2616E-06	-799.41	-235.88	-176.71	-41.436	-67.704	-15.926	1600.8	7.8500E+06	7.8500E+06
Pile N.	11	9	1	6	1	6	1	6	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	1.1636E-03	2.4518E-04	483.72	112.48	320.64	83.060	335.78	84.201	4783.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.1590E-03	2.4518E-04	475.10	110.81	308.49	80.564	322.38	81.263	4749.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.1544E-03	2.4518E-04	472.95	110.82	306.87	80.562	320.77	81.262	4772.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.1498E-03	2.4518E-04	470.80	110.82	305.25	80.559	319.15	81.261	4795.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.1452E-03	2.4518E-04	468.77	110.85	303.80	80.601	317.74	81.313	4819.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.1406E-03	2.4518E-04	473.79	112.74	313.97	83.457	329.26	84.671	4904.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.1406E-03	2.4057E-04	445.25	103.67	272.60	71.922	281.13	70.936	3991.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.1452E-03	2.4057E-04	430.43	99.664	253.88	67.101	257.38	64.673	3853.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.1498E-03	2.4057E-04	431.94	99.544	254.71	66.970	257.99	64.499	3826.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.1544E-03	2.4057E-04	433.90	99.544	256.09	66.972	259.30	64.499	3802.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.1590E-03	2.4057E-04	436.06	99.592	257.71	67.029	260.90	64.572	3779.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.1636E-03	2.4057E-04	453.22	103.17	277.28	71.293	284.97	70.121	3859.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.1636E-03	2.4518E-04	483.72	112.74	320.64	83.457	335.78	84.671	4904.6	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
43114.0	5110.00	0.00000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
0.00000	-3.00000	3.00000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

APPALDATTORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 81 di 271

VERTICAL , M HORIZONTAL Y, M HORIZONTAL Z, M
1.23935E-03 1.53699E-03 -4.43061E-09

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
6.53516E-12 -1.46626E-09 -8.08996E-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	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
2	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
3	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
4	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
5	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
6	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
7	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
8	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
9	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
10	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
11	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
12	1.0574E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
MINIMUM	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
Pile N.	1	1	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	4114.0	470.87	-5.1973E-05	1.7307E-05	-1.9905E-03	1253.8
2	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
3	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
4	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
5	4113.9	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
6	4113.9	470.87	-5.1973E-05	1.7307E-05	-1.9905E-03	1253.8
7	3071.6	408.18	1.7935E-05	1.7307E-05	-2.0773E-03	1141.7
8	3071.7	382.07	4.9408E-05	1.7307E-05	-2.1234E-03	1093.0
9	3071.7	381.73	4.9808E-05	1.7307E-05	-2.1240E-03	1092.3
10	3071.7	381.73	4.9808E-05	1.7307E-05	-2.1240E-03	1092.3
11	3071.7	382.07	4.9408E-05	1.7307E-05	-2.1234E-03	1093.0
12	3071.7	408.18	1.7935E-05	1.7307E-05	-2.0773E-03	1141.7
MINIMUM	3071.6	381.73	-5.1973E-05	1.7307E-05	-2.1240E-03	1092.3
Pile N.	7	9	1	1	9	9
MAXIMUM	4114.0	470.87	4.9808E-05	1.7307E-05	-1.9905E-03	1253.8
Pile N.	1	1	9	1	1	1

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	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
2	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
3	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
4	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
5	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
6	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
7	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
8	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
9	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
10	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
11	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
12	1.0574E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
MINIMUM	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05
Pile N.	1	1	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	4114.0	470.87	-5.1973E-05	1.7307E-05	-1.9905E-03	1253.8
2	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
3	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO V10103 001	REV. A	FOGLIO 82 di 271

4	4114.0	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
5	4113.9	456.07	-3.2589E-05	1.7307E-05	-2.0179E-03	1228.0
6	4113.9	470.87	-5.1973E-05	1.7307E-05	-1.9905E-03	1253.8
7	3071.6	408.18	1.7935E-05	1.7307E-05	-2.0773E-03	1141.7
8	3071.7	382.07	4.9408E-05	1.7307E-05	-2.1234E-03	1093.0
9	3071.7	381.73	4.9808E-05	1.7307E-05	-2.1240E-03	1092.3
10	3071.7	381.73	4.9808E-05	1.7307E-05	-2.1240E-03	1092.3
11	3071.7	382.07	4.9408E-05	1.7307E-05	-2.1234E-03	1093.0
12	3071.7	408.18	1.7935E-05	1.7307E-05	-2.0773E-03	1141.7
MINIMUM	3071.6	381.73	-5.1973E-05	1.7307E-05	-2.1240E-03	1092.3
Pile N.	7	9	1	1	9	9
MAXIMUM	4114.0	470.87	4.9808E-05	1.7307E-05	-1.9905E-03	1253.8
Pile N.	1	1	9	1	1	1

PILE GROUP STRESS, KN/ M**2

1	6089.5
2	6012.2
3	6012.2
4	6012.2
5	6012.1
6	6089.5
7	5163.3
8	5017.1
9	5015.2
10	5015.2
11	5017.1
12	5163.3
MINIMUM	5015.2
Pile N.	9
MAXIMUM	6089.5
Pile N.	1

* 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	-2.3170E-05	-4.4159E-09	-1253.8	-2.0421E-03	-246.18	-5.1894E-05	-94.507	-2.6209E-04	2328.1	7.8500E+06	7.8500E+06
x(M)	8.5500	0.0000	0.0000	1.3500	7.3500	0.0000	8.7000	5.5500	15.000	0.0000	0.0000
2	-2.3596E-05	-4.4159E-09	-1228.0	-2.0467E-03	-238.80	-3.2510E-05	-90.298	-2.5172E-04	2328.0	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.2000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
3	-2.3596E-05	-4.4159E-09	-1228.0	-2.0467E-03	-238.80	-3.2510E-05	-90.298	-2.5172E-04	2328.0	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.2000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
4	-2.3596E-05	-4.4159E-09	-1228.0	-2.0467E-03	-238.80	-3.2510E-05	-90.298	-2.5172E-04	2328.0	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.2000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
5	-2.3596E-05	-4.4159E-09	-1228.0	-2.0467E-03	-238.80	-3.2510E-05	-90.298	-2.5172E-04	2328.0	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.2000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
6	-2.3170E-05	-4.4159E-09	-1253.8	-2.0421E-03	-246.18	-5.1894E-05	-94.507	-2.6209E-04	2328.0	7.8500E+06	7.8500E+06
x(M)	8.5500	0.0000	0.0000	1.3500	7.3500	0.0000	8.7000	5.5500	15.000	0.0000	0.0000
7	-2.5016E-05	-4.4453E-09	-1141.7	-2.0773E-03	-213.24	-2.3360E-05	-76.253	-2.2431E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.0000	0.0000	0.0000	0.0000	7.5000	12.000	9.1500	5.5500	15.000	0.0000	0.0000
8	-2.5914E-05	-4.4453E-09	-1093.0	-2.1234E-03	-198.89	-2.2904E-05	-68.805	-2.0195E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
9	-2.5928E-05	-4.4453E-09	-1092.3	-2.1240E-03	-198.70	-2.2898E-05	-68.710	-2.0165E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
10	-2.5928E-05	-4.4453E-09	-1092.3	-2.1240E-03	-198.70	-2.2898E-05	-68.710	-2.0165E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
11	-2.5914E-05	-4.4453E-09	-1093.0	-2.1234E-03	-198.89	-2.2904E-05	-68.805	-2.0195E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
12	-2.5016E-05	-4.4453E-09	-1141.7	-2.0773E-03	-213.24	-2.3360E-05	-76.253	-2.2431E-04	1738.2	7.8500E+06	7.8500E+06
x(M)	9.0000	0.0000	0.0000	0.0000	7.5000	12.000	9.1500	5.5500	15.000	0.0000	0.0000
Min.	-2.5928E-05	-4.4453E-09	-1253.8	-2.1240E-03	-246.18	-5.1894E-05	-94.507	-2.6209E-04	1738.2	7.8500E+06	7.8500E+06
Pile N.	9	7	1	9	1	1	1	1	7	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	1.5370E-03	4.9027E-11	671.06	6.1284E-05	470.92	4.7653E-04	485.29	1.7768E-04	6089.5	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.200	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
2	1.5370E-03	5.0509E-11	661.70	6.0975E-05	456.12	4.6633E-04	468.37	1.7087E-04	6012.2	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
3	1.5370E-03	5.0509E-11	661.70	6.0975E-05	456.12	4.6633E-04	468.37	1.7087E-04	6012.2	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
4	1.5370E-03	5.0509E-11	661.70	6.0975E-05	456.12	4.6633E-04	468.37	1.7087E-04	6012.2	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
5	1.5370E-03	5.0509E-11	661.70	6.0975E-05	456.12	4.6633E-04	468.37	1.7087E-04	6012.1	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
6	1.5370E-03	4.9027E-11	671.06	6.1284E-05	470.92	4.7653E-04	485.29	1.7768E-04	6089.5	7.8500E+06	7.8500E+06

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA												
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	<table border="0"> <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 001</td> <td>A</td> <td>83 di 271</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	83 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF3A	02	E ZZ CL	VI0103 001	A	83 di 271								

x(M)	0.0000	7.6500	5.8500	10.200	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
7	1.5370E-03	5.6220E-11	626.49	6.0454E-05	408.22	4.3355E-04	410.29	1.4977E-04	5163.3	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.650	0.0000	6.4500	5.5500	7.9500	0.0000	0.0000	0.0000
8	1.5370E-03	5.9918E-11	605.34	6.0006E-05	382.10	4.1480E-04	376.96	1.3821E-04	5017.1	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
9	1.5370E-03	5.9969E-11	605.04	6.0002E-05	381.76	4.1455E-04	376.52	1.3806E-04	5015.2	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
10	1.5370E-03	5.9969E-11	605.04	6.0002E-05	381.76	4.1455E-04	376.52	1.3806E-04	5015.2	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
11	1.5370E-03	5.9918E-11	605.34	6.0006E-05	382.10	4.1480E-04	376.96	1.3821E-04	5017.1	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
12	1.5370E-03	5.6220E-11	626.49	6.0454E-05	408.22	4.3355E-04	410.29	1.4977E-04	5163.3	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.650	0.0000	6.4500	5.5500	7.9500	0.0000	0.0000	0.0000
Max.	1.5370E-03	5.9969E-11	671.06	6.1284E-05	470.92	4.7653E-04	485.29	1.7768E-04	6089.5	7.8500E+06	7.8500E+06
Pile N.	1	9	1	1	1	1	1	1	1	1	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	0.8656	1.0000
2	0.8048	1.0000
3	0.8048	1.0000
4	0.8048	1.0000
5	0.8049	1.0000
6	0.8661	1.0000
7	0.6223	1.0000
8	0.5317	1.0000
9	0.5305	1.0000
10	0.5305	1.0000
11	0.5316	1.0000
12	0.6216	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
50281.0	6136.00	305.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1369.00	9258.00	-9258.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.44796E-03	1.99402E-03	9.31230E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-4.97282E-06	4.97735E-06	-1.45737E-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	1.7199E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
2	1.7423E-03	1.9604E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
3	1.7647E-03	1.9828E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
4	1.7871E-03	2.0052E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
5	1.8095E-03	2.0276E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
6	1.8319E-03	2.0500E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
7	1.1761E-03	2.0500E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
8	1.1536E-03	2.0276E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
9	1.1313E-03	2.0052E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
10	1.1089E-03	1.9828E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
11	1.0865E-03	1.9604E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
12	1.0641E-03	1.9381E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
MINIMUM	1.0641E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	12	1	1	1	1	1

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 84 di 271

MAXIMUM 1.8319E-03 2.0500E-03 1.0431E-04 -4.9728E-06 4.9773E-06 -1.4574E-04
Pile N. 6 6 7 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	4968.6	547.15	24.379	-13.170	-63.803	1382.3
2	5032.7	537.06	23.598	-13.170	-62.445	1374.4
3	5096.8	544.81	23.594	-13.170	-62.435	1397.4
4	5161.0	552.55	23.589	-13.170	-62.426	1420.3
5	5225.1	560.32	23.586	-13.170	-62.419	1443.3
6	5289.2	587.23	24.363	-13.170	-63.769	1499.4
7	3411.6	507.20	28.179	-13.170	-79.671	1356.6
8	3347.5	466.99	26.384	-13.170	-76.319	1273.5
9	3283.3	459.97	26.365	-13.170	-76.283	1251.9
10	3219.2	453.42	26.370	-13.170	-76.295	1231.1
11	3155.1	447.27	26.399	-13.170	-76.351	1211.2
12	3091.0	472.04	28.194	-13.170	-79.706	1248.4
MINIMUM	3091.0	447.27	23.586	-13.170	-79.706	1211.2
Pile N.	12	11	5	1	12	11
MAXIMUM	5289.2	587.23	28.194	-13.170	-62.419	1499.4
Pile N.	6	6	12	1	5	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	1.7199E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
2	1.7423E-03	1.9604E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
3	1.7647E-03	1.9828E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
4	1.7871E-03	2.0052E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
5	1.8095E-03	2.0276E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
6	1.8319E-03	2.0500E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
7	1.1761E-03	2.0500E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
8	1.1536E-03	2.0276E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
9	1.1313E-03	2.0052E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
10	1.1089E-03	1.9828E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
11	1.0865E-03	1.9604E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
12	1.0641E-03	1.9381E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
MINIMUM	1.0641E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8319E-03	2.0500E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	6	6	7	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	4968.6	547.15	24.379	-13.170	-63.803	1382.3
2	5032.7	537.06	23.598	-13.170	-62.445	1374.4
3	5096.8	544.81	23.594	-13.170	-62.435	1397.4
4	5161.0	552.55	23.589	-13.170	-62.426	1420.3
5	5225.1	560.32	23.586	-13.170	-62.419	1443.3
6	5289.2	587.23	24.363	-13.170	-63.769	1499.4
7	3411.6	507.20	28.179	-13.170	-79.671	1356.6
8	3347.5	466.99	26.384	-13.170	-76.319	1273.5
9	3283.3	459.97	26.365	-13.170	-76.283	1251.9
10	3219.2	453.42	26.370	-13.170	-76.295	1231.1
11	3155.1	447.27	26.399	-13.170	-76.351	1211.2
12	3091.0	472.04	28.194	-13.170	-79.706	1248.4
MINIMUM	3091.0	447.27	23.586	-13.170	-79.706	1211.2
Pile N.	12	11	5	1	12	11
MAXIMUM	5289.2	587.23	28.194	-13.170	-62.419	1499.4
Pile N.	6	6	12	1	5	6

PILE GROUP	STRESS, KN/ M**2
1	6963.0
2	6975.4
3	7080.5
4	7185.6
5	7290.7
6	7495.4
7	6007.4
8	5721.6
9	5620.6
10	5522.2
11	5426.2
12	5502.1

APPALDATORE: 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 SPALLA A E SPALLA B			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
			IF3A	02	E ZZ CL	VI0103 001	A	85 di 271

MINIMUM 5426.2
Pile N. 11
MAXIMUM 7495.4
Pile N. 6

* EFFECTS FOR LATERALLY LOADED PILE *

* MINIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS KN/ M**2	FLEX. RIG.	
	y-DIR M	z-DIR M	z-DIR KN- M	y-DIR KN- M	y-DIR KN	z-DIR KN	y-DIR KN/ M	z-DIR KN/ M		z-DIR KN- M**2	y-DIR KN- M**2
1	-2.8215E-05	-1.2200E-06	-1382.3	-63.803	-298.40	-12.939	-114.64	-4.9679	2811.6	7.8500E+06	7.8500E+06
x(M)	8.5500	8.5500	0.0000	0.0000	7.3500	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
2	-2.9052E-05	-1.2415E-06	-1374.4	-62.445	-293.47	-12.552	-110.80	-4.7437	2847.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
3	-2.9417E-05	-1.2412E-06	-1397.4	-62.435	-297.19	-12.550	-112.21	-4.7429	2884.2	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
4	-2.9783E-05	-1.2409E-06	-1420.3	-62.426	-300.91	-12.547	-113.63	-4.7421	2920.5	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
5	-3.0148E-05	-1.2406E-06	-1443.3	-62.419	-304.64	-12.545	-115.05	-4.7416	2956.8	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
6	-2.9992E-05	-1.2182E-06	-1499.4	-63.769	-317.71	-12.930	-122.05	-4.9648	2993.1	7.8500E+06	7.8500E+06
x(M)	8.5500	8.5500	0.0000	0.0000	7.3500	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
7	-3.2389E-05	-1.7087E-06	-1356.6	-79.671	-275.71	-14.576	-98.415	-5.2184	1930.6	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.5000	9.1500	9.1500	15.000	0.0000	0.0000
8	-3.3129E-05	-1.7706E-06	-1273.5	-76.319	-253.92	-13.596	-87.723	-4.7064	1894.3	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
9	-3.2746E-05	-1.7719E-06	-1251.9	-76.283	-250.56	-13.584	-86.517	-4.6999	1858.0	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
10	-3.2349E-05	-1.7722E-06	-1231.1	-76.295	-247.46	-13.586	-85.438	-4.7005	1821.7	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
11	-3.1940E-05	-1.7716E-06	-1211.2	-76.351	-244.59	-13.602	-84.472	-4.7077	1785.4	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
12	-3.0477E-05	-1.7108E-06	-1248.4	-79.706	-258.98	-14.582	-92.350	-5.2180	1749.1	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.5000	9.1500	9.1500	15.000	0.0000	0.0000
Min.	-3.3129E-05	-1.7722E-06	-1499.4	-79.706	-317.71	-14.582	-122.05	-5.2184	1749.1	7.8500E+06	7.8500E+06
Pile N.	8	10	6	12	6	12	6	7	12	1	1

* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS KN/ M**2	FLEX. RIG.	
	y-DIR M	z-DIR M	z-DIR KN- M	y-DIR KN- M	y-DIR KN	z-DIR KN	y-DIR KN/ M	z-DIR KN/ M		z-DIR KN- M**2	y-DIR KN- M**2
1	1.9381E-03	8.1934E-05	814.45	35.283	547.21	24.382	567.14	25.054	6963.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.9605E-03	8.1934E-05	813.79	34.789	537.12	23.601	551.46	24.020	6975.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.9828E-03	8.1934E-05	824.05	34.781	544.87	23.597	555.58	23.864	7080.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	2.0052E-03	8.1934E-05	834.31	34.773	552.62	23.592	559.66	23.711	7185.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	2.0276E-03	8.1934E-05	844.58	34.765	560.39	23.589	563.74	23.562	7290.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	2.0500E-03	8.1934E-05	866.64	35.247	587.30	24.367	588.52	24.270	7495.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	2.0500E-03	1.0431E-04	809.82	42.822	507.24	28.181	497.32	27.136	6007.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	2.0276E-03	1.0431E-04	773.29	41.364	467.03	26.387	453.30	25.076	5721.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	2.0052E-03	1.0431E-04	763.50	41.350	460.01	26.367	449.49	25.206	5620.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.9828E-03	1.0431E-04	754.11	41.358	453.46	26.373	446.22	25.370	5522.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.9605E-03	1.0431E-04	745.06	41.387	447.31	26.402	443.44	25.567	5426.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.9381E-03	1.0431E-04	761.39	42.852	472.08	28.196	479.17	28.010	5502.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	2.0500E-03	1.0431E-04	866.64	42.852	587.30	28.196	588.52	28.010	7495.4	7.8500E+06	7.8500E+06
Pile N.	6	7	6	12	6	12	6	12	6	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	0.8621	1.0000
2	0.8016	1.0000

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 86 di 271

3	0.8016	1.0000
4	0.8016	1.0000
5	0.8020	1.0000
6	0.8661	1.0000
7	0.6266	1.0000
8	0.5324	1.0000
9	0.5307	1.0000
10	0.5307	1.0000
11	0.5318	1.0000
12	0.6211	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 30757.0	HOR. LOAD Y, KN 3431.00	HOR. LOAD Z, KN 540.000
MOMENT X, KN- M 240.000	MOMENT Y, KN- M 7496.00	MOMENT Z, KN- M -7496.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 8.79684E-04	HORIZONTAL Y, M 1.15060E-03	HORIZONTAL Z, M 1.49973E-04
ANGLE ROT. X, RAD 5.65930E-07	ANGLE ROT. Y, RAD 4.46057E-06	ANGLE ROT. Z, RAD -9.35997E-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	1.0401E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
2	1.0602E-03	1.1544E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
3	1.0803E-03	1.1519E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
4	1.1003E-03	1.1493E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
5	1.1204E-03	1.1468E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
6	1.1405E-03	1.1442E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
7	7.1927E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
8	6.9919E-04	1.1468E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
9	6.7912E-04	1.1493E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
10	6.5905E-04	1.1519E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
11	6.3898E-04	1.1544E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
12	6.1890E-04	1.1570E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
MINIMUM	6.1890E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1405E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	6	1	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	3022.4	319.50	49.956	1.4988	-139.09	794.42
2	3079.8	308.09	48.436	1.4988	-136.42	773.65
3	3137.3	307.19	48.435	1.4988	-136.42	771.02
4	3194.8	306.28	48.433	1.4988	-136.42	768.38
5	3252.2	305.45	48.442	1.4988	-136.44	765.87
6	3309.7	315.51	50.046	1.4988	-139.25	782.15
7	2103.8	272.54	42.924	1.4988	-125.41	705.99
8	2046.3	254.28	40.167	1.4988	-120.23	673.27
9	1988.9	254.69	40.116	1.4988	-120.13	674.98
10	1931.4	255.46	40.117	1.4988	-120.13	677.36
11	1873.9	256.46	40.152	1.4988	-120.20	680.19
12	1816.5	275.56	42.777	1.4988	-125.13	716.44
MINIMUM	1816.5	254.28	40.116	1.4988	-139.25	673.27
Pile N.	12	8	9	1	6	8
MAXIMUM	3309.7	319.50	50.046	1.4988	-120.13	794.42
Pile N.	6	1	6	1	9	1

THE PILE COORDINATE SYSTEM (LOCAL AXES)

* PILE TOP DISPLACEMENTS *

APPALDATORE: 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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 87 di 271

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0401E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
2	1.0602E-03	1.1544E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
3	1.0803E-03	1.1519E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
4	1.1003E-03	1.1493E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
5	1.1204E-03	1.1468E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
6	1.1405E-03	1.1442E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
7	7.1927E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
8	6.9919E-04	1.1468E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
9	6.7912E-04	1.1493E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
10	6.5905E-04	1.1519E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
11	6.3898E-04	1.1544E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
12	6.1890E-04	1.1570E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
MINIMUM	6.1890E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1405E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	6	1	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	3022.4	319.50	49.956	1.4988	-139.09	794.42
2	3079.8	308.09	48.436	1.4988	-136.42	773.65
3	3137.3	307.19	48.435	1.4988	-136.42	771.02
4	3194.8	306.28	48.433	1.4988	-136.42	768.38
5	3252.2	305.45	48.442	1.4988	-136.44	765.87
6	3309.7	315.51	50.046	1.4988	-139.25	782.15
7	2103.8	272.54	42.924	1.4988	-125.41	705.99
8	2046.3	254.28	40.167	1.4988	-120.23	673.27
9	1988.9	254.69	40.116	1.4988	-120.13	674.98
10	1931.4	255.46	40.117	1.4988	-120.13	677.36
11	1873.9	256.46	40.152	1.4988	-120.20	680.19
12	1816.5	275.56	42.777	1.4988	-125.13	716.44
MINIMUM	1816.5	254.28	40.116	1.4988	-139.25	673.27
Pile N.	12	8	9	1	6	8
MAXIMUM	3309.7	319.50	50.046	1.4988	-120.13	794.42
Pile N.	6	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4129.8
2	4099.6
3	4124.3
4	4149.1
5	4174.2
6	4256.3
7	3341.6
8	3209.8
9	3182.2
10	3156.8
11	3132.6
12	3209.7
MINIMUM	3132.6
Pile N.	11
MAXIMUM	4256.3
Pile N.	6

* 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	-1.6703E-05	-2.3632E-06	-794.42	-139.09	-176.01	-25.126	-67.563	-9.6424	1710.3	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
2	-1.6934E-05	-2.4095E-06	-773.65	-136.42	-170.51	-24.345	-64.287	-9.2110	1742.8	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.6892E-05	-2.4096E-06	-771.02	-136.42	-170.08	-24.346	-64.125	-9.2112	1775.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.6850E-05	-2.4096E-06	-768.38	-136.42	-169.66	-24.346	-63.964	-9.2113	1807.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.6806E-05	-2.4094E-06	-765.87	-136.44	-169.26	-24.352	-63.822	-9.2146	1840.4	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.6479E-05	-2.3602E-06	-782.15	-139.25	-174.12	-25.176	-66.919	-9.6696	1872.9	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-1.7784E-05	-2.5027E-06	-705.99	-125.41	-151.72	-21.472	-54.195	-7.7044	1190.5	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
8	-1.8480E-05	-2.5949E-06	-673.27	-120.23	-141.41	-19.963	-48.816	-6.9200	1158.0	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
9	-1.8537E-05	-2.5968E-06	-674.98	-120.13	-141.56	-19.931	-48.840	-6.9047	1125.5	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 88 di 271

x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
10	-1.8582E-05	-2.5967E-06	-677.36	-120.13	-141.91	-19.931	-48.963	-6.9046	1092.9	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
11	-1.8621E-05	-2.5954E-06	-680.19	-120.20	-142.40	-19.950	-49.150	-6.9142	1060.4	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.6500	7.6500	9.3000	9.3000	15.000	0.0000	0.0000
12	-1.8037E-05	-2.5079E-06	-716.44	-125.13	-153.04	-21.392	-54.544	-7.6600	1027.9	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.5000	9.0000	9.1500	15.000	0.0000	0.0000
Min.	-1.8621E-05	-2.5968E-06	-794.42	-139.25	-176.01	-25.176	-67.563	-9.6696	1027.9	7.8500E+06	7.8500E+06
Pile N.	11	9	1	6	1	6	1	6	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	1.1570E-03	1.5125E-04	481.18	68.487	319.52	49.960	334.64	50.865	4129.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.1544E-03	1.5125E-04	473.60	67.492	308.11	48.440	322.02	49.092	4099.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.1519E-03	1.5125E-04	472.41	67.493	307.21	48.439	321.13	49.092	4124.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.1493E-03	1.5125E-04	471.22	67.493	306.31	48.437	320.23	49.091	4149.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.1468E-03	1.5125E-04	470.08	67.500	305.47	48.447	319.41	49.103	4174.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.1442E-03	1.5125E-04	475.54	68.550	315.53	50.050	330.72	50.974	4256.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.1442E-03	1.4870E-04	445.71	62.982	272.55	42.927	280.60	42.505	3341.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.1468E-03	1.4870E-04	430.88	60.698	254.30	40.169	257.58	38.937	3209.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.1493E-03	1.4870E-04	431.66	60.651	254.70	40.118	257.84	38.868	3182.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.1519E-03	1.4870E-04	432.75	60.650	255.47	40.119	258.57	38.868	3156.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.1544E-03	1.4870E-04	434.03	60.680	256.47	40.154	259.59	38.913	3132.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.1570E-03	1.4870E-04	450.43	62.862	275.57	42.779	283.24	42.311	3209.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.1570E-03	1.5125E-04	481.18	68.550	319.52	50.050	334.64	50.974	4256.3	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	6	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	0.8660	1.0000
2	0.8052	1.0000
3	0.8052	1.0000
4	0.8052	1.0000
5	0.8052	1.0000
6	0.8661	1.0000
7	0.6218	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
49415.0	6181.00	153.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
74.0000	-1048.00	1048.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 89 di 271

1.42276E-03 1.84392E-03 3.78357E-05
ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
1.70506E-07 -2.86311E-07 -9.24162E-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	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
2	1.6326E-03	1.8451E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
3	1.6313E-03	1.8443E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
4	1.6301E-03	1.8435E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
5	1.6288E-03	1.8428E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
6	1.6275E-03	1.8420E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
7	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
8	1.2129E-03	1.8428E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
9	1.2142E-03	1.8435E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
10	1.2155E-03	1.8443E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
11	1.2167E-03	1.8451E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
12	1.2180E-03	1.8458E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
MINIMUM	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
Pile N.	7	6	7	1	1	1
MAXIMUM	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
Pile N.	1	1	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	4722.5	570.03	14.121	0.4516	-41.576	1526.5
2	4718.8	551.90	13.710	0.4516	-40.848	1494.6
3	4715.1	551.64	13.710	0.4516	-40.849	1493.8
4	4711.4	551.37	13.710	0.4516	-40.849	1493.0
5	4707.7	551.11	13.711	0.4516	-40.849	1492.3
6	4704.0	568.69	14.122	0.4516	-41.578	1522.6
7	3513.4	493.28	12.135	0.4516	-37.661	1387.5
8	3517.1	462.01	11.417	0.4516	-36.298	1329.4
9	3520.7	461.82	11.407	0.4516	-36.280	1329.4
10	3524.4	462.05	11.407	0.4516	-36.280	1330.1
11	3528.1	462.68	11.416	0.4516	-36.298	1331.6
12	3531.8	494.43	12.133	0.4516	-37.658	1391.1
MINIMUM	3513.4	461.82	11.407	0.4516	-41.578	1329.4
Pile N.	7	9	9	1	6	8
MAXIMUM	4722.5	570.03	14.122	0.4516	-36.280	1526.5
Pile N.	1	1	6	1	9	1

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	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
2	1.6326E-03	1.8451E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
3	1.6313E-03	1.8443E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
4	1.6301E-03	1.8435E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
5	1.6288E-03	1.8428E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
6	1.6275E-03	1.8420E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
7	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
8	1.2129E-03	1.8428E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
9	1.2142E-03	1.8435E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
10	1.2155E-03	1.8443E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
11	1.2167E-03	1.8451E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
12	1.2180E-03	1.8458E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
MINIMUM	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
Pile N.	7	6	7	1	1	1
MAXIMUM	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07	-9.2416E-05
Pile N.	1	1	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	4722.5	570.03	14.121	0.4516	-41.576	1526.5
2	4718.8	551.90	13.710	0.4516	-40.848	1494.6
3	4715.1	551.64	13.710	0.4516	-40.849	1493.8
4	4711.4	551.37	13.710	0.4516	-40.849	1493.0
5	4707.7	551.11	13.711	0.4516	-40.849	1492.3

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 90 di 271

6	4704.0	568.69	14.122	0.4516	-41.578	1522.6
7	3513.4	493.28	12.135	0.4516	-37.661	1387.5
8	3517.1	462.01	11.417	0.4516	-36.298	1329.4
9	3520.7	461.82	11.407	0.4516	-36.280	1329.4
10	3524.4	462.05	11.407	0.4516	-36.280	1330.1
11	3528.1	462.68	11.416	0.4516	-36.298	1331.6
12	3531.8	494.43	12.133	0.4516	-37.658	1391.1
MINIMUM	3513.4	461.82	11.407	0.4516	-41.578	1329.4
Pile N.	7	9	9	1	6	8
MAXIMUM	4722.5	570.03	14.122	0.4516	-36.280	1526.5
Pile N.	1	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	7253.7
2	7155.8
3	7151.3
4	7146.9
5	7142.5
6	7231.4
7	6152.2
8	5980.0
9	5981.9
10	5986.1
11	5992.6
12	6173.5
MINIMUM	5980.0
Pile N.	8
MAXIMUM	7253.7
Pile N.	1

* 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	-2.7916E-05	-6.3167E-07	-1526.5	-41.576	-296.79	-6.7459	-113.92	-2.5984	2672.4	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
2	-2.8426E-05	-6.4273E-07	-1494.6	-40.848	-287.72	-6.5395	-108.83	-2.4778	2670.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
3	-2.8413E-05	-6.4274E-07	-1493.8	-40.849	-287.59	-6.5395	-108.78	-2.4778	2668.2	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
4	-2.8401E-05	-6.4274E-07	-1493.0	-40.849	-287.47	-6.5395	-108.73	-2.4778	2666.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
5	-2.8388E-05	-6.4275E-07	-1492.3	-40.849	-287.34	-6.5396	-108.68	-2.4778	2664.0	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
6	-2.7854E-05	-6.3168E-07	-1522.6	-41.578	-296.15	-6.7465	-113.67	-2.5986	2661.9	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-3.0084E-05	-6.6845E-07	-1387.5	-37.661	-256.47	-5.7305	-91.761	-2.0527	1988.2	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
8	-3.1178E-05	-6.9140E-07	-1329.4	-36.298	-239.34	-5.3376	-82.824	-1.8496	1990.2	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.4500	15.000	0.0000	0.0000
9	-3.1209E-05	-6.9168E-07	-1329.4	-36.280	-239.21	-5.3325	-82.744	-1.8472	1992.3	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.4500	15.000	0.0000	0.0000
10	-3.1223E-05	-6.9168E-07	-1330.1	-36.280	-239.31	-5.3325	-82.781	-1.8472	1994.4	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.4500	15.000	0.0000	0.0000
11	-3.1220E-05	-6.9139E-07	-1331.6	-36.298	-239.66	-5.3375	-82.934	-1.8496	1996.5	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.4500	15.000	0.0000	0.0000
12	-3.0152E-05	-6.6846E-07	-1391.1	-37.658	-257.02	-5.7298	-91.954	-2.0524	1998.6	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
Min.	-3.1223E-05	-6.9168E-07	-1526.5	-41.578	-296.79	-6.7465	-113.92	-2.5986	1988.2	7.8500E+06	7.8500E+06
Pile N.	10	9	1	6	1	6	1	6	7	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	1.8458E-03	3.8219E-05	808.74	18.326	570.10	14.123	575.58	13.897	7253.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.8451E-03	3.8219E-05	797.05	18.064	551.97	13.712	555.35	13.417	7155.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.8443E-03	3.8219E-05	796.69	18.064	551.70	13.712	555.21	13.420	7151.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.8435E-03	3.8219E-05	796.34	18.064	551.44	13.712	555.07	13.423	7146.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.8428E-03	3.8219E-05	795.99	18.064	551.17	13.712	554.94	13.426	7142.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.8420E-03	3.8219E-05	806.97	18.328	568.76	14.124	574.88	13.913	7231.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.8420E-03	3.7452E-05	753.50	16.779	493.32	12.136	485.99	11.541	6152.2	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 91 di 271

x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.8428E-03	3.7452E-05	728.24	16.186	462.06	11.418	446.57	10.607	5980.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.8435E-03	3.7452E-05	728.20	16.178	461.87	11.408	446.15	10.592	5981.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.8443E-03	3.7452E-05	728.53	16.178	462.09	11.408	446.26	10.590	5986.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.8451E-03	3.7452E-05	729.21	16.186	462.73	11.418	446.90	10.599	5992.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.8458E-03	3.7452E-05	755.14	16.778	494.47	12.134	486.55	11.527	6173.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.8458E-03	3.8219E-05	808.74	18.328	570.10	14.124	575.58	13.913	7253.7	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	1	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	0.8635	1.0000
2	0.8029	1.0000
3	0.8029	1.0000
4	0.8029	1.0000
5	0.8032	1.0000
6	0.8661	1.0000
7	0.6249	1.0000
8	0.5321	1.0000
9	0.5306	1.0000
10	0.5306	1.0000
11	0.5317	1.0000
12	0.6213	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
46543.0	5546.00	700.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2936.00	29635.0	-29635.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.33916E-03	2.13877E-03	2.25906E-04
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-1.06075E-05	1.55222E-05	-2.43195E-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	1.7117E-03	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
2	1.7816E-03	2.0672E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
3	1.8514E-03	2.1149E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
4	1.9213E-03	2.1626E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
5	1.9911E-03	2.2104E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
6	2.0610E-03	2.2581E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
7	9.6660E-04	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
8	8.9675E-04	2.2104E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
9	8.2690E-04	2.1626E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
10	7.5705E-04	2.1149E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
11	6.8720E-04	2.0672E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
12	6.1735E-04	2.0194E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
MINIMUM	6.1735E-04	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0610E-03	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	6	6	7	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 92 di 271

* 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	4945.2	473.37	56.639	-28.092	-142.53	1025.7
2	5145.2	473.20	54.783	-28.092	-139.33	1046.4
3	5345.2	489.87	54.776	-28.092	-139.33	1095.8
4	5545.2	506.49	54.765	-28.092	-139.31	1145.1
5	5745.2	523.07	54.749	-28.092	-139.28	1194.2
6	5945.2	559.65	56.645	-28.092	-142.56	1277.5
7	2811.9	479.58	64.120	-28.092	-175.29	1135.6
8	2611.9	430.74	59.875	-28.092	-167.40	1027.6
9	2412.0	416.19	59.833	-28.092	-167.32	982.22
10	2212.0	402.10	59.850	-28.092	-167.34	937.68
11	2012.0	388.34	59.911	-28.092	-167.45	893.68
12	1812.0	403.41	64.053	-28.092	-175.14	902.12
MINIMUM	1812.0	388.34	54.749	-28.092	-175.29	893.68
Pile N.	12	11	5	1	7	11
MAXIMUM	5945.2	559.65	64.120	-28.092	-139.28	1277.5
Pile N.	6	6	7	1	5	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	1.7117E-03	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
2	1.7816E-03	2.0672E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
3	1.8514E-03	2.1149E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
4	1.9213E-03	2.1626E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
5	1.9911E-03	2.2104E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
6	2.0610E-03	2.2581E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
7	9.6600E-04	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
8	8.9675E-04	2.2104E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
9	8.2690E-04	2.1626E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
10	7.5705E-04	2.1149E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
11	6.8720E-04	2.0672E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
12	6.1735E-04	2.0194E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
MINIMUM	6.1735E-04	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0610E-03	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	6	6	7	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	4945.2	473.37	56.639	-28.092	-142.53	1025.7
2	5145.2	473.20	54.783	-28.092	-139.33	1046.4
3	5345.2	489.87	54.776	-28.092	-139.33	1095.8
4	5545.2	506.49	54.765	-28.092	-139.31	1145.1
5	5745.2	523.07	54.749	-28.092	-139.28	1194.2
6	5945.2	559.65	56.645	-28.092	-142.56	1277.5
7	2811.9	479.58	64.120	-28.092	-175.29	1135.6
8	2611.9	430.74	59.875	-28.092	-167.40	1027.6
9	2412.0	416.19	59.833	-28.092	-167.32	982.22
10	2212.0	402.10	59.850	-28.092	-167.34	937.68
11	2012.0	388.34	59.911	-28.092	-167.45	893.68
12	1812.0	403.41	64.053	-28.092	-175.14	902.12
MINIMUM	1812.0	388.34	54.749	-28.092	-175.29	893.68
Pile N.	12	11	5	1	7	11
MAXIMUM	5945.2	559.65	64.120	-28.092	-139.28	1277.5
Pile N.	6	6	7	1	5	6

PILE GROUP STRESS, KN/ M**2

1	5905.1
2	6078.6
3	6338.8
4	6598.7
5	6858.1
6	7220.7
7	5038.2
8	4601.4
9	4354.0
10	4109.2
11	3866.2
12	3782.3
MINIMUM	3782.3
Pile N.	12

APPALTA TORE: Consorzio Soci		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 93 di 271

MAXIMUM 7220.7
Pile N. 6

* 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	-2.7332E-05	-2.9365E-06	-1025.7	-142.53	-287.37	-30.996	-109.96	-11.901	2798.4	7.8500E+06	7.8500E+06
X(M)	8.5500	8.5500	0.0000	0.0000	7.2000	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
2	-2.8656E-05	-2.9855E-06	-1046.4	-139.33	-286.48	-30.099	-108.01	-11.356	2911.6	7.8500E+06	7.8500E+06
X(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
3	-2.9443E-05	-2.9857E-06	-1095.8	-139.33	-294.43	-30.101	-111.04	-11.356	3024.8	7.8500E+06	7.8500E+06
X(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
4	-3.0225E-05	-2.9855E-06	-1145.1	-139.31	-302.34	-30.099	-114.05	-11.356	3137.9	7.8500E+06	7.8500E+06
X(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
5	-3.0989E-05	-2.9838E-06	-1194.2	-139.28	-310.30	-30.091	-117.04	-11.354	3251.1	7.8500E+06	7.8500E+06
X(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
6	-3.1164E-05	-2.9313E-06	-1277.5	-142.56	-328.66	-31.010	-126.04	-11.916	3364.3	7.8500E+06	7.8500E+06
X(M)	8.5500	8.5500	0.0000	0.0000	7.2000	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
7	-3.3686E-05	-3.9966E-06	-1135.6	-175.29	-285.67	-34.160	-101.99	-12.215	1591.2	7.8500E+06	7.8500E+06
X(M)	8.5000	8.8500	0.0000	0.0000	7.5000	7.5000	9.0000	9.1500	15.000	0.0000	0.0000
8	-3.4096E-05	-4.1433E-06	-1027.6	-167.40	-259.34	-31.810	-89.476	-11.000	1478.1	7.8500E+06	7.8500E+06
X(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.5000	9.1500	9.3000	15.000	0.0000	0.0000
9	-3.3271E-05	-4.1480E-06	-982.22	-167.32	-252.49	-31.779	-87.035	-10.982	1364.9	7.8500E+06	7.8500E+06
X(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
10	-3.2412E-05	-4.1484E-06	-937.68	-167.34	-245.92	-31.782	-84.745	-10.983	1251.7	7.8500E+06	7.8500E+06
X(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
11	-3.1530E-05	-4.1458E-06	-893.68	-167.45	-239.53	-31.810	-82.555	-10.997	1138.6	7.8500E+06	7.8500E+06
X(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
12	-2.9585E-05	-4.0048E-06	-902.12	-175.14	-249.26	-34.094	-88.871	-12.177	1025.4	7.8500E+06	7.8500E+06
X(M)	8.8500	8.8500	0.0000	0.0000	7.5000	7.5000	9.0000	9.1500	15.000	0.0000	0.0000
Min.	-3.4096E-05	-4.1484E-06	-1277.5	-175.29	-328.66	-34.160	-126.04	-12.215	1025.4	7.8500E+06	7.8500E+06
Pile N.	8	10	6	7	6	7	6	7	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	2.0194E-03	2.0204E-04	786.71	84.654	473.42	56.646	511.14	59.211	5905.1	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	2.0672E-03	2.0204E-04	797.82	83.522	473.25	54.789	509.89	57.137	6078.6	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	2.1149E-03	2.0204E-04	819.82	83.523	489.93	54.783	526.61	57.135	6338.8	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	2.1626E-03	2.0204E-04	841.70	83.513	506.56	54.773	541.40	56.930	6598.7	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	2.2104E-03	2.0204E-04	863.22	83.477	523.13	54.757	550.39	56.145	6858.1	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	2.2581E-03	2.0204E-04	897.95	84.611	559.72	56.653	580.28	57.469	7220.7	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	2.2581E-03	2.4977E-04	841.64	100.21	479.61	64.125	490.52	62.875	5038.2	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	2.2104E-03	2.4977E-04	792.79	96.840	430.76	59.879	442.17	58.422	4601.4	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	2.1626E-03	2.4977E-04	772.55	96.817	416.21	59.837	434.30	59.157	4354.0	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	2.1149E-03	2.4977E-04	752.57	96.833	402.12	59.854	423.29	59.497	4109.2	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	2.0672E-03	2.4977E-04	732.77	96.877	388.35	59.914	410.29	59.568	3866.2	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	2.0194E-03	2.4977E-04	736.62	100.18	403.43	64.056	432.16	64.814	3782.3	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	2.2581E-03	2.4977E-04	897.95	100.21	559.72	64.125	580.28	64.814	7220.7	7.8500E+06	7.8500E+06
Pile N.	6	7	6	7	6	7	6	12	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 94 di 271

5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 43114.0	HOR. LOAD Y, KN 5110.00	HOR. LOAD Z, KN 0.00000
MOMENT X, KN- M 0.00000	MOMENT Y, KN- M 7494.00	MOMENT Z, KN- M -7494.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.23935E-03	HORIZONTAL Y, M 1.65571E-03	HORIZONTAL Z, M 1.10677E-05
ANGLE ROT. X,RAD -1.64179E-08	ANGLE ROT. Y,RAD 3.66272E-06	ANGLE ROT. Z,RAD -1.20196E-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	1.4686E-03	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
2	1.4851E-03	1.6556E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
3	1.5016E-03	1.6557E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
4	1.5180E-03	1.6557E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
5	1.5345E-03	1.6558E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
6	1.5510E-03	1.6559E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
7	1.0101E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
8	9.9364E-04	1.6558E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
9	9.7715E-04	1.6557E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
10	9.6067E-04	1.6557E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
11	9.4419E-04	1.6556E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
12	9.2771E-04	1.6555E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
MINIMUM	9.2771E-04	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5510E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	6	6	7	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	4249.1	472.30	0.1295	-0.043480	4.9720	1200.7
2	4296.3	456.99	0.081066	-0.043480	5.0405	1174.2
3	4343.5	457.00	0.080994	-0.043480	5.0404	1174.3
4	4390.7	457.01	0.080923	-0.043480	5.0403	1174.4
5	4437.9	457.03	0.080852	-0.043480	5.0402	1174.5
6	4485.1	472.37	0.1292	-0.043480	4.9714	1201.1
7	2936.5	407.67	-0.044510	-0.043480	5.1891	1085.8
8	2889.3	380.70	-0.1231	-0.043480	5.3045	1035.8
9	2842.1	380.34	-0.1240	-0.043480	5.3061	1035.0
10	2795.0	380.33	-0.1239	-0.043480	5.3062	1035.0
11	2747.8	380.67	-0.1229	-0.043480	5.3049	1035.6
12	2700.6	407.60	-0.044174	-0.043480	5.1897	1085.4
MINIMUM	2700.6	380.33	-0.1240	-0.043480	4.9714	1035.0
Pile N.	12	10	9	1	6	9
MAXIMUM	4485.1	472.37	0.1295	-0.043480	5.3062	1201.1
Pile N.	6	6	1	1	10	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
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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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 95 di 271

*****	*****	*****	*****	*****	*****	*****
1	1.4686E-03	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
2	1.4851E-03	1.6556E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
3	1.5016E-03	1.6557E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
4	1.5180E-03	1.6557E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
5	1.5345E-03	1.6558E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
6	1.5510E-03	1.6559E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
7	1.0101E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
8	9.9364E-04	1.6558E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
9	9.7715E-04	1.6557E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
10	9.6067E-04	1.6557E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
11	9.4419E-04	1.6556E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
12	9.2771E-04	1.6555E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
MINIMUM	9.2771E-04	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5510E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	6	6	7	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	4249.1	472.30	0.1295	-0.043480	4.9720	1200.7
2	4296.3	456.99	0.081066	-0.043480	5.0405	1174.2
3	4343.5	457.00	0.080994	-0.043480	5.0404	1174.3
4	4390.7	457.01	0.080923	-0.043480	5.0403	1174.4
5	4437.9	457.03	0.080852	-0.043480	5.0402	1174.5
6	4485.1	472.37	0.1292	-0.043480	4.9714	1201.1
7	2936.5	407.67	-0.044510	-0.043480	5.1891	1085.8
8	2889.3	380.70	-0.1231	-0.043480	5.3045	1035.8
9	2842.1	380.34	-0.1240	-0.043480	5.3061	1035.0
10	2795.0	380.33	-0.1239	-0.043480	5.3062	1035.0
11	2747.8	380.67	-0.1229	-0.043480	5.3049	1035.6
12	2700.6	407.60	-0.044174	-0.043480	5.1897	1085.4
MINIMUM	2700.6	380.33	-0.1240	-0.043480	4.9714	1035.0
Pile N.	12	10	9	1	6	9
MAXIMUM	4485.1	472.37	0.1295	-0.043480	5.3062	1201.1
Pile N.	6	6	1	1	10	6

PILE GROUP STRESS, KN/ M**2

*****	*****
1	6006.6
2	5953.9
3	5980.9
4	6007.8
5	6034.7
6	6141.2
7	4919.2
8	4742.4
9	4713.5
10	4686.6
11	4661.7
12	4784.6
MINIMUM	4661.7
Pile N.	11
MAXIMUM	6141.2
Pile N.	6

* 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	-2.4200E-05	-1.2248E-07	-1200.7	-0.1531	-256.14	-1.1904	-98.409	-0.4439	2404.5	7.8500E+06	7.8500E+06
x (M)	8.5500	7.6500	0.0000	10.200	7.3500	6.3000	8.7000	7.8000	15.000	0.0000	0.0000
2	-2.4608E-05	-1.2619E-07	-1174.2	-0.1523	-248.70	-1.1650	-93.911	-0.4269	2431.2	7.8500E+06	7.8500E+06
x (M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
3	-2.4610E-05	-1.2619E-07	-1174.3	-0.1523	-248.72	-1.1650	-93.917	-0.4269	2457.9	7.8500E+06	7.8500E+06
x (M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
4	-2.4611E-05	-1.2619E-07	-1174.4	-0.1523	-248.73	-1.1650	-93.923	-0.4269	2484.6	7.8500E+06	7.8500E+06
x (M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
5	-2.4613E-05	-1.2620E-07	-1174.5	-0.1523	-248.75	-1.1651	-93.929	-0.4269	2511.3	7.8500E+06	7.8500E+06
x (M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
6	-2.4208E-05	-1.2250E-07	-1201.1	-0.1531	-256.22	-1.1906	-98.442	-0.4439	2538.0	7.8500E+06	7.8500E+06
x (M)	8.5500	7.6500	0.0000	10.200	7.3500	6.3000	8.7000	7.8000	15.000	0.0000	0.0000
7	-2.6149E-05	-1.4042E-07	-1085.8	-0.1510	-222.30	-1.0830	-79.296	-0.3741	1661.7	7.8500E+06	7.8500E+06
x (M)	8.8500	7.8000	0.0000	10.650	7.5000	6.4500	9.1500	7.9500	15.000	0.0000	0.0000
8	-2.7060E-05	-1.4965E-07	-1035.8	-0.1499	-207.26	-1.0361	-71.583	-0.3452	1635.0	7.8500E+06	7.8500E+06
x (M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
9	-2.7068E-05	-1.4978E-07	-1035.0	-0.1499	-207.05	-1.0354	-71.482	-0.3448	1608.3	7.8500E+06	7.8500E+06
x (M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
10	-2.7066E-05	-1.4977E-07	-1035.0	-0.1499	-207.03	-1.0354	-71.477	-0.3448	1581.6	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 96 di 271

x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
11	-2.7054E-05	-1.4964E-07	-1035.6	-0.1499	-207.22	-1.0360	-71.568	-0.3452	1554.9	7.8500E+06	7.8500E+06
x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
12	-2.6140E-05	-1.4040E-07	-1085.4	-0.1510	-222.23	-1.0828	-79.268	-0.3740	1528.2	7.8500E+06	7.8500E+06
x(M)	8.8500	7.8000	0.0000	10.650	7.5000	6.4500	9.1500	7.9500	15.000	0.0000	0.0000
Min.	-2.7068E-05	-1.4978E-07	-1201.1	-0.1531	-256.22	-1.1906	-98.442	-0.4439	1528.2	7.8500E+06	7.8500E+06
Pile N.	9	9	6	6	6	6	6	6	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	1.6555E-03	1.1031E-05	699.03	5.1013	472.35	0.1293	492.37	0.6545	6006.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.3500	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
2	1.6556E-03	1.1031E-05	689.66	5.1127	457.03	0.080859	475.19	0.6286	5953.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.2000	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
3	1.6557E-03	1.1031E-05	689.69	5.1127	457.05	0.080785	475.21	0.6285	5980.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.2000	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
4	1.6557E-03	1.1031E-05	689.73	5.1127	457.06	0.080712	475.23	0.6285	6007.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.2000	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
5	1.6558E-03	1.1031E-05	689.77	5.1127	457.08	0.080639	475.25	0.6284	6034.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.2000	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
6	1.6559E-03	1.1031E-05	699.22	5.1012	472.42	0.1290	492.48	0.6543	6141.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.3500	0.0000	0.0000	5.5500	0.0000	0.0000	0.0000	0.0000
7	1.6559E-03	1.1105E-05	653.44	5.1891	407.70	0.058348	416.24	0.5605	4919.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	12.000	5.5500	0.0000	0.0000	0.0000	0.0000
8	1.6558E-03	1.1105E-05	631.37	5.3045	380.73	0.057206	382.30	0.5047	4742.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	0.0000	0.0000	0.0000	0.0000
9	1.6557E-03	1.1105E-05	631.04	5.3061	380.37	0.057187	381.83	0.5040	4713.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	0.0000	0.0000	0.0000	0.0000
10	1.6557E-03	1.1105E-05	631.00	5.3062	380.35	0.057185	381.81	0.5040	4686.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	0.0000	0.0000	0.0000	0.0000
11	1.6556E-03	1.1105E-05	631.27	5.3049	380.69	0.057198	382.24	0.5048	4661.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	0.0000	0.0000	0.0000	0.0000
12	1.6555E-03	1.1105E-05	653.26	5.1897	407.63	0.058337	416.14	0.5607	4784.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	12.000	5.5500	0.0000	0.0000	0.0000	0.0000
Max.	1.6559E-03	1.1105E-05	699.22	5.3062	472.42	0.1293	492.48	0.6545	6141.2	7.8500E+06	7.8500E+06
Pile N.	6	7	6	10	6	1	6	1	6	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	0.8660	1.0000
2	0.8052	1.0000
3	0.8052	1.0000
4	0.8052	1.0000
5	0.8052	1.0000
6	0.8661	1.0000
7	0.6218	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 49797.0	HOR. LOAD Y, KN 5773.00	HOR. LOAD Z, KN 117.000
MOMENT X, KN- M 3090.00	MOMENT Y, KN- M 5096.00	MOMENT Z, KN- M -5096.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.43387E-03	HORIZONTAL Y, M 1.81801E-03	HORIZONTAL Z, M 3.58051E-05
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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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 97 di 271

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
1.06450E-05 2.65931E-06 -1.18157E-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	1.6698E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
2	1.6818E-03	1.8899E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
3	1.6937E-03	1.8420E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
4	1.7057E-03	1.7941E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
5	1.7177E-03	1.7462E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
6	1.7296E-03	1.6983E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
7	1.1979E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
8	1.1860E-03	1.7462E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
9	1.1740E-03	1.7941E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
10	1.1620E-03	1.8420E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
11	1.1501E-03	1.8899E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
12	1.1381E-03	1.9378E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
MINIMUM	1.1381E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.7296E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	6	1	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	4825.2	576.01	18.800	28.192	-50.918	1506.5
2	4859.5	541.01	18.221	28.192	-49.912	1425.5
3	4893.8	524.36	18.227	28.192	-49.927	1376.3
4	4928.0	507.53	18.226	28.192	-49.927	1326.7
5	4962.3	490.71	18.226	28.192	-49.927	1277.1
6	4996.6	489.71	18.811	28.192	-50.949	1255.0
7	3474.3	422.96	1.1680	28.192	0.078991	1136.0
8	3440.0	409.39	1.0393	28.192	0.2985	1129.2
9	3405.7	423.27	1.0377	28.192	0.3014	1173.3
10	3371.5	437.54	1.0377	28.192	0.3015	1218.2
11	3337.2	452.04	1.0389	28.192	0.3001	1263.3
12	3302.9	498.47	1.1669	28.192	0.082436	1367.9
MINIMUM	3302.9	409.39	1.0377	28.192	-50.949	1129.2
Pile N.	12	8	9	1	6	8
MAXIMUM	4996.6	576.01	18.811	28.192	0.3015	1506.5
Pile N.	6	1	6	1	10	1

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	1.6698E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
2	1.6818E-03	1.8899E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
3	1.6937E-03	1.8420E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
4	1.7057E-03	1.7941E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
5	1.7177E-03	1.7462E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
6	1.7296E-03	1.6983E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
7	1.1979E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
8	1.1860E-03	1.7462E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
9	1.1740E-03	1.7941E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
10	1.1620E-03	1.8420E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
11	1.1501E-03	1.8899E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
12	1.1381E-03	1.9378E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
MINIMUM	1.1381E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.7296E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	6	1	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	4825.2	576.01	18.800	28.192	-50.918	1506.5
2	4859.5	541.01	18.221	28.192	-49.912	1425.5
3	4893.8	524.36	18.227	28.192	-49.927	1376.3
4	4928.0	507.53	18.226	28.192	-49.927	1326.7
5	4962.3	490.71	18.226	28.192	-49.927	1277.1
6	4996.6	489.71	18.811	28.192	-50.949	1255.0
7	3474.3	422.96	1.1680	28.192	0.078991	1136.0

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandataria Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA			RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
			IF3A	02	E ZZ CL	VI0103 001	A	98 di 271

8	3440.0	409.39	1.0393	28.192	0.2985	1129.2
9	3405.7	423.27	1.0377	28.192	0.3014	1173.3
10	3371.5	437.54	1.0377	28.192	0.3015	1218.2
11	3337.2	452.04	1.0389	28.192	0.3001	1263.3
12	3302.9	498.47	1.1669	28.192	0.082436	1367.9
MINIMUM	3302.9	409.39	1.0377	28.192	-50.949	1129.2
Pile N.	12	8	9	1	6	8
MAXIMUM	4996.6	576.01	18.811	28.192	0.3015	1506.5
Pile N.	6	1	6	1	10	1

PILE GROUP STRESS, KN/ M**2

*****	*****
1	7252.7
2	7029.0
3	6901.0
4	6771.7
5	6642.4
6	6595.5
7	5373.9
8	5334.1
9	5447.2
10	5562.3
11	5678.5
12	5972.8
MINIMUM	5334.1
Pile N.	8
MAXIMUM	7252.7
Pile N.	1

* EFFECTS FOR LATERALLY LOADED PILE *

* MINIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS	FLEX. RIG.	
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR		KN- M**2	KN- M**2
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.8812E-05	-9.1104E-07	-1506.5	-50.918	-305.74	-9.6969	-117.40	-3.7211	2730.5	7.8500E+06	7.8500E+06
X (M)	8.5500	8.5500	0.0000	0.0000	7.3500	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
2	-2.8548E-05	-9.2907E-07	-1425.5	-49.912	-288.71	-9.4068	-109.10	-3.5592	2749.9	7.8500E+06	7.8500E+06
X (M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
3	-2.7767E-05	-9.2960E-07	-1376.3	-49.927	-280.76	-9.4114	-106.08	-3.5607	2769.3	7.8500E+06	7.8500E+06
X (M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
4	-2.6969E-05	-9.2961E-07	-1326.7	-49.927	-272.66	-9.4115	-103.01	-3.5607	2788.7	7.8500E+06	7.8500E+06
X (M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
5	-2.6172E-05	-9.2962E-07	-1277.1	-49.927	-264.57	-9.4117	-99.938	-3.5608	2808.1	7.8500E+06	7.8500E+06
X (M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.3500	8.8500	8.8500	15.000	0.0000	0.0000
6	-2.4949E-05	-9.1229E-07	-1255.0	-50.949	-264.21	-9.7064	-101.50	-3.7252	2827.5	7.8500E+06	7.8500E+06
X (M)	8.5500	8.5500	0.0000	0.0000	7.3500	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
7	-2.6945E-05	-1.4982E-07	-1136.0	-0.1651	-229.20	-1.2316	-81.789	-0.4347	1966.0	7.8500E+06	7.8500E+06
X (M)	8.8500	8.5500	0.0000	11.250	7.5000	7.0500	9.1500	8.7000	15.000	0.0000	0.0000
8	-2.8750E-05	-1.5622E-07	-1129.2	-0.1585	-220.43	-1.1556	-76.165	-0.3938	1946.6	7.8500E+06	7.8500E+06
X (M)	9.0000	8.5500	0.0000	11.400	7.6500	7.2000	9.3000	8.8500	15.000	0.0000	0.0000
9	-2.9636E-05	-1.5629E-07	-1173.3	-0.1584	-226.94	-1.1545	-78.395	-0.3933	1927.2	7.8500E+06	7.8500E+06
X (M)	9.1500	8.5500	0.0000	11.400	7.6500	7.2000	9.3000	8.8500	15.000	0.0000	0.0000
10	-3.0511E-05	-1.5629E-07	-1218.2	-0.1584	-233.67	-1.1545	-80.729	-0.3933	1907.9	7.8500E+06	7.8500E+06
X (M)	9.1500	8.5500	0.0000	11.400	7.6500	7.2000	9.3000	8.8500	15.000	0.0000	0.0000
11	-3.1355E-05	-1.5610E-07	-1263.3	-0.1584	-240.53	-1.1549	-83.149	-0.3936	1888.5	7.8500E+06	7.8500E+06
X (M)	9.1500	8.5500	0.0000	11.400	7.6500	7.2000	9.3000	8.8500	15.000	0.0000	0.0000
12	-3.1102E-05	-1.4963E-07	-1367.9	-0.1649	-264.99	-1.2299	-94.684	-0.4342	1869.1	7.8500E+06	7.8500E+06
X (M)	8.8500	8.5500	0.0000	11.250	7.5000	7.0500	9.1500	8.7000	15.000	0.0000	0.0000
Min.	-3.1355E-05	-9.2962E-07	-1506.5	-50.949	-305.74	-9.7064	-117.40	-3.7252	1869.1	7.8500E+06	7.8500E+06
Pile N.	11	5	1	6	1	6	1	6	12	1	1

* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS	FLEX. RIG.	
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR		KN- M**2	KN- M**2
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.9378E-03	5.9756E-05	833.60	26.413	576.08	18.802	580.62	18.784	7252.7	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.8899E-03	5.9756E-05	800.17	26.053	541.08	18.223	551.55	18.381	7029.0	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.8420E-03	5.9756E-05	778.19	26.067	524.42	18.229	542.40	18.637	6901.0	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.7941E-03	5.9756E-05	755.81	26.067	507.59	18.229	525.56	18.637	6771.7	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.7462E-03	5.9756E-05	733.43	26.067	490.77	18.229	508.73	18.637	6642.4	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.6983E-03	5.9756E-05	720.81	26.441	489.77	18.814	509.72	19.310	6595.5	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.6983E-03	1.1854E-05	673.39	3.6811	423.00	1.1680	430.88	1.5746	5373.9	7.8500E+06	7.8500E+06
X (M)	0.0000	0.0000	5.8500	5.2500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.7462E-03	1.1854E-05	671.26	3.5769	409.42	1.0393	409.32	1.4398	5334.1	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 99 di 271

x(M)	0.0000	0.0000	6.0000	5.4000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.7941E-03	1.1854E-05	691.37	3.5754	423.31	1.0376	422.38	1.4380	5447.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.4000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.8420E-03	1.1854E-05	711.81	3.5754	437.58	1.0377	435.94	1.4380	5562.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.4000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.8899E-03	1.1854E-05	732.28	3.5750	452.08	1.0389	443.82	1.4200	5678.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.4000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.9378E-03	1.1854E-05	778.32	3.6774	498.51	1.1669	490.80	1.5315	5972.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.2500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.9378E-03	5.9756E-05	833.60	26.441	576.08	18.814	580.62	19.310	7252.7	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	1	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	0.6253	1.0000
2	0.5822	1.0000
3	0.5822	1.0000
4	0.5822	1.0000
5	0.6110	1.0000
6	0.8661	1.0000
7	0.8410	1.0000
8	0.5748	1.0000
9	0.5439	1.0000
10	0.5439	1.0000
11	0.5440	1.0000
12	0.5901	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
38547.0	3605.00	13664.0
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1835.00	14992.0	-14992.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.10658E-03	1.48537E-03	4.07139E-03
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-3.17267E-06	2.83333E-05	-1.38430E-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	1.0993E-03	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
2	1.2268E-03	1.4640E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
3	1.3543E-03	1.4782E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
4	1.4818E-03	1.4925E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
5	1.6093E-03	1.5068E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
6	1.7368E-03	1.5211E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
7	1.1139E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
8	9.8636E-04	1.5068E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
9	8.5886E-04	1.4925E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
10	7.3136E-04	1.4782E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
11	6.0386E-04	1.4640E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
12	4.7636E-04	1.4497E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
MINIMUM	4.7636E-04	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.7368E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	6	6	7	1	1	1

* PILE TOP REACTIONS *

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B									COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 100 di 271

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	3191.8	291.49	1142.3	-8.4023	-3553.9	729.06
2	3556.9	284.33	1104.5	-8.4023	-3479.6	720.57
3	3921.9	288.14	1104.0	-8.4023	-3479.0	733.07
4	4287.0	291.94	1103.5	-8.4023	-3478.4	745.56
5	4652.0	303.48	1128.1	-8.4023	-3527.5	772.90
6	5017.0	370.57	1329.2	-8.4023	-3909.8	902.34
7	3233.5	364.78	1315.4	-8.4023	-3888.1	891.19
8	2868.5	293.83	1100.5	-8.4023	-3475.9	753.54
9	2503.5	281.61	1073.0	-8.4023	-3420.5	724.67
10	2138.4	277.92	1073.5	-8.4023	-3421.1	712.42
11	1773.4	274.27	1074.1	-8.4023	-3421.9	700.24
12	1403.0	282.65	1116.0	-8.4023	-3505.3	711.39
MINIMUM	1403.0	274.27	1073.0	-8.4023	-3909.8	700.24
Pile N.	12	11	9	1	6	11
MAXIMUM	5017.0	370.57	1329.2	-8.4023	-3420.5	902.34
Pile N.	6	6	6	1	9	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	1.0993E-03	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
2	1.2268E-03	1.4640E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
3	1.3543E-03	1.4782E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
4	1.4818E-03	1.4925E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
5	1.6093E-03	1.5068E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
6	1.7368E-03	1.5211E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
7	1.1139E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
8	9.8636E-04	1.5068E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
9	8.5886E-04	1.4925E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
10	7.3136E-04	1.4782E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
11	6.0386E-04	1.4640E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
12	4.7636E-04	1.4497E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
MINIMUM	4.7636E-04	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.7368E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	6	6	7	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	3191.8	291.49	1142.3	-8.4023	-3553.9	729.06
2	3556.9	284.33	1104.5	-8.4023	-3479.6	720.57
3	3921.9	288.14	1104.0	-8.4023	-3479.0	733.07
4	4287.0	291.94	1103.5	-8.4023	-3478.4	745.56
5	4652.0	303.48	1128.1	-8.4023	-3527.5	772.90
6	5017.0	370.57	1329.2	-8.4023	-3909.8	902.34
7	3233.5	364.78	1315.4	-8.4023	-3888.1	891.19
8	2868.5	293.83	1100.5	-8.4023	-3475.9	753.54
9	2503.5	281.61	1073.0	-8.4023	-3420.5	724.67
10	2138.4	277.92	1073.5	-8.4023	-3421.1	712.42
11	1773.4	274.27	1074.1	-8.4023	-3421.9	700.24
12	1403.0	282.65	1116.0	-8.4023	-3505.3	711.39
MINIMUM	1403.0	274.27	1073.0	-8.4023	-3909.8	700.24
Pile N.	12	11	9	1	6	11
MAXIMUM	5017.0	370.57	1329.2	-8.4023	-3420.5	902.34
Pile N.	6	6	6	1	9	6

PILE GROUP STRESS, KN/ M**2

*****	*****
1	1.2690E+04
2	1.2673E+04
3	1.2886E+04
4	1.3098E+04
5	1.3466E+04
6	1.4877E+04
7	1.3797E+04
8	1.2293E+04
9	1.1906E+04
10	1.1693E+04
11	1.1482E+04
12	1.1524E+04
MINIMUM	1.1482E+04
Pile N.	11
MAXIMUM	1.4877E+04
Pile N.	6

APPALDATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							
		COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
		IF3A	02	E ZZ CL	VI0103 001	A	101 di 271

* 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	-1.8968E-05	-6.1719E-05	-729.06	-3553.9	-166.11	-546.31	-60.028	-198.25	1806.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	7.8000	7.9500	9.4500	9.6000	15.000	0.0000	0.0000
2	-1.9450E-05	-6.2598E-05	-720.57	-3479.6	-162.18	-527.42	-57.375	-186.73	2012.8	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
3	-1.9672E-05	-6.2605E-05	-733.07	-3479.0	-164.05	-527.43	-58.009	-186.65	2219.3	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
4	-1.9894E-05	-6.2612E-05	-745.56	-3478.4	-165.91	-527.44	-58.643	-186.57	2425.9	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
5	-1.9934E-05	-6.2008E-05	-772.90	-3527.5	-171.84	-540.00	-61.865	-194.90	2632.5	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
6	-1.9104E-05	-5.8691E-05	-902.34	-3909.8	-206.66	-642.07	-80.057	-249.14	2839.1	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
7	-1.9173E-05	-5.9182E-05	-891.19	-3888.1	-203.63	-634.22	-78.345	-244.98	1829.8	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.6500	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
8	-2.0130E-05	-6.2902E-05	-753.54	-3475.9	-166.47	-525.27	-58.471	-184.55	1623.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
9	-2.0133E-05	-6.3614E-05	-724.67	-3420.5	-159.70	-509.57	-54.981	-175.90	1416.7	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.9500	8.1000	9.4500	9.7500	15.000	0.0000	0.0000
10	-1.9906E-05	-6.3602E-05	-712.42	-3421.1	-157.92	-509.57	-54.390	-175.96	1210.1	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.9500	8.1000	9.4500	9.7500	15.000	0.0000	0.0000
11	-1.9678E-05	-6.3587E-05	-700.24	-3421.9	-156.16	-509.64	-53.811	-176.06	1003.5	7.8500E+06	7.8500E+06
x(M)	9.4500	9.6000	0.0000	0.0000	7.9500	8.1000	9.4500	9.7500	15.000	0.0000	0.0000
12	-1.9156E-05	-6.2575E-05	-711.39	-3505.3	-161.22	-532.26	-57.297	-189.39	793.96	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.9500	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
Min.	-2.0133E-05	-6.3614E-05	-902.34	-3909.8	-206.66	-642.07	-80.057	-249.14	793.96	7.8500E+06	7.8500E+06
Pile N.	9	9	6	6	6	6	6	6	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	1.4497E-03	4.0643E-03	495.19	1604.7	291.51	1142.4	209.04	760.81	1.2690E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.4640E-03	4.0643E-03	490.87	1571.8	284.36	1104.6	201.12	723.11	1.2673E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.4782E-03	4.0643E-03	496.39	1571.7	288.17	1104.1	203.62	722.86	1.2886E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.4925E-03	4.0643E-03	501.91	1571.6	291.97	1103.6	206.13	722.60	1.3098E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.5068E-03	4.0643E-03	514.28	1593.9	303.51	1128.3	216.02	747.56	1.3466E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.5211E-03	4.0643E-03	571.02	1751.5	370.61	1329.4	278.31	948.62	1.4877E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.5211E-03	4.0785E-03	566.54	1744.2	364.81	1315.5	272.66	932.74	1.3797E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.5068E-03	4.0785E-03	505.26	1570.0	293.85	1100.6	206.55	717.69	1.2293E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.4925E-03	4.0785E-03	491.81	1543.5	281.63	1073.1	196.07	690.22	1.1906E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.4782E-03	4.0785E-03	486.43	1543.6	277.94	1073.6	193.68	690.47	1.1693E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.4640E-03	4.0785E-03	481.08	1543.8	274.28	1074.2	191.33	690.83	1.1482E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.4497E-03	4.0785E-03	486.88	1582.8	282.66	1116.1	200.39	732.27	1.1524E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.5211E-03	4.0785E-03	571.02	1751.5	370.61	1329.4	278.31	948.62	1.4877E+04	7.8500E+06	7.8500E+06
Pile N.	6	7	6	6	6	6	6	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 102 di 271

7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 29666.0	HOR. LOAD Y, KN 20989.0	HOR. LOAD Z, KN 21.0000
MOMENT X, KN- M -222.000	MOMENT Y, KN- M 535.000	MOMENT Z, KN- M -535.000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 8.55242E-04	HORIZONTAL Y, M 8.09913E-03	HORIZONTAL Z, M 8.10632E-06
ANGLE ROT. X, RAD -1.26069E-06	ANGLE ROT. Y, RAD 2.91852E-07	ANGLE ROT. Z, RAD -3.65859E-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	1.6751E-03	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
2	1.6764E-03	8.0906E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
3	1.6778E-03	8.0963E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
4	1.6791E-03	8.1020E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
5	1.6804E-03	8.1076E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
6	1.6817E-03	8.1133E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
7	3.5343E-05	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
8	3.4030E-05	8.1076E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
9	3.2717E-05	8.1020E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
10	3.1403E-05	8.0963E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
11	3.0090E-05	8.0906E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
12	2.8777E-05	8.0850E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
MINIMUM	2.8777E-05	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.6817E-03	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
Pile N.	6	6	7	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	4840.5	1954.5	1.2260	-3.3387	-3.5094	5727.4
2	4844.3	1887.0	1.1820	-3.3387	-3.4223	5595.2
3	4848.0	1888.1	1.1817	-3.3387	-3.4217	5599.4
4	4851.8	1889.2	1.1814	-3.3387	-3.4212	5603.5
5	4855.5	1890.3	1.1811	-3.3387	-3.4207	5607.7
6	4859.3	1960.2	1.2246	-3.3387	-3.5067	5748.6
7	104.10	1671.5	2.4188	-3.3387	-7.7526	5149.7
8	100.23	1547.7	2.2461	-3.3387	-7.3806	4882.8
9	96.362	1545.1	2.2444	-3.3387	-7.3766	4875.6
10	92.494	1544.2	2.2449	-3.3387	-7.3777	4871.9
11	88.626	1544.8	2.2476	-3.3387	-7.3836	4871.7
12	84.757	1666.5	2.4214	-3.3387	-7.7579	5130.4
MINIMUM	84.757	1544.2	1.1811	-3.3387	-7.7579	4871.7
Pile N.	12	10	5	1	12	11
MAXIMUM	4859.3	1960.2	2.4214	-3.3387	-3.4207	5748.6
Pile N.	6	6	12	1	5	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	1.6751E-03	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 103 di 271

2	1.6764E-03	8.0906E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
3	1.6778E-03	8.0963E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
4	1.6791E-03	8.1020E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
5	1.6804E-03	8.1076E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
6	1.6817E-03	8.1133E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
7	3.5343E-05	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
8	3.4030E-05	8.1076E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
9	3.2717E-05	8.1020E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
10	3.1403E-05	8.0963E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
11	3.0090E-05	8.0906E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
12	2.8777E-05	8.0850E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
MINIMUM	2.8777E-05	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.6817E-03	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04
Pile N.	6	6	7	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	4840.5	1954.5	1.2260	-3.3387	-3.5094	5727.4
2	4844.3	1887.0	1.1820	-3.3387	-3.4223	5595.2
3	4848.0	1888.1	1.1817	-3.3387	-3.4217	5599.4
4	4851.8	1889.2	1.1814	-3.3387	-3.4212	5603.5
5	4855.5	1890.3	1.1811	-3.3387	-3.4207	5607.7
6	4859.3	1960.2	1.2246	-3.3387	-3.5067	5748.6
7	104.10	1671.5	2.4188	-3.3387	-7.7526	5149.7
8	100.23	1547.7	2.2461	-3.3387	-7.3806	4882.8
9	96.362	1545.1	2.2444	-3.3387	-7.3766	4875.6
10	92.494	1544.2	2.2449	-3.3387	-7.3777	4871.9
11	88.626	1544.8	2.2476	-3.3387	-7.3836	4871.7
12	84.757	1666.5	2.4214	-3.3387	-7.7579	5130.4
MINIMUM	84.757	1544.2	1.1811	-3.3387	-7.7579	4871.7
Pile N.	12	10	5	1	12	11
MAXIMUM	4859.3	1960.2	2.4214	-3.3387	-3.4207	5748.6
Pile N.	6	6	12	1	5	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.9922E+04
2	1.9527E+04
3	1.9542E+04
4	1.9556E+04
5	1.9571E+04
6	1.9996E+04
7	1.5508E+04
8	1.4705E+04
9	1.4681E+04
10	1.4668E+04
11	1.4665E+04
12	1.5439E+04
MINIMUM	1.4665E+04
Pile N.	11
MAXIMUM	1.9996E+04
Pile N.	6

* 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	-1.0518E-04	-6.7278E-08	-5727.4	-3.5094	-1067.3	-0.6827	-372.24	-0.2381	2739.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	7.9500	7.9500	9.3000	9.3000	15.000	0.0000	0.0000
2	-1.0710E-04	-6.8527E-08	-5595.2	-3.4223	-1024.1	-0.6540	-349.32	-0.2231	2741.3	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	8.1000	8.1000	9.4500	9.4500	15.000	0.0000	0.0000
3	-1.0719E-04	-6.8529E-08	-5599.4	-3.4217	-1024.7	-0.6539	-349.45	-0.2231	2743.4	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	8.1000	8.1000	9.4500	9.4500	15.000	0.0000	0.0000
4	-1.0727E-04	-6.8531E-08	-5603.5	-3.4212	-1025.3	-0.6538	-349.59	-0.2230	2745.5	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	8.1000	8.1000	9.4500	9.4500	15.000	0.0000	0.0000
5	-1.0735E-04	-6.8533E-08	-5607.7	-3.4207	-1025.9	-0.6537	-349.73	-0.2229	2747.7	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	8.1000	8.1000	9.4500	9.4500	15.000	0.0000	0.0000
6	-1.0562E-04	-6.7306E-08	-5748.6	-3.5067	-1070.3	-0.6820	-372.98	-0.2377	2749.8	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	7.9500	7.9500	9.3000	9.3000	15.000	0.0000	0.0000
7	-1.1493E-04	-1.6026E-07	-5149.7	-7.7526	-882.21	-1.2325	-279.23	-0.3903	58.908	7.8500E+06	7.8500E+06
x(M)	9.7500	9.7500	0.0000	0.0000	8.4000	8.4000	9.9000	9.9000	15.000	0.0000	0.0000
8	-1.1994E-04	-1.6759E-07	-4882.8	-7.3806	-803.96	-1.1235	-244.16	-0.3420	56.719	7.8500E+06	7.8500E+06
x(M)	10.050	10.050	0.0000	0.0000	8.5500	8.5500	10.200	10.200	15.000	0.0000	0.0000
9	-1.1992E-04	-1.6768E-07	-4875.6	-7.3766	-802.52	-1.1223	-243.63	-0.3415	54.530	7.8500E+06	7.8500E+06
x(M)	10.050	10.050	0.0000	0.0000	8.5500	8.5500	10.200	10.200	15.000	0.0000	0.0000
10	-1.1982E-04	-1.6766E-07	-4871.9	-7.3777	-802.08	-1.1226	-243.53	-0.3416	52.341	7.8500E+06	7.8500E+06
x(M)	10.050	10.050	0.0000	0.0000	8.5500	8.5500	10.200	10.200	15.000	0.0000	0.0000
11	-1.1963E-04	-1.6755E-07	-4871.7	-7.3836	-802.63	-1.1243	-243.84	-0.3423	50.152	7.8500E+06	7.8500E+06

APPALDATORE: 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 SPALLA A E SPALLA B	
COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 104 di 271	

x(M)	10.050	10.050	0.0000	0.0000	8.5500	8.5500	10.200	10.200	15.000	0.0000	0.0000
12	-1.1446E-04	-1.6022E-07	-5130.4	-7.7579	-879.71	-1.2337	-278.64	-0.3910	47.963	7.8500E+06	7.8500E+06
x(M)	9.7500	9.7500	0.0000	0.0000	8.4000	8.4000	9.9000	9.9000	15.000	0.0000	0.0000
Min.	-1.1994E-04	-1.6768E-07	-5748.6	-7.7579	-1070.3	-1.2337	-372.98	-0.3910	47.963	7.8500E+06	7.8500E+06
Pile N.	8	9	6	12	6	12	6	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	8.0850E-03	5.2698E-06	3030.0	1.9429	1954.8	1.2262	1397.6	0.8846	1.9922E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	8.0906E-03	5.2698E-06	2965.3	1.8984	1887.2	1.1821	1326.1	0.8386	1.9527E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	8.0963E-03	5.2698E-06	2967.2	1.8982	1888.3	1.1819	1326.8	0.8384	1.9542E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	8.1020E-03	5.2698E-06	2969.1	1.8979	1889.4	1.1816	1327.5	0.8382	1.9556E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	8.1076E-03	5.2698E-06	2970.9	1.8977	1890.6	1.1813	1328.2	0.8379	1.9571E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	8.1133E-03	5.2698E-06	3039.5	1.9417	1960.5	1.2247	1401.2	0.8834	1.9996E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	8.1133E-03	1.0943E-05	2734.6	3.8012	1671.5	2.4188	1096.5	1.5579	1.5508E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	8.1076E-03	1.0943E-05	2591.2	3.6057	1547.7	2.2462	972.60	1.3836	1.4705E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.6000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	8.1020E-03	1.0943E-05	2587.6	3.6036	1545.1	2.2444	970.53	1.3818	1.4681E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.6000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	8.0963E-03	1.0943E-05	2586.1	3.6041	1544.2	2.2449	970.05	1.3822	1.4668E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.6000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	8.0906E-03	1.0943E-05	2586.4	3.6071	1544.9	2.2476	971.15	1.3848	1.4665E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.6000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	8.0850E-03	1.0943E-05	2726.0	3.8037	1666.5	2.4214	1093.7	1.5601	1.5439E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	8.1133E-03	1.0943E-05	3039.5	3.8037	1960.5	2.4214	1401.2	1.5601	1.9996E+04	7.8500E+06	7.8500E+06
Pile N.	6	7	6	12	6	12	6	12	6	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	0.6504	1.0000
2	0.6055	1.0000
3	0.6055	1.0000
4	0.6055	1.0000
5	0.6308	1.0000
6	0.8661	1.0000
7	0.8238	1.0000
8	0.5711	1.0000
9	0.5427	1.0000
10	0.5427	1.0000
11	0.5429	1.0000
12	0.5930	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
29602.0	3572.00	13685.0
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-5761.00	49852.0	-49852.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
8.50040E-04	2.04231E-03	4.13163E-03
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.96849E-05	4.52084E-05	-3.19583E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 105 di 271

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	1.0605E-03	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
2	1.2639E-03	1.9094E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
3	1.4674E-03	1.9980E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
4	1.6708E-03	2.0866E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
5	1.8743E-03	2.1752E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
6	2.0777E-03	2.2638E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
7	6.3957E-04	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
8	4.3614E-04	2.1752E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
9	2.3270E-04	2.0866E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
10	2.9261E-05	1.9980E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
11	-1.7418E-04	1.9094E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
12	-3.7761E-04	1.8208E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
MINIMUM	-3.7761E-04	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0777E-03	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	6	6	7	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	3080.8	240.62	1154.8	-52.132	-3546.9	315.83
2	3663.2	253.56	1114.5	-52.132	-3468.8	373.49
3	4245.7	277.72	1112.1	-52.132	-3465.0	451.63
4	4828.1	301.74	1109.7	-52.132	-3461.0	529.53
5	5410.6	333.89	1128.5	-52.132	-3499.0	622.62
6	5993.0	433.10	1307.3	-52.132	-3839.3	836.63
7	1875.6	418.70	1300.7	-52.132	-3856.8	808.34
8	1284.6	313.18	1098.2	-52.132	-3465.0	580.85
9	685.37	280.91	1075.0	-52.132	-3417.2	487.39
10	86.182	258.11	1077.3	-52.132	-3420.9	412.03
11	-489.65	235.23	1079.7	-52.132	-3424.9	336.57
12	-1061.6	225.25	1127.1	-52.132	-3518.9	285.11
MINIMUM	-1061.6	225.25	1075.0	-52.132	-3856.8	285.11
Pile N.	12	9	9	1	7	12
MAXIMUM	5993.0	433.10	1307.3	-52.132	-3417.2	836.63
Pile N.	6	6	6	1	9	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	1.0605E-03	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
2	1.2639E-03	1.9094E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
3	1.4674E-03	1.9980E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
4	1.6708E-03	2.0866E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
5	1.8743E-03	2.1752E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
6	2.0777E-03	2.2638E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
7	6.3957E-04	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
8	4.3614E-04	2.1752E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
9	2.3270E-04	2.0866E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
10	2.9261E-05	1.9980E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
11	-1.7418E-04	1.9094E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
12	-3.7761E-04	1.8208E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
MINIMUM	-3.7761E-04	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0777E-03	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	6	6	7	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	3080.8	240.62	1154.8	-52.132	-3546.9	315.83
2	3663.2	253.56	1114.5	-52.132	-3468.8	373.49
3	4245.7	277.72	1112.1	-52.132	-3465.0	451.63
4	4828.1	301.74	1109.7	-52.132	-3461.0	529.53
5	5410.6	333.89	1128.5	-52.132	-3499.0	622.62
6	5993.0	433.10	1307.3	-52.132	-3839.3	836.63
7	1875.6	418.70	1300.7	-52.132	-3856.8	808.34
8	1284.6	313.18	1098.2	-52.132	-3465.0	580.85
9	685.37	280.91	1075.0	-52.132	-3417.2	487.39

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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 001	A	106 di 271	

10	86.182	258.11	1077.3	-52.132	-3420.9	412.03
11	-489.65	235.23	1079.7	-52.132	-3424.9	336.57
12	-1061.6	225.25	1127.1	-52.132	-3518.9	285.11
MINIMUM	-1061.6	225.25	1075.0	-52.132	-3856.8	285.11
Pile N.	12	12	9	1	7	12
MAXIMUM	5993.0	433.10	1307.3	-52.132	-3417.2	836.63
Pile N.	6	6	6	1	9	6

PILE GROUP STRESS, KN/ M**2

1	1.2426E+04
2	1.2539E+04
3	1.2885E+04
4	1.3236E+04
5	1.3724E+04
6	1.5180E+04
7	1.2883E+04
8	1.1267E+04
9	1.0743E+04
10	1.0386E+04
11	1.0601E+04
12	1.1192E+04

MINIMUM	1.0386E+04
Pile N.	10
MAXIMUM	1.5180E+04
Pile N.	6

* 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	-2.0804E-05	-6.1592E-05	-315.83	-3546.9	-183.73	-558.55	-66.508	-204.18	1743.4	7.8500E+06	7.8500E+06
x(M)	9.0000	9.3000	0.0000	0.0000	7.6500	7.9500	9.1500	9.4500	15.000	0.0000	0.0000
2	-2.2308E-05	-6.2208E-05	-373.49	-3468.8	-188.51	-537.73	-67.288	-192.94	2073.0	7.8500E+06	7.8500E+06
x(M)	9.1500	9.4500	0.0000	0.0000	7.6500	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
3	-2.3637E-05	-6.2202E-05	-451.63	-3465.0	-199.67	-537.50	-71.421	-192.30	2402.6	7.8500E+06	7.8500E+06
x(M)	9.1500	9.4500	0.0000	0.0000	7.6500	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
4	-2.4967E-05	-6.2204E-05	-529.53	-3461.0	-211.15	-537.22	-75.325	-191.66	2732.2	7.8500E+06	7.8500E+06
x(M)	9.1500	9.4500	0.0000	0.0000	7.8000	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
5	-2.6064E-05	-6.1663E-05	-622.62	-3499.0	-227.13	-548.41	-81.963	-198.05	3061.8	7.8500E+06	7.8500E+06
x(M)	9.1500	9.3000	0.0000	0.0000	7.8000	7.9500	9.3000	9.6000	15.000	0.0000	0.0000
6	-2.6014E-05	-5.8592E-05	-836.63	-3839.3	-279.76	-641.01	-107.89	-248.80	3391.4	7.8500E+06	7.8500E+06
x(M)	8.7000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.4500	15.000	0.0000	0.0000
7	-2.6089E-05	-6.0114E-05	-808.34	-3856.8	-271.83	-636.77	-103.80	-244.78	1061.4	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.8000	9.0000	9.1500	15.000	0.0000	0.0000
8	-2.6475E-05	-6.4125E-05	-580.85	-3465.0	-214.83	-530.26	-74.575	-183.50	726.91	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
9	-2.5439E-05	-6.4890E-05	-487.39	-3417.2	-198.34	-515.84	-67.856	-176.05	387.84	7.8500E+06	7.8500E+06
x(M)	9.3000	9.6000	0.0000	0.0000	7.8000	8.1000	9.3000	9.7500	15.000	0.0000	0.0000
10	-2.4072E-05	-6.4853E-05	-412.03	-3420.9	-187.82	-516.25	-64.551	-176.52	48.769	7.8500E+06	7.8500E+06
x(M)	9.3000	9.6000	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
11	-2.2703E-05	-6.4810E-05	-336.57	-3424.9	-177.29	-516.74	-61.235	-177.04	277.09	7.8500E+06	7.8500E+06
x(M)	9.1500	9.6000	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
12	-2.0996E-05	-6.3625E-05	-285.11	-3518.9	-174.41	-541.99	-61.861	-191.88	600.72	7.8500E+06	7.8500E+06
x(M)	9.1500	9.4500	0.0000	0.0000	7.6500	8.1000	9.1500	9.6000	15.000	0.0000	0.0000
Min.	-2.6475E-05	-6.4890E-05	-836.63	-3856.8	-279.76	-641.01	-107.89	-248.80	48.769	7.8500E+06	7.8500E+06
Pile N.	8	9	6	7	6	6	6	6	10	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	1.8209E-03	4.0873E-03	556.45	1623.8	240.63	1154.9	198.11	780.89	1.2426E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.9094E-03	4.0873E-03	578.61	1590.9	253.57	1114.6	204.20	741.25	1.2539E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.9980E-03	4.0873E-03	611.89	1590.0	277.74	1112.3	220.26	739.70	1.2885E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
4	2.0866E-03	4.0873E-03	645.06	1589.0	301.77	1109.8	236.21	738.06	1.3236E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
5	2.1752E-03	4.0873E-03	685.91	1606.6	333.92	1128.7	259.68	757.95	1.3724E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
6	2.2638E-03	4.0873E-03	781.07	1748.8	433.15	1307.5	344.40	939.21	1.5180E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.1500	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
7	2.2638E-03	4.1759E-03	769.68	1760.6	418.71	1300.8	331.08	923.05	1.2883E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.1500	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
8	2.1752E-03	4.1759E-03	664.81	1589.9	313.19	1098.3	240.08	717.43	1.1267E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	5.5500	5.5500	5.5500	0.0000	0.0000	0.0000
9	2.0866E-03	4.1759E-03	623.50	1566.3	280.91	1075.0	216.64	693.32	1.0743E+04	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 107 di 271

x(M)	0.0000	0.0000	5.8500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.9980E-03	4.1759E-03	591.90	1567.2	258.11	1077.3	201.97	694.84	1.0386E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.9094E-03	4.1759E-03	560.28	1568.2	235.23	1079.7	187.27	696.46	1.0601E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.8209E-03	4.1759E-03	541.28	1612.0	225.25	1127.1	184.10	743.12	1.1192E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	2.2638E-03	4.1759E-03	781.07	1760.6	433.15	1307.5	344.40	939.21	1.5180E+04	7.8500E+06	7.8500E+06
Pile N.	6	7	6	7	6	6	6	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
28708.0	20815.0	0.00000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-58.0000	-66.0000	66.0000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
8.27535E-04	7.99409E-03	-4.14115E-08
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-3.20853E-07	-3.17163E-08	-3.59018E-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	1.6357E-03	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
2	1.6355E-03	7.9919E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
3	1.6354E-03	7.9934E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
4	1.6352E-03	7.9948E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
5	1.6351E-03	7.9963E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
6	1.6350E-03	7.9977E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
7	1.9388E-05	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
8	1.9531E-05	7.9963E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
9	1.9673E-05	7.9948E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
10	1.9816E-05	7.9934E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
11	1.9959E-05	7.9919E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
12	2.0102E-05	7.9905E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
MINIMUM	1.9388E-05	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	1.6357E-03	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	1	6	7	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
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APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 108 di 271

*****	*****	*****	*****	*****	*****	*****
1	4727.5	1940.5	-0.1877	-0.8497	0.5537	5683.3
2	4727.1	1872.6	-0.1811	-0.8497	0.5407	5549.1
3	4726.7	1872.9	-0.1811	-0.8497	0.5407	5550.1
4	4726.3	1873.2	-0.1811	-0.8497	0.5407	5551.2
5	4725.9	1873.5	-0.1811	-0.8497	0.5406	5552.3
6	4725.5	1942.0	-0.1876	-0.8497	0.5536	5688.7
7	57.104	1655.7	0.1918	-0.8497	-0.6831	5096.2
8	57.524	1533.7	0.1791	-0.8497	-0.6554	4834.8
9	57.945	1531.9	0.1790	-0.8497	-0.6551	4830.4
10	58.365	1531.6	0.1790	-0.8497	-0.6551	4829.5
11	58.785	1533.0	0.1792	-0.8497	-0.6555	4832.0
12	59.206	1654.4	0.1918	-0.8497	-0.6832	5091.2
MINIMUM	57.104	1531.6	-0.1877	-0.8497	-0.6832	4829.5
Pile N.	7	10	1	1	12	10
MAXIMUM	4727.5	1942.0	0.1918	-0.8497	0.5537	5688.7
Pile N.	1	6	12	1	1	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	1.6357E-03	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
2	1.6355E-03	7.9919E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
3	1.6354E-03	7.9934E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
4	1.6352E-03	7.9948E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
5	1.6351E-03	7.9963E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
6	1.6350E-03	7.9977E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
7	1.9388E-05	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
8	1.9531E-05	7.9963E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
9	1.9673E-05	7.9948E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
10	1.9816E-05	7.9934E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
11	1.9959E-05	7.9919E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
12	2.0102E-05	7.9905E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
MINIMUM	1.9388E-05	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	1.6357E-03	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	1	6	7	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	4727.5	1940.5	-0.1877	-0.8497	0.5537	5683.3
2	4727.1	1872.6	-0.1811	-0.8497	0.5407	5549.1
3	4726.7	1872.9	-0.1811	-0.8497	0.5407	5550.1
4	4726.3	1873.2	-0.1811	-0.8497	0.5407	5551.2
5	4725.9	1873.5	-0.1811	-0.8497	0.5406	5552.3
6	4725.5	1942.0	-0.1876	-0.8497	0.5536	5688.7
7	57.104	1655.7	0.1918	-0.8497	-0.6831	5096.2
8	57.524	1533.7	0.1791	-0.8497	-0.6554	4834.8
9	57.945	1531.9	0.1790	-0.8497	-0.6551	4830.4
10	58.365	1531.6	0.1790	-0.8497	-0.6551	4829.5
11	58.785	1533.0	0.1792	-0.8497	-0.6555	4832.0
12	59.206	1654.4	0.1918	-0.8497	-0.6832	5091.2
MINIMUM	57.104	1531.6	-0.1877	-0.8497	-0.6832	4829.5
Pile N.	7	10	1	1	12	10
MAXIMUM	4727.5	1942.0	0.1918	-0.8497	0.5537	5688.7
Pile N.	1	6	12	1	1	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.9725E+04
2	1.9322E+04
3	1.9325E+04
4	1.9328E+04
5	1.9331E+04
6	1.9740E+04
7	1.5321E+04
8	1.4537E+04
9	1.4524E+04
10	1.4522E+04
11	1.4529E+04
12	1.5307E+04
MINIMUM	1.4522E+04
Pile N.	10
MAXIMUM	1.9740E+04
Pile N.	6

* EFFECTS FOR LATERALLY LOADED PILE *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 110 di 271

9	0.5366	1.0000
10	0.5366	1.0000
11	0.5373	1.0000
12	0.6074	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 38608.0	HOR. LOAD Y, KN 3540.00	HOR. LOAD Z, KN 4093.00
MOMENT X , KN- M -1823.00	MOMENT Y, KN- M 15295.0	MOMENT Z, KN- M -15295.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M 1.10820E-03	HORIZONTAL Y, M 1.32304E-03	HORIZONTAL Z, M 1.09242E-03
ANGLE ROT. X,RAD -6.07158E-06	ANGLE ROT. Y,RAD 1.35575E-05	ANGLE ROT. Z,RAD -1.36623E-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	1.2631E-03	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
2	1.3241E-03	1.2821E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
3	1.3851E-03	1.3094E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
4	1.4461E-03	1.3367E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
5	1.5071E-03	1.3640E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
6	1.5681E-03	1.3913E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
7	9.5332E-04	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
8	8.9231E-04	1.3640E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
9	8.3130E-04	1.3367E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
10	7.7029E-04	1.3094E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
11	7.0929E-04	1.2821E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
12	6.4828E-04	1.2547E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
MINIMUM	6.4828E-04	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5681E-03	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	6	6	7	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	3660.8	291.98	357.28	-16.080	-1042.6	672.57
2	3835.4	291.11	346.83	-16.080	-1023.8	682.63
3	4010.1	300.20	346.80	-16.080	-1023.8	710.08
4	4184.8	309.29	346.77	-16.080	-1023.8	737.54
5	4359.4	320.70	348.93	-16.080	-1027.7	769.07
6	4534.1	359.33	375.99	-16.080	-1075.9	847.69
7	2773.9	331.95	360.02	-16.080	-1058.3	799.63
8	2599.2	283.26	321.60	-16.080	-987.14	700.91
9	2424.6	271.52	318.10	-16.080	-980.40	668.55
10	2249.9	263.38	318.13	-16.080	-980.41	642.89
11	2075.2	255.38	318.31	-16.080	-980.72	617.50
12	1900.6	261.90	334.25	-16.080	-1010.8	618.66
MINIMUM	1900.6	255.38	318.10	-16.080	-1075.9	617.50
Pile N.	12	11	9	1	6	11
MAXIMUM	4534.1	359.33	375.99	-16.080	-980.40	847.69
Pile N.	6	6	6	1	9	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	1.2631E-03	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
2	1.3241E-03	1.2821E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
3	1.3851E-03	1.3094E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04

APPALTATORE: <u>Consorzio</u> Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: <u>Mandatario</u> Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 111 di 271

4	1.4461E-03	1.3367E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
5	1.5071E-03	1.3640E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
6	1.5681E-03	1.3913E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
7	9.5332E-04	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
8	8.9231E-04	1.3640E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
9	8.3130E-04	1.3367E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
10	7.7029E-04	1.3094E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
11	7.0929E-04	1.2821E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
12	6.4828E-04	1.2547E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
MINIMUM	6.4828E-04	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5681E-03	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	6	6	7	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	3660.8	291.98	357.28	-16.080	-1042.6	672.57
2	3835.4	291.11	346.83	-16.080	-1023.8	682.63
3	4010.1	300.20	346.80	-16.080	-1023.8	710.08
4	4184.8	309.29	346.77	-16.080	-1023.8	737.54
5	4359.4	320.70	348.93	-16.080	-1027.7	769.07
6	4534.1	359.33	375.99	-16.080	-1075.9	847.69
7	2773.9	331.95	360.02	-16.080	-1058.3	799.63
8	2599.2	283.26	321.60	-16.080	-987.14	700.91
9	2424.6	271.52	318.10	-16.080	-980.40	668.55
10	2249.9	263.38	318.13	-16.080	-980.41	642.89
11	2075.2	255.38	318.31	-16.080	-980.72	617.50
12	1900.6	261.90	334.25	-16.080	-1010.8	618.66
MINIMUM	1900.6	255.38	318.10	-16.080	-1075.9	617.50
Pile N.	12	11	9	1	6	11
MAXIMUM	4534.1	359.33	375.99	-16.080	-980.40	847.69
Pile N.	6	6	6	1	9	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	5793.7
2	5861.9
3	6007.1
4	6153.5
5	6317.8
6	6675.0
7	5549.1
8	5102.9
9	4932.0
10	4790.4
11	4651.1
12	4630.8
MINIMUM	4630.8
Pile N.	12
MAXIMUM	6675.0
Pile N.	6

* 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	-1.7811E-05	-1.7805E-05	-672.57	-1042.6	-173.09	-175.02	-64.522	-65.488	2071.6	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
2	-1.8621E-05	-1.8139E-05	-682.63	-1023.8	-172.24	-169.73	-63.212	-62.555	2170.4	7.8500E+06	7.8500E+06
x(M)	8.7000	8.8500	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
3	-1.9086E-05	-1.8140E-05	-710.08	-1023.8	-176.60	-169.74	-64.816	-62.559	2269.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.8500	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
4	-1.9552E-05	-1.8141E-05	-737.54	-1023.8	-180.96	-169.75	-66.421	-62.563	2368.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.8500	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
5	-1.9945E-05	-1.8075E-05	-769.07	-1027.7	-186.57	-170.90	-68.730	-63.201	2466.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.8500	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
6	-1.9522E-05	-1.7298E-05	-847.69	-1075.9	-206.00	-184.62	-79.061	-71.000	2565.8	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-2.0342E-05	-1.8479E-05	-799.63	-1058.3	-191.78	-176.08	-70.835	-65.270	1569.7	7.8500E+06	7.8500E+06
x(M)	8.7000	8.8500	0.0000	0.0000	7.3500	7.5000	8.8500	9.0000	15.000	0.0000	0.0000
8	-2.1202E-05	-1.9671E-05	-700.91	-987.14	-165.57	-155.34	-57.601	-54.294	1470.9	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
9	-2.0845E-05	-1.9796E-05	-668.55	-980.40	-159.59	-153.29	-55.194	-53.279	1372.0	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.8000	9.1500	9.3000	15.000	0.0000	0.0000
10	-2.0350E-05	-1.9794E-05	-642.89	-980.41	-155.77	-153.28	-53.863	-53.275	1273.2	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.8000	9.1500	9.3000	15.000	0.0000	0.0000
11	-1.9849E-05	-1.9787E-05	-617.50	-980.72	-152.04	-153.35	-52.575	-53.317	1174.3	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.8000	9.1500	9.3000	15.000	0.0000	0.0000
12	-1.8826E-05	-1.9265E-05	-618.66	-1010.8	-156.61	-162.27	-55.521	-57.790	1075.5	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
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 SPALLA A E SPALLA B					
COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 112 di 271

x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.0000	9.1500	15.000	0.0000	0.0000
Min. Pile N.	-2.1202E-05	-1.9796E-05	-847.69	-1075.9	-206.00	-184.62	-79.061	-71.000	1075.5	7.8500E+06	7.8500E+06
	8	9	6	6	6	6	6	6	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	1.2547E-03	1.0788E-03	486.36	489.32	292.00	357.32	311.68	357.85	5793.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.2821E-03	1.0788E-03	492.11	482.46	291.13	346.87	309.39	345.01	5861.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.3094E-03	1.0788E-03	504.53	482.46	300.23	346.84	318.40	345.00	6007.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.3367E-03	1.0788E-03	516.96	482.47	309.32	346.81	327.41	344.99	6153.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.3640E-03	1.0788E-03	530.98	483.96	320.73	348.97	339.10	347.70	6317.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.3913E-03	1.0788E-03	562.70	502.11	359.37	376.04	381.10	380.25	6675.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.3913E-03	1.1061E-03	544.57	497.50	331.97	360.05	350.32	358.90	5549.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.3640E-03	1.1061E-03	501.48	467.90	283.28	321.63	293.87	309.75	5102.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.3367E-03	1.1061E-03	486.71	464.74	271.53	318.12	281.59	305.08	4932.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.3094E-03	1.1061E-03	475.15	464.73	263.39	318.15	273.83	305.09	4790.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.2821E-03	1.1061E-03	463.71	464.87	255.40	318.33	266.24	305.30	4651.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.2547E-03	1.1061E-03	464.47	478.42	261.91	334.27	276.42	326.15	4630.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max. Pile N.	1.3913E-03	1.1061E-03	562.70	502.11	359.37	376.04	381.10	380.25	6675.0	7.8500E+06	7.8500E+06
	6	7	6	6	6	6	6	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
23926.0	8646.00	0.00000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-17.0000	-218.000	218.000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
6.83177E-04	2.62724E-03	-3.06048E-07
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.09169E-08	-1.05025E-07	-1.34989E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 113 di 271

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	9.8808E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
2	9.8761E-04	2.6268E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
3	9.8714E-04	2.6271E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
4	9.8667E-04	2.6274E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
5	9.8619E-04	2.6277E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
6	9.8572E-04	2.6279E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
7	3.7827E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
8	3.7874E-04	2.6277E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
9	3.7922E-04	2.6274E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
10	3.7969E-04	2.6271E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
11	3.8016E-04	2.6268E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
12	3.8063E-04	2.6266E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
MINIMUM	3.7827E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	9.8808E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	1	6	7	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	2873.4	802.59	-0.049231	-0.1613	-0.010127	2142.0
2	2872.1	777.29	-0.046493	-0.1613	-0.014483	2098.0
3	2870.7	777.38	-0.046492	-0.1613	-0.014483	2098.3
4	2869.4	777.47	-0.046492	-0.1613	-0.014484	2098.5
5	2868.0	777.57	-0.046492	-0.1613	-0.014485	2098.8
6	2866.7	803.08	-0.049230	-0.1613	-0.010130	2143.4
7	1114.1	687.37	0.047892	-0.1613	-0.2925	1928.4
8	1115.5	639.50	0.047166	-0.1613	-0.2900	1836.3
9	1116.9	638.80	0.047156	-0.1613	-0.2899	1834.8
10	1118.3	638.72	0.047156	-0.1613	-0.2899	1834.6
11	1119.7	639.27	0.047167	-0.1613	-0.2900	1835.6
12	1121.1	686.97	0.047893	-0.1613	-0.2925	1927.2
MINIMUM	1114.1	638.72	-0.049231	-0.1613	-0.2925	1834.6
Pile N.	7	1	1	1	12	10
MAXIMUM	2873.4	803.08	0.047893	-0.1613	-0.010127	2143.4
Pile N.	1	6	12	1	1	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	9.8808E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
2	9.8761E-04	2.6268E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
3	9.8714E-04	2.6271E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
4	9.8667E-04	2.6274E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
5	9.8619E-04	2.6277E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
6	9.8572E-04	2.6279E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
7	3.7827E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
8	3.7874E-04	2.6277E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
9	3.7922E-04	2.6274E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
10	3.7969E-04	2.6271E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
11	3.8016E-04	2.6268E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
12	3.8063E-04	2.6266E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
MINIMUM	3.7827E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	9.8808E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	1	6	7	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	2873.4	802.59	-0.049231	-0.1613	-0.010127	2142.0
2	2872.1	777.29	-0.046493	-0.1613	-0.014483	2098.0
3	2870.7	777.38	-0.046492	-0.1613	-0.014483	2098.3
4	2869.4	777.47	-0.046492	-0.1613	-0.014484	2098.5
5	2868.0	777.57	-0.046492	-0.1613	-0.014485	2098.8
6	2866.7	803.08	-0.049230	-0.1613	-0.010130	2143.4
7	1114.1	687.37	0.047892	-0.1613	-0.2925	1928.4
8	1115.5	639.50	0.047166	-0.1613	-0.2900	1836.3
9	1116.9	638.80	0.047156	-0.1613	-0.2899	1834.8
10	1118.3	638.72	0.047156	-0.1613	-0.2899	1834.6
11	1119.7	639.27	0.047167	-0.1613	-0.2900	1835.6

<p>APPALTATORE:</p> <p><u>Consorzio</u> <u>Soci</u></p> <p>HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI</p> <hr/> <p>PROGETTAZIONE:</p> <p><u>Mandatario</u> <u>Mandanti</u></p> <p>ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA</p> <hr/> <p>PROGETTO ESECUTIVO</p> <p>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</p>	<p>ITINERARIO NAPOLI – BARI</p> <p>RADDOPPIO TRATTA APICE – ORSARA</p> <p>II LOTTO FUNZIONALE HIRPINIA - ORSARA</p> <hr/> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:12.5%;">COMMESSA</td> <td style="width:12.5%;">LOTTO</td> <td style="width:12.5%;">CODIFICA</td> <td style="width:12.5%;">DOCUMENTO</td> <td style="width:12.5%;">REV.</td> <td style="width:12.5%;">FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 001</td> <td>A</td> <td>114 di 271</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	114 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF3A	02	E ZZ CL	VI0103 001	A	114 di 271								

12	1121.1	686.97	0.047893	-0.1613	-0.2925	1927.2
MINIMUM	1114.1	638.72	-0.049231	-0.1613	-0.2925	1834.6
PILE N.	7	10	1	1	12	10
MAXIMUM	2873.4	803.08	0.047893	-0.1613	-0.010127	2143.4
PILE N.	1	6	12	1	1	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	8052.0
2	7919.2
3	7919.3
4	7919.3
5	7919.4
6	8052.4
7	6415.7
8	6140.2
9	6136.6
10	6136.6
11	6140.4
12	6415.9
MINIMUM	6136.6
PILE N.	9
MAXIMUM	8052.4
PILE N.	6

* 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	-3.8944E-05	-4.4311E-07	-2142.0	-0.1453	-415.61	-0.049231	-159.79	-0.054743	1626.0	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
2	-3.9712E-05	-4.4311E-07	-2098.0	-0.1431	-402.78	-0.046492	-152.65	-0.052734	1625.3	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
3	-3.9716E-05	-4.4311E-07	-2098.3	-0.1431	-402.82	-0.046492	-152.67	-0.052731	1624.5	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
4	-3.9720E-05	-4.4311E-07	-2098.5	-0.1431	-402.87	-0.046492	-152.68	-0.052728	1623.7	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
5	-3.9724E-05	-4.4311E-07	-2098.8	-0.1431	-402.91	-0.046492	-152.70	-0.052726	1623.0	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
6	-3.8964E-05	-4.4311E-07	-2143.4	-0.1453	-415.83	-0.049230	-159.88	-0.054730	1622.2	7.8500E+06	7.8500E+06
x (M)	8.7000	0.0000	0.0000	4.5000	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
7	-4.0952E-05	-1.6899E-07	-1928.4	-0.2925	-352.21	-6.5717E-03	-126.17	-2.4913E-03	630.47	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.6500	9.3000	9.3000	10.650	15.000	0.0000	0.0000
8	-4.2000E-05	-1.6899E-07	-1836.3	-0.2900	-325.89	-6.3757E-03	-113.26	-2.3605E-03	631.26	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.8000	9.4500	9.4500	10.950	15.000	0.0000	0.0000
9	-4.2013E-05	-1.6899E-07	-1834.8	-0.2899	-325.50	-6.3731E-03	-113.08	-2.3586E-03	632.05	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.8000	9.4500	9.4500	10.950	15.000	0.0000	0.0000
10	-4.2009E-05	-1.6899E-07	-1834.6	-0.2899	-325.47	-6.3730E-03	-113.07	-2.3586E-03	632.83	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.8000	9.4500	9.4500	10.950	15.000	0.0000	0.0000
11	-4.1987E-05	-1.6899E-07	-1835.6	-0.2900	-325.80	-6.3754E-03	-113.22	-2.3603E-03	633.62	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.8000	9.4500	9.4500	10.950	15.000	0.0000	0.0000
12	-4.0932E-05	-1.6899E-07	-1927.2	-0.2925	-352.03	-6.5713E-03	-126.10	-2.4911E-03	634.41	7.8500E+06	7.8500E+06
x (M)	9.3000	0.0000	0.0000	0.0000	7.6500	9.3000	9.3000	10.650	15.000	0.0000	0.0000
Min.	-4.2013E-05	-4.4311E-07	-2143.4	-0.2925	-415.83	-0.049231	-159.88	-0.054743	630.47	7.8500E+06	7.8500E+06
PILE N.	9	1	6	12	6	1	6	1	7	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	2.6266E-03	4.9290E-09	1131.2	6.3306E-03	802.65	0.050636	701.87	0.019234	8052.0	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
2	2.6268E-03	5.0384E-09	1115.3	6.2547E-03	777.34	0.049207	677.05	0.018391	7919.2	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
3	2.6271E-03	5.0383E-09	1115.4	6.2546E-03	777.44	0.049207	677.10	0.018391	7919.3	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
4	2.6274E-03	5.0383E-09	1115.5	6.2545E-03	777.53	0.049206	677.15	0.018390	7919.3	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
5	2.6276E-03	5.0382E-09	1115.6	6.2545E-03	777.62	0.049206	677.20	0.018390	7919.4	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
6	2.6279E-03	4.9287E-09	1131.8	6.3303E-03	803.13	0.050634	702.12	0.019234	8052.4	7.8500E+06	7.8500E+06
x (M)	0.0000	8.2500	5.8500	10.800	0.0000	6.9000	5.5500	8.4000	0.0000	0.0000	0.0000
7	2.6279E-03	2.0431E-08	1033.0	0.018326	687.39	0.050145	536.87	0.023919	6415.7	7.8500E+06	7.8500E+06
x (M)	0.0000	4.5000	6.0000	7.8000	0.0000	2.7000	5.5500	6.4500	0.0000	0.0000	0.0000
8	2.6276E-03	2.1981E-08	989.77	0.018381	639.52	0.049066	480.22	0.021978	6140.2	7.8500E+06	7.8500E+06
x (M)	0.0000	4.6500	6.1500	7.8000	0.0000	2.7000	5.5500	6.6000	0.0000	0.0000	0.0000
9	2.6274E-03	2.2003E-08	989.10	0.018380	638.82	0.049052	479.46	0.021951	6136.6	7.8500E+06	7.8500E+06
x (M)	0.0000	4.6500	6.1500	7.9500	0.0000	2.7000	5.5500	6.6000	0.0000	0.0000	0.0000
10	2.6271E-03	2.2003E-08	989.00	0.018380	638.74	0.049052	479.42	0.021952	6136.6	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 115 di 271

x(M)	0.0000	4.6500	6.1500	7.9500	0.0000	2.7000	5.5500	6.6000	0.0000	0.0000	0.0000
11	2.6268E-03	2.1980E-08	989.48	0.018380	639.29	0.049067	480.11	0.021981	6140.4	7.8500E+06	7.8500E+06
x(M)	0.0000	4.6500	6.1500	7.8000	0.0000	2.7000	5.5500	6.6000	0.0000	0.0000	0.0000
12	2.6266E-03	2.0430E-08	1032.5	0.018324	686.99	0.050147	536.67	0.023924	6415.9	7.8500E+06	7.8500E+06
x(M)	0.0000	4.5000	6.0000	7.8000	0.0000	2.7000	5.5500	6.4500	0.0000	0.0000	0.0000
Max.	2.6279E-03	2.2003E-08	1131.8	0.018381	803.13	0.050636	702.12	0.023924	8052.4	7.8500E+06	7.8500E+06
Pile N.	6	9	6	8	6	1	6	12	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
38062.0	8706.00	22.0000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-455.000	3683.00	-3683.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.09231E-03	2.71309E-03	1.15215E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.67480E-06	1.83330E-06	-1.57423E-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	1.4259E-03	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
2	1.4341E-03	2.7018E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
3	1.4424E-03	2.7093E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
4	1.4506E-03	2.7169E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
5	1.4589E-03	2.7244E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
6	1.4671E-03	2.7319E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
7	7.5873E-04	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
8	7.5048E-04	2.7244E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
9	7.4223E-04	2.7169E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
10	7.3398E-04	2.7093E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
11	7.2573E-04	2.7018E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
12	7.1748E-04	2.6943E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
MINIMUM	7.1748E-04	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4671E-03	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	6	6	7	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	4126.9	802.81	0.8645	-4.4354	0.1564	2111.3

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 116 di 271

2	4150.5	779.66	0.8164	-4.4354	0.2330	2074.2
3	4174.1	782.20	0.8162	-4.4354	0.2332	2081.7
4	4197.7	784.74	0.8161	-4.4354	0.2334	2089.3
5	4221.4	787.28	0.8160	-4.4354	0.2336	2096.8
6	4245.0	815.92	0.8639	-4.4354	0.1575	2149.8
7	2216.8	697.07	2.9920	-4.4354	-6.6824	1928.9
8	2193.2	645.95	2.7555	-4.4354	-6.2397	1828.1
9	2169.6	643.27	2.7531	-4.4354	-6.2355	1820.4
10	2145.9	641.24	2.7538	-4.4354	-6.2372	1813.8
11	2122.3	639.83	2.7576	-4.4354	-6.2447	1808.5
12	2098.7	686.04	2.9950	-4.4354	-6.6897	1894.5
MINIMUM	2098.7	639.83	0.8160	-4.4354	-6.6897	1808.5
Pile N.	12	11	5	1	12	11
MAXIMUM	4245.0	815.92	2.9950	-4.4354	0.2336	2149.8
Pile N.	6	6	12	1	5	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	1.4259E-03	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
2	1.4341E-03	2.7018E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
3	1.4424E-03	2.7093E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
4	1.4506E-03	2.7169E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
5	1.4589E-03	2.7244E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
6	1.4671E-03	2.7319E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
7	7.5873E-04	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
8	7.5048E-04	2.7244E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
9	7.4223E-04	2.7169E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
10	7.3398E-04	2.7093E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
11	7.2573E-04	2.7018E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
12	7.1748E-04	2.6943E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
MINIMUM	7.1748E-04	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4671E-03	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	6	6	7	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	4126.9	802.81	0.8645	-4.4354	0.1564	2111.3
2	4150.5	779.66	0.8164	-4.4354	0.2330	2074.2
3	4174.1	782.20	0.8162	-4.4354	0.2332	2081.7
4	4197.7	784.74	0.8161	-4.4354	0.2334	2089.3
5	4221.4	787.28	0.8160	-4.4354	0.2336	2096.8
6	4245.0	815.92	0.8639	-4.4354	0.1575	2149.8
7	2216.8	697.07	2.9920	-4.4354	-6.6824	1928.9
8	2193.2	645.95	2.7555	-4.4354	-6.2397	1828.1
9	2169.6	643.27	2.7531	-4.4354	-6.2355	1820.4
10	2145.9	641.24	2.7538	-4.4354	-6.2372	1813.8
11	2122.3	639.83	2.7576	-4.4354	-6.2447	1808.5
12	2098.7	686.04	2.9950	-4.4354	-6.6897	1894.5
MINIMUM	2098.7	639.83	0.8160	-4.4354	-6.6897	1808.5
Pile N.	12	11	5	1	12	11
MAXIMUM	4245.0	815.92	2.9950	-4.4354	0.2336	2149.8
Pile N.	6	6	12	1	5	6

PILE GROUP	STRESS, KN/ M**2
1	8669.3
2	8571.2
3	8607.2
4	8643.3
5	8679.3
6	8851.6
7	7041.2
8	6725.5
9	6688.9
10	6655.9
11	6626.7
12	6871.3
MINIMUM	6626.7
Pile N.	11
MAXIMUM	8851.6
Pile N.	6

* EFFECTS FOR LATERALLY LOADED PILE *

* MINIMUM VALUES AND LOCATIONS *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 118 di 271

11 0.5428 1.0000
12 0.5931 1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 33280.0	HOR. LOAD Y, KN 3491.00	HOR. LOAD Z, KN 13665.0
MOMENT X, KN- M -6009.00	MOMENT Y, KN- M 52663.0	MOMENT Z, KN- M -52663.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 9.56721E-04	HORIZONTAL Y, M 2.06059E-03	HORIZONTAL Z, M 4.12768E-03
ANGLE ROT. X, RAD -2.07597E-05	ANGLE ROT. Y, RAD 4.64974E-05	ANGLE ROT. Z, RAD -3.33170E-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	1.1833E-03	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
2	1.3925E-03	1.9205E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
3	1.6017E-03	2.0139E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
4	1.8110E-03	2.1073E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
5	2.0202E-03	2.2007E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
6	2.2295E-03	2.2941E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
7	7.3018E-04	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
8	5.2095E-04	2.2007E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
9	3.1171E-04	2.1073E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
10	1.0247E-04	2.0139E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
11	-1.0677E-04	1.9205E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
12	-3.1601E-04	1.8270E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
MINIMUM	-3.1601E-04	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.2295E-03	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	6	6	7	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	3432.2	230.46	1153.4	-54.978	-3539.2	265.20
2	4031.3	244.95	1113.0	-54.978	-3461.0	327.66
3	4630.3	270.47	1110.5	-54.978	-3457.0	410.17
4	5229.4	295.84	1108.0	-54.978	-3452.8	492.41
5	5828.5	329.27	1126.5	-54.978	-3490.3	589.67
6	6427.5	429.76	1304.1	-54.978	-3828.3	807.61
7	2135.1	415.01	1298.3	-54.978	-3849.1	778.56
8	1534.4	308.21	1096.7	-54.978	-3458.6	547.17
9	918.08	274.74	1073.6	-54.978	-3411.3	449.72
10	301.81	250.68	1076.1	-54.978	-3415.2	370.21
11	-300.15	226.54	1078.6	-54.978	-3419.3	290.57
12	-888.36	215.08	1126.2	-54.978	-3513.6	234.45
MINIMUM	-888.36	215.08	1073.6	-54.978	-3849.1	234.45
Pile N.	12	12	9	1	7	12
MAXIMUM	6427.5	429.76	1304.1	-54.978	-3411.3	807.61
Pile N.	6	6	6	1	9	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	1.1833E-03	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
2	1.3925E-03	1.9205E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
3	1.6017E-03	2.0139E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
4	1.8110E-03	2.1073E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
5	2.0202E-03	2.2007E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 119 di 271

6	2.2295E-03	2.2941E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
7	7.3018E-04	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
8	5.2095E-04	2.2007E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
9	3.1171E-04	2.1073E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
10	1.0247E-04	2.0139E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
11	-1.0677E-04	1.9205E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
12	-3.1601E-04	1.8270E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
MINIMUM	-3.1601E-04	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.2295E-03	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	6	6	7	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	3432.2	230.46	1153.4	-54.978	-3539.2	265.20
2	4031.3	244.95	1113.0	-54.978	-3461.0	327.66
3	4630.3	270.47	1110.5	-54.978	-3457.0	410.17
4	5229.4	295.84	1108.0	-54.978	-3452.8	492.41
5	5828.5	329.27	1126.5	-54.978	-3490.3	589.67
6	6427.5	429.76	1304.1	-54.978	-3828.3	807.61
7	2135.1	415.01	1298.3	-54.978	-3849.1	778.56
8	1534.4	308.21	1096.7	-54.978	-3458.6	547.17
9	918.08	274.74	1073.6	-54.978	-3411.3	449.72
10	301.81	250.68	1076.1	-54.978	-3415.2	370.21
11	-300.15	226.54	1078.6	-54.978	-3419.3	290.57
12	-888.36	215.08	1126.2	-54.978	-3513.6	234.45
MINIMUM	-888.36	215.08	1073.6	-54.978	-3849.1	234.45
Pile N.	12	12	9	1	7	12
MAXIMUM	6427.5	429.76	1304.1	-54.978	-3411.3	807.61
Pile N.	6	6	6	1	9	6

PILE GROUP	STRESS, KN/ M**2
1	1.2590E+04
2	1.2711E+04
3	1.3064E+04
4	1.3423E+04
5	1.3917E+04
6	1.5375E+04
7	1.2989E+04
8	1.1373E+04
9	1.0842E+04
10	1.0476E+04
11	1.0465E+04
12	1.1067E+04
MINIMUM	1.0465E+04
Pile N.	11
MAXIMUM	1.5375E+04
Pile N.	6

* 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	-2.0653E-05	-6.1509E-05	-265.20	-3539.2	-182.21	-558.21	-65.961	-204.11	1942.2	7.8500E+06	7.8500E+06
x (M)	9.0000	9.3000	0.0000	0.0000	7.5000	7.9500	9.1500	9.4500	15.000	0.0000	0.0000
2	-2.2257E-05	-6.2096E-05	-327.66	-3461.0	-187.87	-537.31	-66.939	-193.14	2281.2	7.8500E+06	7.8500E+06
x (M)	9.0000	9.4500	0.0000	0.0000	7.6500	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
3	-2.3609E-05	-6.2089E-05	-410.17	-3457.0	-199.68	-537.07	-71.350	-192.47	2620.2	7.8500E+06	7.8500E+06
x (M)	9.1500	9.4500	0.0000	0.0000	7.6500	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
4	-2.5013E-05	-6.2088E-05	-492.41	-3452.8	-211.48	-536.79	-75.524	-191.78	2959.2	7.8500E+06	7.8500E+06
x (M)	9.1500	9.4500	0.0000	0.0000	7.8000	8.1000	9.3000	9.6000	15.000	0.0000	0.0000
5	-2.6172E-05	-6.1572E-05	-589.67	-3490.3	-228.21	-548.01	-82.352	-198.08	3298.2	7.8500E+06	7.8500E+06
x (M)	9.1500	9.3000	0.0000	0.0000	7.6500	7.9500	9.3000	9.6000	15.000	0.0000	0.0000
6	-2.6207E-05	-5.8505E-05	-807.61	-3828.3	-281.41	-640.02	-108.56	-248.38	3637.2	7.8500E+06	7.8500E+06
x (M)	8.7000	9.0000	0.0000	0.0000	7.5000	7.6500	8.8500	9.1500	15.000	0.0000	0.0000
7	-2.6264E-05	-6.0097E-05	-778.56	-3849.1	-273.38	-636.16	-104.30	-244.50	1208.2	7.8500E+06	7.8500E+06
x (M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.8000	9.0000	9.1500	15.000	0.0000	0.0000
8	-2.6594E-05	-6.4106E-05	-547.17	-3458.6	-215.67	-529.96	-74.962	-183.40	868.27	7.8500E+06	7.8500E+06
x (M)	9.1500	9.4500	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
9	-2.5489E-05	-6.4860E-05	-449.72	-3411.3	-198.67	-515.64	-68.063	-176.01	519.53	7.8500E+06	7.8500E+06
x (M)	9.3000	9.6000	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
10	-2.4046E-05	-6.4820E-05	-370.21	-3415.2	-187.56	-516.07	-64.616	-176.51	170.79	7.8500E+06	7.8500E+06
x (M)	9.3000	9.6000	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
11	-2.2650E-05	-6.4777E-05	-290.57	-3419.3	-176.44	-516.56	-61.088	-177.05	169.85	7.8500E+06	7.8500E+06
x (M)	9.1500	9.6000	0.0000	0.0000	7.8000	8.1000	9.1500	9.7500	15.000	0.0000	0.0000
12	-2.0864E-05	-6.3591E-05	-234.45	-3513.6	-173.05	-541.80	-61.386	-191.97	502.71	7.8500E+06	7.8500E+06
x (M)	9.0000	9.4500	0.0000	0.0000	7.6500	8.1000	9.1500	9.6000	15.000	0.0000	0.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 120 di 271

Min. -2.6594E-05 -6.4860E-05 -807.61 -3849.1 -281.41 -640.02 -108.56 -248.38 169.85 7.8500E+06 7.8500E+06
Pile N. 8 9 6 7 6 6 6 6 11 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	1.8270E-03	4.0810E-03	553.67	1621.9	230.47	1153.5	192.98	780.83	1.2590E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.9205E-03	4.0810E-03	577.66	1589.1	244.96	1113.1	200.26	741.17	1.2711E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	2.0139E-03	4.0810E-03	612.23	1588.2	270.49	1110.7	217.24	739.55	1.3064E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	2.1073E-03	4.0810E-03	647.27	1587.1	295.86	1108.1	234.11	737.83	1.3423E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	2.2007E-03	4.0810E-03	689.85	1604.5	329.30	1126.7	258.41	757.48	1.3917E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	2.2941E-03	4.0810E-03	786.81	1745.7	429.81	1304.3	343.72	937.67	1.5375E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	2.2941E-03	4.1744E-03	774.69	1759.1	415.02	1298.4	330.13	921.84	1.2989E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	2.2007E-03	4.1744E-03	668.56	1589.0	308.22	1096.7	238.54	716.85	1.1373E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	2.1073E-03	4.1744E-03	625.63	1565.4	274.74	1073.7	214.36	692.94	1.0842E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	2.0139E-03	4.1744E-03	592.28	1566.3	250.68	1076.1	198.87	694.51	1.0476E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.9205E-03	4.1744E-03	558.89	1567.5	226.53	1078.6	183.34	696.20	1.0465E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.8270E-03	4.1744E-03	538.70	1611.3	215.08	1126.1	179.08	743.03	1.1067E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	2.2941E-03	4.1744E-03	786.81	1759.1	429.81	1304.3	343.72	937.67	1.5375E+04	7.8500E+06	7.8500E+06
Pile N.	6	7	6	7	6	6	6	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
37589.0	8646.00	0.00000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-17.0000	215.000	-215.000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.07854E-03	2.63870E-03	3.30001E-07
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.21925E-08	1.05107E-07	-1.38282E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA		RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 121 di 271

* PILE TOP DISPLACEMENTS *

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.3885E-03	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
2	1.3890E-03	2.6383E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
3	1.3894E-03	2.6386E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
4	1.3899E-03	2.6388E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
5	1.3904E-03	2.6391E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
6	1.3909E-03	2.6394E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
7	7.6859E-04	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
8	7.6811E-04	2.6391E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
9	7.6764E-04	2.6388E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
10	7.6717E-04	2.6386E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
11	7.6670E-04	2.6383E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
12	7.6622E-04	2.6380E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
MINIMUM	7.6622E-04	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.3909E-03	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	6	6	7	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	4019.8	802.76	-0.041827	-0.1647	0.2755	2139.0
2	4021.2	777.40	-0.041872	-0.1647	0.2751	2094.9
3	4022.5	777.49	-0.041872	-0.1647	0.2751	2095.2
4	4023.9	777.59	-0.041872	-0.1647	0.2751	2095.5
5	4025.2	777.68	-0.041872	-0.1647	0.2751	2095.7
6	4026.6	803.25	-0.041827	-0.1647	0.2755	2140.4
7	2245.0	687.31	0.045448	-0.1647	5.0862E-03	1925.0
8	2243.7	639.34	0.040095	-0.1647	0.014465	1832.7
9	2242.3	638.63	0.040026	-0.1647	0.014587	1831.2
10	2240.9	638.56	0.040026	-0.1647	0.014586	1831.0
11	2239.6	639.11	0.040096	-0.1647	0.014462	1832.0
12	2238.2	686.90	0.045450	-0.1647	5.0817E-03	1923.7
MINIMUM	2238.2	638.56	-0.041872	-0.1647	5.0817E-03	1831.0
Pile N.	12	10	2	1	12	10
MAXIMUM	4026.6	803.25	0.045450	-0.1647	0.2755	2140.4
Pile N.	6	6	12	1	1	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	1.3885E-03	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
2	1.3890E-03	2.6383E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
3	1.3894E-03	2.6386E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
4	1.3899E-03	2.6388E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
5	1.3904E-03	2.6391E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
6	1.3909E-03	2.6394E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
7	7.6859E-04	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
8	7.6811E-04	2.6391E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
9	7.6764E-04	2.6388E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
10	7.6717E-04	2.6386E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
11	7.6670E-04	2.6383E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
12	7.6622E-04	2.6380E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
MINIMUM	7.6622E-04	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.3909E-03	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	6	6	7	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	4019.8	802.76	-0.041827	-0.1647	0.2755	2139.0
2	4021.2	777.40	-0.041872	-0.1647	0.2751	2094.9
3	4022.5	777.49	-0.041872	-0.1647	0.2751	2095.2
4	4023.9	777.59	-0.041872	-0.1647	0.2751	2095.5
5	4025.2	777.68	-0.041872	-0.1647	0.2751	2095.7
6	4026.6	803.25	-0.041827	-0.1647	0.2755	2140.4
7	2245.0	687.31	0.045448	-0.1647	5.0862E-03	1925.0
8	2243.7	639.34	0.040095	-0.1647	0.014465	1832.7
9	2242.3	638.63	0.040026	-0.1647	0.014587	1831.2
10	2240.9	638.56	0.040026	-0.1647	0.014586	1831.0
11	2239.6	639.11	0.040096	-0.1647	0.014462	1832.0
12	2238.2	686.90	0.045450	-0.1647	5.0817E-03	1923.7

APPALDATORE:		<p style="text-align: center;">ITINERARIO NAPOLI – BARI</p> <p style="text-align: center;">RADDOPPIO TRATTA APICE – ORSARA</p> <p style="text-align: center;">II LOTTO FUNZIONALE HIRPINIA - ORSARA</p>					
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 SPALLA A E SPALLA B		IF3A	02	E ZZ CL	VI0103 001	A	122 di 271

MINIMUM	2238.2	638.56	-0.041872	-0.1647	5.0817E-03	1831.0
Pile N.	12	10	2	1	12	10
MAXIMUM	4026.6	803.25	0.045450	-0.1647	0.2755	2140.4
Pile N.	6	6	12	1	1	6

PILE GROUP	STRESS, KN/ M**2
1	8691.7
2	8560.2
3	8561.8
4	8563.4
5	8565.0
6	8699.9
7	7045.4
8	6767.8
9	6762.6
10	6761.1
11	6763.3
12	7037.8

MINIMUM	6761.1
Pile N.	10
MAXIMUM	8699.9
Pile N.	6

* 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	-3.9060E-05	-1.1725E-08	-2139.0	-0.012686	-416.81	-0.047061	-160.24	-0.025178	2274.8	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
2	-3.9835E-05	-1.2149E-08	-2094.9	-0.012710	-403.98	-0.046713	-153.10	-0.024515	2275.5	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
3	-3.9839E-05	-1.2149E-08	-2095.2	-0.012710	-404.02	-0.046713	-153.11	-0.024514	2276.3	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
4	-3.9843E-05	-1.2149E-08	-2095.5	-0.012710	-404.07	-0.046713	-153.13	-0.024513	2277.1	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
5	-3.9847E-05	-1.2149E-08	-2095.7	-0.012710	-404.11	-0.046713	-153.15	-0.024512	2277.8	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
6	-3.9081E-05	-1.1726E-08	-2140.4	-0.012687	-417.04	-0.047061	-160.33	-0.025172	2278.6	7.8500E+06	7.8500E+06
x(M)	8.7000	4.9500	0.0000	7.8000	7.3500	3.4500	8.8500	6.0000	15.000	0.0000	0.0000
7	-4.1081E-05	-5.6471E-09	-1925.0	-6.2233E-03	-353.24	-0.046802	-126.53	-0.016537	1270.4	7.8500E+06	7.8500E+06
x(M)	9.0000	8.5500	0.0000	11.250	7.6500	7.2000	9.1500	8.8500	15.000	0.0000	0.0000
8	-4.2128E-05	-5.8286E-09	-1832.7	-5.8983E-03	-326.86	-0.043488	-113.58	-0.014871	1269.7	7.8500E+06	7.8500E+06
x(M)	9.3000	8.7000	0.0000	11.550	7.8000	7.3500	9.4500	9.0000	15.000	0.0000	0.0000
9	-4.2141E-05	-5.8308E-09	-1831.2	-5.8935E-03	-326.47	-0.043446	-113.40	-0.014850	1268.9	7.8500E+06	7.8500E+06
x(M)	9.3000	8.7000	0.0000	11.550	7.8000	7.3500	9.4500	9.0000	15.000	0.0000	0.0000
10	-4.2137E-05	-5.8309E-09	-1831.0	-5.8936E-03	-326.43	-0.043446	-113.39	-0.014851	1268.1	7.8500E+06	7.8500E+06
x(M)	9.3000	8.7000	0.0000	11.550	7.8000	7.3500	9.4500	9.0000	15.000	0.0000	0.0000
11	-4.2115E-05	-5.8289E-09	-1832.0	-5.8986E-03	-326.76	-0.043489	-113.55	-0.014872	1267.4	7.8500E+06	7.8500E+06
x(M)	9.3000	8.7000	0.0000	11.550	7.8000	7.3500	9.4500	9.0000	15.000	0.0000	0.0000
12	-4.1061E-05	-5.6476E-09	-1923.7	-6.2238E-03	-353.06	-0.046806	-126.46	-0.016539	1266.6	7.8500E+06	7.8500E+06
x(M)	9.0000	8.5500	0.0000	11.250	7.6500	7.2000	9.1500	8.8500	15.000	0.0000	0.0000
Min.	-4.2141E-05	-1.2149E-08	-2140.4	-0.012710	-417.04	-0.047061	-160.33	-0.025178	1266.6	7.8500E+06	7.8500E+06
Pile N.	9	2	6	2	6	1	6	1	12	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	2.6380E-03	1.9007E-07	1134.3	0.2755	802.84	4.9394E-03	702.34	2.3905E-03	8691.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.1500	5.5500	1.6500	0.0000	0.0000	0.0000
2	2.6383E-03	1.9007E-07	1118.3	0.2751	777.48	4.8687E-03	677.51	2.2201E-03	8560.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.3000	5.5500	1.6500	0.0000	0.0000	0.0000
3	2.6386E-03	1.9007E-07	1118.4	0.2751	777.57	4.8687E-03	677.56	2.2201E-03	8561.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.3000	5.5500	1.6500	0.0000	0.0000	0.0000
4	2.6388E-03	1.9007E-07	1118.5	0.2751	777.67	4.8688E-03	677.61	2.2201E-03	8563.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.3000	5.5500	1.6500	0.0000	0.0000	0.0000
5	2.6391E-03	1.9007E-07	1118.7	0.2751	777.76	4.8689E-03	677.65	2.2201E-03	8565.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.3000	5.5500	1.6500	0.0000	0.0000	0.0000
6	2.6394E-03	1.9007E-07	1134.9	0.2755	803.33	4.9397E-03	702.60	2.3905E-03	8699.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	9.1500	5.5500	1.6500	0.0000	0.0000	0.0000
7	2.6394E-03	4.6993E-07	1035.8	0.1423	687.35	0.045448	537.22	0.047635	7045.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	2.6391E-03	4.6993E-07	992.44	0.1374	639.37	0.040094	480.53	0.042377	6767.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	2.6388E-03	4.6993E-07	991.76	0.1373	638.67	0.040026	479.77	0.042311	6762.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	2.6386E-03	4.6993E-07	991.66	0.1373	638.60	0.040026	479.73	0.042313	6761.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	2.6383E-03	4.6993E-07	992.14	0.1374	639.15	0.040096	480.42	0.042383	6763.3	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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 123 di 271

x(M)	0.0000	0.0000	6.1500	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	2.6380E-03	4.6993E-07	1035.3	0.1423	686.94	0.045450	537.02	0.047647	7037.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	5.1000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	2.6394E-03	4.6993E-07	1134.9	0.2755	803.33	0.045450	702.60	0.047647	8699.9	7.8500E+06	7.8500E+06
Pile N.	6	7	6	1	6	12	6	12	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 29630.0	HOR. LOAD Y, KN 20907.0	HOR. LOAD Z, KN 16.0000
MOMENT X, KN- M 368.000	MOMENT Y, KN- M 16.0000	MOMENT Z, KN- M -16.0000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 8.54070E-04	HORIZONTAL Y, M 8.04538E-03	HORIZONTAL Z, M 4.95321E-06
ANGLE ROT. X, RAD 2.02358E-06	ANGLE ROT. Y, RAD 3.24849E-08	ANGLE ROT. Z, RAD -3.61469E-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	1.6670E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
2	1.6672E-03	8.0590E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
3	1.6673E-03	8.0499E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
4	1.6675E-03	8.0408E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
5	1.6676E-03	8.0317E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
6	1.6677E-03	8.0226E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
7	4.1131E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
8	4.0985E-05	8.0317E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
9	4.0838E-05	8.0408E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
10	4.0692E-05	8.0499E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
11	4.0546E-05	8.0590E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
12	4.0400E-05	8.0681E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
MINIMUM	4.0400E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.6677E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	6	1	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	4817.2	1954.4	2.6561	5.3591	-8.4027	5731.9
2	4817.6	1884.0	2.5688	5.3591	-8.2270	5588.9
3	4818.1	1882.2	2.5697	5.3591	-8.2288	5582.2

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 124 di 271

4	4818.5	1880.4	2.5705	5.3591	-8.2305	5575.6
5	4818.9	1878.6	2.5714	5.3591	-8.2322	5568.9
6	4819.3	1945.1	2.6608	5.3591	-8.4116	5697.8
7	121.14	1658.4	0.070915	5.3591	-0.1967	5104.1
8	120.71	1537.9	0.065333	5.3591	-0.1849	4849.1
9	120.28	1537.8	0.065235	5.3591	-0.1847	4851.6
10	119.85	1539.3	0.065210	5.3591	-0.1847	4857.5
11	119.42	1542.4	0.065257	5.3591	-0.1847	4866.9
12	118.99	1666.5	0.070778	5.3591	-0.1964	5135.2
MINIMUM	118.99	1537.8	0.065210	5.3591	-8.4116	4849.1
Pile N.	12	9	10	1	6	8
MAXIMUM	4819.3	1954.4	2.6608	5.3591	-0.1847	5731.9
Pile N.	6	1	6	1	10	1

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	1.6670E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
2	1.6672E-03	8.0590E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
3	1.6673E-03	8.0499E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
4	1.6675E-03	8.0408E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
5	1.6676E-03	8.0317E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
6	1.6677E-03	8.0226E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
7	4.1131E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
8	4.0985E-05	8.0317E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
9	4.0838E-05	8.0408E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
10	4.0692E-05	8.0499E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
11	4.0546E-05	8.0590E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
12	4.0400E-05	8.0681E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
MINIMUM	4.0400E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.6677E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	6	1	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	4817.2	1954.4	2.6561	5.3591	-8.4027	5731.9
2	4817.6	1884.0	2.5688	5.3591	-8.2270	5588.9
3	4818.1	1882.2	2.5697	5.3591	-8.2288	5582.2
4	4818.5	1880.4	2.5705	5.3591	-8.2305	5575.6
5	4818.9	1878.6	2.5714	5.3591	-8.2322	5568.9
6	4819.3	1945.1	2.6608	5.3591	-8.4116	5697.8
7	121.14	1658.4	0.070915	5.3591	-0.1967	5104.1
8	120.71	1537.9	0.065333	5.3591	-0.1849	4849.1
9	120.28	1537.8	0.065235	5.3591	-0.1847	4851.6
10	119.85	1539.3	0.065210	5.3591	-0.1847	4857.5
11	119.42	1542.4	0.065257	5.3591	-0.1847	4866.9
12	118.99	1666.5	0.070778	5.3591	-0.1964	5135.2
MINIMUM	118.99	1537.8	0.065210	5.3591	-8.4116	4849.1
Pile N.	12	9	10	1	6	8
MAXIMUM	4819.3	1954.4	2.6608	5.3591	-0.1847	5731.9
Pile N.	6	1	6	1	10	1

PILE GROUP STRESS, KN/ M**2

*****	*****
1	1.9922E+04
2	1.9493E+04
3	1.9473E+04
4	1.9453E+04
5	1.9434E+04
6	1.9821E+04
7	1.5381E+04
8	1.4616E+04
9	1.4623E+04
10	1.4640E+04
11	1.4668E+04
12	1.5473E+04
MINIMUM	1.4616E+04
Pile N.	8
MAXIMUM	1.9922E+04
Pile N.	1

* EFFECTS FOR Laterally Loaded Pile *

* MINIMUM VALUES AND LOCATIONS *

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
------	--------	--------	--------	--------	-------	-------	------------	------------	-------	------------	------------

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA			RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 125 di 271

	y-DIR M	z-DIR M	z-DIR KN- M	y-DIR KN- M	y-DIR KN	z-DIR KN	y-DIR KN/ M	z-DIR KN/ M	STRESS KN/ M**2	z-DIR KN- M**2	y-DIR KN- M**2
1	-1.0501E-04	-1.3314E-07	-5731.9	-8.4027	-1066.1	-1.3520	-371.94	-0.4728	2726.0	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	7.9500	7.9500	9.3000	9.4500	15.000	0.0000	0.0000
2	-1.0671E-04	-1.3564E-07	-5588.9	-8.2270	-1021.4	-1.3006	-348.68	-0.4437	2726.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	8.1000	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
3	-1.0658E-04	-1.3563E-07	-5582.2	-8.2288	-1020.5	-1.3010	-348.46	-0.4440	2726.5	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	8.1000	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
4	-1.0644E-04	-1.3561E-07	-5575.6	-8.2305	-1019.5	-1.3014	-348.24	-0.4442	2726.7	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	8.1000	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
5	-1.0631E-04	-1.3559E-07	-5568.9	-8.2322	-1018.6	-1.3018	-348.02	-0.4445	2726.9	7.8500E+06	7.8500E+06
x(M)	9.3000	9.4500	0.0000	0.0000	8.1000	8.1000	9.4500	9.6000	15.000	0.0000	0.0000
6	-1.0430E-04	-1.3306E-07	-5697.8	-8.4116	-1061.2	-1.3542	-370.74	-0.4741	2727.2	7.8500E+06	7.8500E+06
x(M)	9.3000	9.3000	0.0000	0.0000	7.9500	7.9500	9.3000	9.4500	15.000	0.0000	0.0000
7	-1.1352E-04	-5.2858E-09	-5104.1	-0.1967	-874.78	-0.040798	-277.48	-0.012901	68.553	7.8500E+06	7.8500E+06
x(M)	9.7500	9.7500	0.0000	0.0000	8.4000	8.2500	9.9000	9.7500	15.000	0.0000	0.0000
8	-1.1869E-04	-5.5237E-09	-4849.1	-0.1849	-798.48	-0.037140	-242.85	-0.011259	68.309	7.8500E+06	7.8500E+06
x(M)	10.050	9.9000	0.0000	0.0000	8.5500	8.4000	10.200	10.050	15.000	0.0000	0.0000
9	-1.1893E-04	-5.5270E-09	-4851.6	-0.1847	-798.20	-0.037076	-242.60	-0.011233	68.066	7.8500E+06	7.8500E+06
x(M)	10.050	9.9000	0.0000	0.0000	8.5500	8.4000	10.200	10.050	15.000	0.0000	0.0000
10	-1.1909E-04	-5.5275E-09	-4857.5	-0.1847	-798.92	-0.037062	-242.77	-0.011227	67.822	7.8500E+06	7.8500E+06
x(M)	10.050	9.9000	0.0000	0.0000	8.5500	8.4000	10.200	10.050	15.000	0.0000	0.0000
11	-1.1918E-04	-5.5251E-09	-4866.9	-0.1847	-800.62	-0.037099	-243.36	-0.011241	67.579	7.8500E+06	7.8500E+06
x(M)	10.050	9.9000	0.0000	0.0000	8.5500	8.4000	10.200	10.050	15.000	0.0000	0.0000
12	-1.1428E-04	-5.2891E-09	-5135.2	-0.1964	-878.78	-0.040726	-278.42	-0.012864	67.335	7.8500E+06	7.8500E+06
x(M)	9.7500	9.7500	0.0000	0.0000	8.4000	8.2500	9.9000	9.7500	15.000	0.0000	0.0000
Min.	-1.1918E-04	-1.3564E-07	-5731.9	-8.4116	-1066.1	-1.3542	-371.94	-0.4741	67.335	7.8500E+06	7.8500E+06
Pile N.	11	2	1	6	1	6	1	6	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	8.0681E-03	9.5063E-06	3026.1	3.8163	1954.6	2.6565	1396.9	1.8401	1.9922E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	8.0590E-03	9.5063E-06	2956.6	3.7314	1884.2	2.5691	1323.7	1.7466	1.9493E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	8.0499E-03	9.5063E-06	2953.6	3.7322	1882.4	2.5700	1322.6	1.7473	1.9473E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	8.0408E-03	9.5063E-06	2950.5	3.7329	1880.6	2.5709	1321.5	1.7481	1.9453E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	8.0317E-03	9.5063E-06	2947.5	3.7337	1878.8	2.5718	1320.4	1.7489	1.9434E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3000	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	8.0226E-03	9.5063E-06	3010.8	3.8198	1945.4	2.6611	1391.2	1.8443	1.9821E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	8.0226E-03	4.0016E-07	2708.9	0.1274	1658.4	0.070915	1088.8	0.048621	1.5381E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	8.0317E-03	4.0016E-07	2571.4	0.1209	1537.9	0.065333	967.11	0.043086	1.4616E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	8.0408E-03	4.0016E-07	2572.0	0.1207	1537.8	0.065236	966.31	0.042994	1.4623E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	8.0499E-03	4.0016E-07	2574.5	0.1207	1539.3	0.065210	967.09	0.042973	1.4640E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	8.0590E-03	4.0016E-07	2579.0	0.1208	1542.5	0.065258	969.44	0.043023	1.4668E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.4500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	8.0681E-03	4.0016E-07	2722.6	0.1273	1666.5	0.070778	1093.2	0.048506	1.5473E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.4500	6.3000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	8.0681E-03	9.5063E-06	3026.1	3.8198	1954.6	2.6611	1396.9	1.8443	1.9922E+04	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	1	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 126 di 271

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 30757.0	HOR. LOAD Y, KN 3431.00	HOR. LOAD Z, KN 0.00000
MOMENT X, KN- M 0.00000	MOMENT Y, KN- M 4997.00	MOMENT Z, KN- M -4997.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 8.79684E-04	HORIZONTAL Y, M 1.11051E-03	HORIZONTAL Z, M 7.37651E-06
ANGLE ROT. X, RAD -9.53452E-09	ANGLE ROT. Y, RAD 2.44227E-06	ANGLE ROT. Z, RAD -8.04885E-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	1.0333E-03	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
2	1.0443E-03	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
3	1.0553E-03	1.1105E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
4	1.0663E-03	1.1105E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
5	1.0773E-03	1.1106E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
6	1.0883E-03	1.1106E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
7	7.2606E-04	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
8	7.1507E-04	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
9	7.0408E-04	1.1105E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
10	6.9309E-04	1.1105E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
11	6.8210E-04	1.1104E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
12	6.7111E-04	1.1104E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
MINIMUM	6.7111E-04	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.0883E-03	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	6	6	7	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	3002.9	317.14	0.087588	-0.025250	3.3176	805.91
2	3034.4	306.86	0.055264	-0.025250	3.3633	788.17
3	3065.8	306.87	0.055232	-0.025250	3.3633	788.21
4	3097.3	306.88	0.055200	-0.025250	3.3632	788.26
5	3128.8	306.89	0.055169	-0.025250	3.3632	788.30
6	3160.2	317.19	0.087434	-0.025250	3.3173	806.14
7	2123.3	273.68	-0.030950	-0.025250	3.4678	728.82
8	2091.8	255.59	-0.083246	-0.025250	3.5445	695.26
9	2060.3	255.35	-0.083881	-0.025250	3.5456	694.77
10	2028.9	255.34	-0.083851	-0.025250	3.5456	694.73
11	1997.4	255.57	-0.083156	-0.025250	3.5447	695.13
12	1965.9	273.64	-0.030803	-0.025250	3.4681	728.60
MINIMUM	1965.9	255.34	-0.083881	-0.025250	3.3173	694.73
Pile N.	12	10	9	1	6	10
MAXIMUM	3160.2	317.19	0.087588	-0.025250	3.5456	806.14
Pile N.	6	6	1	1	9	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	1.0333E-03	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
2	1.0443E-03	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
3	1.0553E-03	1.1105E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
4	1.0663E-03	1.1105E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
5	1.0773E-03	1.1106E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
6	1.0883E-03	1.1106E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
7	7.2606E-04	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05

APPALDATORE: <u>Consorzio</u> HIRPINIA - ORSARA AV	<u>Soci</u> WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
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 SPALLA A E SPALLA B	COMMESSA IF3A		LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 127 di 271

8	7.1507E-04	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
9	7.0408E-04	1.1105E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
10	6.9309E-04	1.1105E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
11	6.8210E-04	1.1104E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
12	6.7111E-04	1.1104E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
MINIMUM	6.7111E-04	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.0883E-03	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	6	6	7	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	3002.9	317.14	0.087588	-0.025250	3.3176	805.91
2	3034.4	306.86	0.055264	-0.025250	3.3633	788.17
3	3065.8	306.87	0.055232	-0.025250	3.3633	788.21
4	3097.3	306.88	0.055200	-0.025250	3.3632	788.26
5	3128.8	306.89	0.055169	-0.025250	3.3632	788.30
6	3160.2	317.19	0.087434	-0.025250	3.3173	806.14
7	2123.3	273.68	-0.030950	-0.025250	3.4678	728.82
8	2091.8	255.59	-0.083246	-0.025250	3.5445	695.26
9	2060.3	255.35	-0.083881	-0.025250	3.5456	694.77
10	2028.9	255.34	-0.083851	-0.025250	3.5456	694.73
11	1997.4	255.57	-0.083156	-0.025250	3.5447	695.13
12	1965.9	273.64	-0.030803	-0.025250	3.4681	728.60
MINIMUM	1965.9	255.34	-0.083881	-0.025250	3.3173	694.73
Pile N.	12	10	9	1	6	10
MAXIMUM	3160.2	317.19	0.087588	-0.025250	3.5456	806.14
Pile N.	6	6	1	1	9	6

PILE GROUP STRESS, KN/ M**2

1	4117.1
2	4081.6
3	4099.6
4	4117.5
5	4135.4
6	4206.8
7	3388.0
8	3269.5
9	3250.2
10	3232.3
11	3215.7
12	3298.3
MINIMUM	3215.7
Pile N.	11
MAXIMUM	4206.8
Pile N.	6

* 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	-1.6227E-05	-8.1606E-08	-805.91	-0.1020	-171.78	-0.7933	-65.994	-0.2958	1699.3	7.8500E+06	7.8500E+06
x(M)	8.5500	7.6500	0.0000	10.200	7.3500	6.3000	8.7000	7.8000	15.000	0.0000	0.0000
2	-1.6501E-05	-8.4070E-08	-788.17	-0.1015	-166.78	-0.7763	-62.978	-0.2844	1717.1	7.8500E+06	7.8500E+06
x(M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
3	-1.6502E-05	-8.4072E-08	-788.21	-0.1015	-166.79	-0.7763	-62.981	-0.2844	1734.9	7.8500E+06	7.8500E+06
x(M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
4	-1.6503E-05	-8.4074E-08	-788.26	-0.1015	-166.80	-0.7763	-62.984	-0.2844	1752.7	7.8500E+06	7.8500E+06
x(M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
5	-1.6504E-05	-8.4075E-08	-788.30	-0.1015	-166.81	-0.7763	-62.988	-0.2844	1770.5	7.8500E+06	7.8500E+06
x(M)	8.7000	7.6500	0.0000	10.350	7.3500	6.3000	8.8500	7.8000	15.000	0.0000	0.0000
6	-1.6232E-05	-8.1613E-08	-806.14	-0.1020	-171.83	-0.7933	-66.012	-0.2958	1788.3	7.8500E+06	7.8500E+06
x(M)	8.5500	7.6500	0.0000	10.200	7.3500	6.3000	8.7000	7.8000	15.000	0.0000	0.0000
7	-1.7535E-05	-9.3548E-08	-728.82	-0.1006	-149.09	-0.7213	-53.181	-0.2492	1201.5	7.8500E+06	7.8500E+06
x(M)	8.8500	7.8000	0.0000	10.650	7.5000	6.4500	9.1500	7.9500	15.000	0.0000	0.0000
8	-1.8146E-05	-9.9713E-08	-695.26	-0.099835	-139.00	-0.6901	-48.007	-0.2299	1183.7	7.8500E+06	7.8500E+06
x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
9	-1.8152E-05	-9.9795E-08	-694.77	-0.099827	-138.86	-0.6897	-47.940	-0.2297	1165.9	7.8500E+06	7.8500E+06
x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
10	-1.8151E-05	-9.9793E-08	-694.73	-0.099824	-138.85	-0.6897	-47.937	-0.2297	1148.1	7.8500E+06	7.8500E+06
x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
11	-1.8143E-05	-9.9705E-08	-695.13	-0.099828	-138.97	-0.6901	-47.999	-0.2299	1130.3	7.8500E+06	7.8500E+06
x(M)	9.0000	7.8000	0.0000	10.800	7.6500	6.4500	9.3000	8.1000	15.000	0.0000	0.0000
12	-1.7530E-05	-9.3538E-08	-728.60	-0.1006	-149.05	-0.7212	-53.166	-0.2492	1112.5	7.8500E+06	7.8500E+06
x(M)	8.8500	7.8000	0.0000	10.650	7.5000	6.4500	9.1500	7.9500	15.000	0.0000	0.0000
Min.	-1.8152E-05	-9.9795E-08	-806.14	-0.1020	-171.83	-0.7933	-66.012	-0.2958	1112.5	7.8500E+06	7.8500E+06
Pile N.	9	9	6	6	6	6	6	6	12	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 128 di 271

* 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	1.1104E-03	7.3551E-06	468.91	3.4018	317.16	0.087493	330.45	0.4371	4117.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.3500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.1104E-03	7.3551E-06	462.62	3.4097	306.89	0.055166	318.92	0.4198	4081.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.0500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.1105E-03	7.3551E-06	462.64	3.4097	306.90	0.055133	318.93	0.4198	4099.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.0500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.1105E-03	7.3551E-06	462.66	3.4096	306.91	0.055101	318.94	0.4198	4117.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.0500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.1106E-03	7.3551E-06	462.68	3.4096	306.92	0.055069	318.96	0.4198	4135.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.0500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.1106E-03	7.3551E-06	469.02	3.4018	317.21	0.087334	330.52	0.4370	4206.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	1.3500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.1106E-03	7.3980E-06	438.31	3.4678	273.70	0.038854	279.32	0.3722	3388.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.1106E-03	7.3980E-06	423.52	3.5445	255.60	0.038096	256.54	0.3351	3269.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.1105E-03	7.3980E-06	423.30	3.5456	255.36	0.038084	256.23	0.3346	3250.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.1105E-03	7.3980E-06	423.28	3.5456	255.35	0.038083	256.22	0.3346	3232.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.1104E-03	7.3980E-06	423.46	3.5447	255.58	0.038093	256.51	0.3351	3215.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	0.0000	0.0000	12.150	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.1104E-03	7.3980E-06	438.21	3.4681	273.65	0.038849	279.26	0.3723	3298.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	0.0000	0.0000	12.000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.1106E-03	7.3980E-06	469.02	3.5456	317.21	0.087493	330.52	0.4371	4206.8	7.8500E+06	7.8500E+06
Pile N.	5	7	6	9	6	1	6	1	6	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	0.8659	1.0000
2	0.8051	1.0000
3	0.8051	1.0000
4	0.8051	1.0000
5	0.8052	1.0000
6	0.8661	1.0000
7	0.6219	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
35548.0	4302.00	105.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-819.000	5354.00	-5354.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.01913E-03	1.37833E-03	3.54290E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-2.90252E-06	2.77290E-06	-9.61605E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

* PILE TOP DISPLACEMENTS *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 129 di 271

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.2043E-03	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
2	1.2168E-03	1.3587E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
3	1.2293E-03	1.3718E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
4	1.2417E-03	1.3849E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
5	1.2542E-03	1.3979E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
6	1.2667E-03	1.4110E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
7	8.3397E-04	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
8	8.2149E-04	1.3979E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
9	8.0901E-04	1.3849E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
10	7.9653E-04	1.3718E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
11	7.8406E-04	1.3587E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
12	7.7158E-04	1.3457E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
MINIMUM	7.7158E-04	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2667E-03	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	6	6	7	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	3492.5	385.65	7.5356	-7.6868	-17.898	982.88
2	3528.2	377.75	7.2806	-7.6868	-17.461	974.80
3	3563.9	382.33	7.2805	-7.6868	-17.461	988.32
4	3599.6	386.91	7.2803	-7.6868	-17.461	1001.8
5	3635.4	391.50	7.2802	-7.6868	-17.461	1015.4
6	3671.1	409.28	7.5355	-7.6868	-17.900	1051.8
7	2432.2	353.61	10.600	-7.6868	-28.708	952.62
8	2396.5	326.49	9.9063	-7.6868	-27.419	897.26
9	2360.7	322.31	9.8973	-7.6868	-27.401	884.46
10	2325.0	318.43	9.8975	-7.6868	-27.401	872.23
11	2289.3	314.83	9.9067	-7.6868	-27.418	860.54
12	2253.6	332.90	10.600	-7.6868	-28.705	889.00
MINIMUM	2253.6	314.83	7.2802	-7.6868	-28.708	860.54
Pile N.	12	11	5	1	7	11
MAXIMUM	3671.1	409.28	10.600	-7.6868	-17.461	1051.8
Pile N.	6	6	7	1	2	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	1.2043E-03	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
2	1.2168E-03	1.3587E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
3	1.2293E-03	1.3718E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
4	1.2417E-03	1.3849E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
5	1.2542E-03	1.3979E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
6	1.2667E-03	1.4110E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
7	8.3397E-04	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
8	8.2149E-04	1.3979E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
9	8.0901E-04	1.3849E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
10	7.9653E-04	1.3718E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
11	7.8406E-04	1.3587E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
12	7.7158E-04	1.3457E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
MINIMUM	7.7158E-04	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2667E-03	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	6	6	7	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	3492.5	385.65	7.5356	-7.6868	-17.898	982.88
2	3528.2	377.75	7.2806	-7.6868	-17.461	974.80
3	3563.9	382.33	7.2805	-7.6868	-17.461	988.32
4	3599.6	386.91	7.2803	-7.6868	-17.461	1001.8
5	3635.4	391.50	7.2802	-7.6868	-17.461	1015.4
6	3671.1	409.28	7.5355	-7.6868	-17.900	1051.8
7	2432.2	353.61	10.600	-7.6868	-28.708	952.62
8	2396.5	326.49	9.9063	-7.6868	-27.419	897.26
9	2360.7	322.31	9.8973	-7.6868	-27.401	884.46
10	2325.0	318.43	9.8975	-7.6868	-27.401	872.23
11	2289.3	314.83	9.9067	-7.6868	-27.418	860.54
12	2253.6	332.90	10.600	-7.6868	-28.705	889.00
MINIMUM	2253.6	314.83	7.2802	-7.6868	-28.708	860.54
Pile N.	12	11	5	1	7	11

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 131 di 271

x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.4110E-03	4.1960E-05	600.27	16.728	409.32	10.601	425.45	10.763	5233.3	7.8500E+06	7.8500E+06
Pile N.	6	7	6	7	6	7	6	7	6	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	0.8612	1.0000
2	0.8008	1.0000
3	0.8008	1.0000
4	0.8008	1.0000
5	0.8013	1.0000
6	0.8661	1.0000
7	0.6277	1.0000
8	0.5326	1.0000
9	0.5307	1.0000
10	0.5307	1.0000
11	0.5318	1.0000
12	0.6210	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
30757.0	3431.00	600.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
266.000	4997.00	-4997.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
8.79684E-04	1.11117E-03	1.61735E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
6.42170E-07	3.32778E-06	-8.05055E-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	1.0234E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
2	1.0384E-03	1.1155E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
3	1.0533E-03	1.1126E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
4	1.0683E-03	1.1097E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
5	1.0833E-03	1.1068E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
6	1.0983E-03	1.1040E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
7	7.3598E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
8	7.2101E-04	1.1068E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
9	7.0603E-04	1.1097E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
10	6.9106E-04	1.1126E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
11	6.7608E-04	1.1155E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
12	6.6111E-04	1.1184E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
MINIMUM	6.6111E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0983E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	6	1	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	2974.5	319.20	55.437	1.7007	-156.74	812.86
2	3017.4	307.84	53.771	1.7007	-153.81	791.97
3	3060.2	306.82	53.770	1.7007	-153.81	788.98
4	3103.1	305.80	53.768	1.7007	-153.81	785.99
5	3146.0	304.87	53.781	1.7007	-153.84	783.15

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 132 di 271

6	3188.9	314.75	55.563	1.7007	-156.97	799.03
7	2151.7	272.70	47.748	1.7007	-141.72	724.36
8	2108.8	254.68	44.691	1.7007	-135.97	692.09
9	2065.9	255.16	44.629	1.7007	-135.85	694.07
10	2023.0	256.03	44.630	1.7007	-135.85	696.78
11	1980.2	257.12	44.668	1.7007	-135.92	699.92
12	1937.3	276.02	47.544	1.7007	-141.34	736.05
MINIMUM	1937.3	254.68	44.629	1.7007	-156.97	692.09
Pile N.	12	8	9	1	6	8
MAXIMUM	3188.9	319.20	55.563	1.7007	-135.85	812.86
Pile N.	6	1	6	1	9	1

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	1.0234E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
2	1.0384E-03	1.1155E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
3	1.0533E-03	1.1126E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
4	1.0683E-03	1.1097E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
5	1.0833E-03	1.1068E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
6	1.0983E-03	1.1040E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
7	7.3598E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
8	7.2101E-04	1.1068E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
9	7.0603E-04	1.1097E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
10	6.9106E-04	1.1126E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
11	6.7608E-04	1.1155E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
12	6.6111E-04	1.1184E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
MINIMUM	6.6111E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0983E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	6	1	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	2974.5	319.20	55.437	1.7007	-156.74	812.86
2	3017.4	307.84	53.771	1.7007	-153.81	791.97
3	3060.2	306.82	53.770	1.7007	-153.81	788.98
4	3103.1	305.80	53.768	1.7007	-153.81	785.99
5	3146.0	304.87	53.781	1.7007	-153.84	783.15
6	3188.9	314.75	55.563	1.7007	-156.97	799.03
7	2151.7	272.70	47.748	1.7007	-141.72	724.36
8	2108.8	254.68	44.691	1.7007	-135.97	692.09
9	2065.9	255.16	44.629	1.7007	-135.85	694.07
10	2023.0	256.03	44.630	1.7007	-135.85	696.78
11	1980.2	257.12	44.668	1.7007	-135.92	699.92
12	1937.3	276.02	47.544	1.7007	-141.34	736.05
MINIMUM	1937.3	254.68	44.629	1.7007	-156.97	692.09
Pile N.	12	8	9	1	6	8
MAXIMUM	3188.9	319.20	55.563	1.7007	-135.85	812.86
Pile N.	6	1	6	1	9	1

PILE GROUP STRESS, KN/ M**2

*****	*****
1	4166.7
2	4127.8
3	4143.2
4	4158.7
5	4174.6
6	4247.5
7	3431.9
8	3309.3
9	3290.8
10	3274.5
11	3259.5
12	3344.8
MINIMUM	3259.5
Pile N.	11
MAXIMUM	4247.5
Pile N.	6

* 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
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APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA												
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:12.5%;">COMMESSA</td> <td style="width:12.5%;">LOTTO</td> <td style="width:12.5%;">CODIFICA</td> <td style="width:12.5%;">DOCUMENTO</td> <td style="width:12.5%;">REV.</td> <td style="width:12.5%;">FOGLIO</td> </tr> <tr> <td>IF3A</td> <td>02</td> <td>E ZZ CL</td> <td>VI0103 001</td> <td>A</td> <td style="text-align: right;">133 di 271</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	133 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF3A	02	E ZZ CL	VI0103 001	A	133 di 271								

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*****
1  -1.6378E-05  -2.5876E-06  -812.86  -156.74  -172.78  -27.499  -66.277  -10.558  1683.2  7.8500E+06  7.8500E+06
X(M) 8.5500 8.7000 0.0000 0.0000 7.3500 7.3500 8.7000 8.8500 15.000 0.0000 0.0000
2  -1.6611E-05  -2.6366E-06  -791.97  -153.81  -167.24  -26.634  -63.088  -10.080  1707.5  7.8500E+06  7.8500E+06
X(M) 8.7000 8.7000 0.0000 0.0000 7.3500 7.3500 8.8500 8.8500 15.000 0.0000 0.0000
3  -1.6564E-05  -2.6366E-06  -788.98  -153.81  -166.75  -26.634  -62.896  -10.080  1731.7  7.8500E+06  7.8500E+06
X(M) 8.7000 8.7000 0.0000 0.0000 7.3500 7.3500 8.8500 8.8500 15.000 0.0000 0.0000
4  -1.6516E-05  -2.6367E-06  -785.99  -153.81  -166.27  -26.635  -62.713  -10.080  1756.0  7.8500E+06  7.8500E+06
X(M) 8.7000 8.7000 0.0000 0.0000 7.3500 7.3500 8.8500 8.8500 15.000 0.0000 0.0000
5  -1.6465E-05  -2.6363E-06  -783.15  -153.84  -165.83  -26.643  -62.553  -10.085  1780.3  7.8500E+06  7.8500E+06
X(M) 8.7000 8.7000 0.0000 0.0000 7.3500 7.3500 8.8500 8.8500 15.000 0.0000 0.0000
6  -1.6123E-05  -2.5835E-06  -799.03  -156.97  -170.66  -27.567  -65.565  -10.595  1804.5  7.8500E+06  7.8500E+06
X(M) 8.5500 8.7000 0.0000 0.0000 7.3500 7.3500 8.7000 8.8500 15.000 0.0000 0.0000
7  -1.7385E-05  -2.7355E-06  -724.36  -141.72  -148.72  -23.524  -53.147  -8.4444  1217.6  7.8500E+06  7.8500E+06
X(M) 8.8500 9.0000 0.0000 0.0000 7.5000 7.6500 9.0000 9.1500 15.000 0.0000 0.0000
8  -1.8072E-05  -2.8366E-06  -692.09  -135.97  -138.59  -21.837  -47.884  -7.5754  1193.3  7.8500E+06  7.8500E+06
X(M) 9.0000 9.1500 0.0000 0.0000 7.6500 7.6500 9.3000 9.3000 15.000 0.0000 0.0000
9  -1.8135E-05  -2.8387E-06  -694.07  -135.85  -138.78  -21.800  -47.918  -7.5572  1169.1  7.8500E+06  7.8500E+06
X(M) 9.0000 9.1500 0.0000 0.0000 7.6500 7.6500 9.3000 9.3000 15.000 0.0000 0.0000
10  -1.8187E-05  -2.8386E-06  -696.78  -135.85  -139.18  -21.799  -48.058  -7.5570  1144.8  7.8500E+06  7.8500E+06
X(M) 9.0000 9.1500 0.0000 0.0000 7.6500 7.6500 9.3000 9.3000 15.000 0.0000 0.0000
11  -1.8232E-05  -2.8373E-06  -699.92  -135.92  -139.72  -21.821  -48.262  -7.5677  1120.5  7.8500E+06  7.8500E+06
X(M) 9.0000 9.1500 0.0000 0.0000 7.6500 7.6500 9.3000 9.3000 15.000 0.0000 0.0000
12  -1.7674E-05  -2.7425E-06  -736.05  -141.34  -150.16  -23.414  -53.558  -8.3838  1096.3  7.8500E+06  7.8500E+06
X(M) 8.8500 9.0000 0.0000 0.0000 7.5000 7.6500 9.1500 9.1500 15.000 0.0000 0.0000

Min. -1.8232E-05  -2.8387E-06  -812.86  -156.97  -172.78  -27.567  -66.277  -10.595  1096.3  7.8500E+06  7.8500E+06
Pile N. 11 9 1 6 1 6 1 6 12 1 1

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* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS	FLEX. RIG.	
	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir		KN- M**2	KN- M**2
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	1.1184E-03	1.6318E-04	472.21	74.941	319.22	55.441	332.44	56.208	4166.7	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.1155E-03	1.6318E-04	464.47	73.836	307.87	53.775	319.79	54.250	4127.8	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.1126E-03	1.6318E-04	463.12	73.837	306.85	53.774	318.78	54.250	4143.2	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.1097E-03	1.6318E-04	461.77	73.837	305.83	53.773	317.76	54.249	4158.7	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.1068E-03	1.6318E-04	460.48	73.847	304.89	53.786	316.84	54.266	4174.6	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.1039E-03	1.6318E-04	465.85	75.026	314.77	55.568	328.07	56.359	4247.5	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.1039E-03	1.6029E-04	436.32	68.921	272.72	47.751	278.68	47.024	3431.9	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.1068E-03	1.6029E-04	422.10	66.366	254.69	44.693	255.75	43.049	3309.3	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	6.0000	0.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.1097E-03	1.6029E-04	423.00	66.310	255.17	44.632	256.08	42.966	3290.8	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.1126E-03	1.6029E-04	424.23	66.310	256.04	44.633	256.90	42.967	3274.5	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.1155E-03	1.6029E-04	425.66	66.343	257.14	44.671	258.01	43.016	3259.5	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.1184E-03	1.6029E-04	441.60	68.757	276.04	47.546	281.54	46.758	3344.8	7.8500E+06	7.8500E+06
X(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.1184E-03	1.6318E-04	472.21	75.026	319.22	55.568	332.44	56.359	4247.5	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	6	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	0.8661	1.0000
2	0.8053	1.0000
3	0.8053	1.0000
4	0.8053	1.0000
5	0.8053	1.0000
6	0.8661	1.0000
7	0.6217	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 134 di 271

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 30757.0	HOR. LOAD Y, KN 3431.00	HOR. LOAD Z, KN 0.00000
MOMENT X , KN- M 0.00000	MOMENT Y, KN- M -2.00000	MOMENT Z, KN- M 2.00000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M 8.79684E-04	HORIZONTAL Y, M 1.03139E-03	HORIZONTAL Z, M -2.95237E-09
ANGLE ROT. X,RAD 3.82436E-12	ANGLE ROT. Y,RAD -9.77495E-10	ANGLE ROT. Z,RAD -5.42886E-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	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
2	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
3	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
4	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
5	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
6	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
7	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
8	7.5753E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
9	7.5753E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
10	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
11	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
12	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
MINIMUM	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	1	1	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	2912.8	316.17	-3.5087E-05	1.0128E-05	-1.3279E-03	841.39
2	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
3	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
4	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
5	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
6	2912.8	316.17	-3.5087E-05	1.0128E-05	-1.3279E-03	841.39
7	2213.3	274.04	1.2421E-05	1.0128E-05	-1.3879E-03	766.14
8	2213.3	256.52	3.3362E-05	1.0128E-05	-1.4186E-03	733.45
9	2213.4	256.29	3.3628E-05	1.0128E-05	-1.4190E-03	733.01
10	2213.4	256.29	3.3628E-05	1.0128E-05	-1.4190E-03	733.01
11	2213.4	256.52	3.3362E-05	1.0128E-05	-1.4186E-03	733.45
12	2213.4	274.04	1.2421E-05	1.0128E-05	-1.3879E-03	766.14
MINIMUM	2213.3	256.29	-3.5087E-05	1.0128E-05	-1.4190E-03	733.01
Pile N.	7	9	1	1	9	9
MAXIMUM	2912.8	316.17	3.3628E-05	1.0128E-05	-1.3279E-03	841.39
Pile N.	1	1	9	1	1	1

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	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
2	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
3	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
4	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
5	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
6	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
7	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
8	7.5753E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
9	7.5753E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 135 di 271

10	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
11	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
12	7.5754E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
MINIMUM	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	1	1	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	2912.8	316.17	-3.5087E-05	1.0128E-05	-1.3279E-03	841.39
2	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
3	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
4	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
5	2912.8	306.24	-2.2162E-05	1.0128E-05	-1.3462E-03	824.10
6	2912.8	316.17	-3.5087E-05	1.0128E-05	-1.3279E-03	841.39
7	2213.3	274.04	1.2421E-05	1.0128E-05	-1.3879E-03	766.14
8	2213.3	256.52	3.362E-05	1.0128E-05	-1.4186E-03	733.45
9	2213.4	256.29	3.362E-05	1.0128E-05	-1.4190E-03	733.01
10	2213.4	256.29	3.362E-05	1.0128E-05	-1.4190E-03	733.01
11	2213.4	256.52	3.362E-05	1.0128E-05	-1.4186E-03	733.45
12	2213.4	274.04	1.2421E-05	1.0128E-05	-1.3879E-03	766.14
MINIMUM	2213.3	256.29	-3.5087E-05	1.0128E-05	-1.4190E-03	733.01
Pile N.	7	9	1	1	9	9
MAXIMUM	2912.8	316.17	3.362E-05	1.0128E-05	-1.3279E-03	841.39
Pile N.	1	1	9	1	1	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4172.5
2	4120.6
3	4120.6
4	4120.6
5	4120.6
6	4172.5
7	3550.9
8	3452.8
9	3451.5
10	3451.6
11	3452.9
12	3551.0
MINIMUM	3451.5
Pile N.	9
MAXIMUM	4172.5
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	-1.5542E-05	-2.9438E-09	-841.39	-1.3616E-03	-165.14	-3.5050E-05	-63.395	-1.7497E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.5500	0.0000	0.0000	1.3500	7.3500	0.0000	8.7000	5.5500	15.000	0.0000	0.0000
2	-1.5828E-05	-2.9438E-09	-824.10	-1.3647E-03	-160.19	-2.2124E-05	-60.572	-1.6806E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.0500	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
3	-1.5828E-05	-2.9438E-09	-824.10	-1.3647E-03	-160.19	-2.2124E-05	-60.572	-1.6806E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.0500	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
4	-1.5828E-05	-2.9438E-09	-824.10	-1.3647E-03	-160.19	-2.2124E-05	-60.572	-1.6806E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.0500	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
5	-1.5828E-05	-2.9438E-09	-824.10	-1.3647E-03	-160.19	-2.2124E-05	-60.572	-1.6806E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.7000	0.0000	0.0000	1.0500	7.3500	0.0000	8.8500	5.5500	15.000	0.0000	0.0000
6	-1.5542E-05	-2.9438E-09	-841.39	-1.3616E-03	-165.14	-3.5050E-05	-63.395	-1.7497E-04	1648.3	7.8500E+06	7.8500E+06
x(M)	8.5500	0.0000	0.0000	1.3500	7.3500	0.0000	8.7000	5.5500	15.000	0.0000	0.0000
7	-1.6781E-05	-2.9610E-09	-766.14	-1.3879E-03	-143.05	-1.5525E-05	-51.154	-1.4894E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.0000	0.0000	0.0000	0.0000	7.5000	12.150	9.1500	5.5500	15.000	0.0000	0.0000
8	-1.7384E-05	-2.9610E-09	-733.45	-1.4186E-03	-133.42	-1.5249E-05	-46.157	-1.3408E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
9	-1.7393E-05	-2.9610E-09	-733.01	-1.4190E-03	-133.29	-1.5245E-05	-46.093	-1.3389E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
10	-1.7393E-05	-2.9610E-09	-733.01	-1.4190E-03	-133.29	-1.5245E-05	-46.093	-1.3389E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
11	-1.7384E-05	-2.9610E-09	-733.45	-1.4186E-03	-133.42	-1.5249E-05	-46.157	-1.3408E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.1500	0.0000	0.0000	0.0000	7.6500	12.150	9.3000	5.5500	15.000	0.0000	0.0000
12	-1.6781E-05	-2.9610E-09	-766.14	-1.3879E-03	-143.05	-1.5525E-05	-51.154	-1.4894E-04	1252.5	7.8500E+06	7.8500E+06
x(M)	9.0000	0.0000	0.0000	0.0000	7.5000	12.000	9.1500	5.5500	15.000	0.0000	0.0000
Min.	-1.7393E-05	-2.9610E-09	-841.39	-1.4190E-03	-165.14	-3.5050E-05	-63.395	-1.7497E-04	1252.5	7.8500E+06	7.8500E+06
Pile N.	9	7	1	9	1	1	1	1	7	1	1

* MAXIMUM VALUES AND LOCATIONS *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 136 di 271

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	1.0314E-03	3.2660E-11	450.27	4.0824E-05	316.20	3.1748E-04	325.73	1.1838E-04	4172.5	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.200	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
2	1.0314E-03	3.3645E-11	443.99	4.0619E-05	306.26	3.1068E-04	314.37	1.1383E-04	4120.6	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
3	1.0314E-03	3.3645E-11	443.99	4.0619E-05	306.26	3.1068E-04	314.37	1.1383E-04	4120.6	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
4	1.0314E-03	3.3645E-11	443.99	4.0619E-05	306.26	3.1068E-04	314.37	1.1383E-04	4120.6	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
5	1.0314E-03	3.3645E-11	443.99	4.0619E-05	306.26	3.1068E-04	314.37	1.1383E-04	4120.6	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.350	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
6	1.0314E-03	3.2660E-11	450.27	4.0824E-05	316.20	3.1748E-04	325.73	1.1838E-04	4172.5	7.8500E+06	7.8500E+06
x(M)	0.0000	7.6500	5.8500	10.200	0.0000	6.3000	5.5500	7.8000	0.0000	0.0000	0.0000
7	1.0314E-03	3.7444E-11	420.37	4.0257E-05	274.06	2.8870E-04	275.37	9.9735E-05	3550.9	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.650	0.0000	6.4500	5.5500	7.9500	0.0000	0.0000	0.0000
8	1.0314E-03	3.9913E-11	406.18	3.9962E-05	256.53	2.7623E-04	252.99	9.2038E-05	3452.8	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
9	1.0314E-03	3.9947E-11	405.98	3.9959E-05	256.31	2.7607E-04	252.70	9.1938E-05	3451.5	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
10	1.0314E-03	3.9947E-11	405.98	3.9959E-05	256.31	2.7607E-04	252.70	9.1938E-05	3451.6	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
11	1.0314E-03	3.9913E-11	406.18	3.9962E-05	256.53	2.7623E-04	252.99	9.2038E-05	3452.9	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.800	0.0000	6.4500	5.5500	8.1000	0.0000	0.0000	0.0000
12	1.0314E-03	3.7444E-11	420.37	4.0257E-05	274.06	2.8870E-04	275.37	9.9735E-05	3551.0	7.8500E+06	7.8500E+06
x(M)	0.0000	7.8000	6.0000	10.650	0.0000	6.4500	5.5500	7.9500	0.0000	0.0000	0.0000
Max.	1.0314E-03	3.9947E-11	450.27	4.0824E-05	316.20	3.1748E-04	325.73	1.1838E-04	4172.5	7.8500E+06	7.8500E+06
Pile N.	1	9	1	1	1	1	1	1	1	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	0.8629	1.0000
2	0.8023	1.0000
3	0.8023	1.0000
4	0.8023	1.0000
5	0.8027	1.0000
6	0.8661	1.0000
7	0.6257	1.0000
8	0.5322	1.0000
9	0.5306	1.0000
10	0.5306	1.0000
11	0.5317	1.0000
12	0.6212	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
35701.0	4138.00	570.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-785.000	3284.00	-3284.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.02359E-03	1.29673E-03	1.52106E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-2.99278E-06	2.44775E-06	-8.27276E-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
------------	------------	------------	------------	-------------	-------------	-------------

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 137 di 271

*****	*****	*****	*****	*****	*****	*****
1	1.1822E-03	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
2	1.1932E-03	1.2765E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
3	1.2042E-03	1.2900E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
4	1.2152E-03	1.3035E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
5	1.2262E-03	1.3169E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
6	1.2373E-03	1.3304E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
7	8.6499E-04	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
8	8.5397E-04	1.3169E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
9	8.4296E-04	1.3035E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
10	8.3194E-04	1.2900E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
11	8.2093E-04	1.2765E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
12	8.0991E-04	1.2631E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
MINIMUM	8.0991E-04	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2373E-03	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	6	6	7	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	3429.2	369.34	49.962	-7.9259	-142.05	955.67
2	3460.7	362.23	48.466	-7.9259	-139.42	949.06
3	3492.2	366.95	48.466	-7.9259	-139.42	963.00
4	3523.8	371.66	48.465	-7.9259	-139.42	976.93
5	3555.3	376.45	48.472	-7.9259	-139.43	990.99
6	3586.8	394.30	50.036	-7.9259	-142.18	1027.7
7	2521.0	342.01	48.071	-7.9259	-144.03	934.51
8	2489.5	315.09	45.061	-7.9259	-138.36	879.31
9	2457.9	310.68	45.008	-7.9259	-138.26	865.93
10	2426.4	306.68	45.009	-7.9259	-138.26	853.32
11	2394.9	302.94	45.047	-7.9259	-138.33	841.22
12	2363.3	319.66	47.937	-7.9259	-143.78	867.11
MINIMUM	2363.3	302.94	45.008	-7.9259	-144.03	841.22
Pile N.	12	11	9	1	7	11
MAXIMUM	3586.8	394.30	50.036	-7.9259	-138.26	1027.7
Pile N.	6	6	6	1	9	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	1.1822E-03	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
2	1.1932E-03	1.2765E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
3	1.2042E-03	1.2900E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
4	1.2152E-03	1.3035E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
5	1.2262E-03	1.3169E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
6	1.2373E-03	1.3304E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
7	8.6499E-04	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
8	8.5397E-04	1.3169E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
9	8.4296E-04	1.3035E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
10	8.3194E-04	1.2900E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
11	8.2093E-04	1.2765E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
12	8.0991E-04	1.2631E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
MINIMUM	8.0991E-04	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2373E-03	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	6	6	7	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	3429.2	369.34	49.962	-7.9259	-142.05	955.67
2	3460.7	362.23	48.466	-7.9259	-139.42	949.06
3	3492.2	366.95	48.466	-7.9259	-139.42	963.00
4	3523.8	371.66	48.465	-7.9259	-139.42	976.93
5	3555.3	376.45	48.472	-7.9259	-139.43	990.99
6	3586.8	394.30	50.036	-7.9259	-142.18	1027.7
7	2521.0	342.01	48.071	-7.9259	-144.03	934.51
8	2489.5	315.09	45.061	-7.9259	-138.36	879.31
9	2457.9	310.68	45.008	-7.9259	-138.26	865.93
10	2426.4	306.68	45.009	-7.9259	-138.26	853.32
11	2394.9	302.94	45.047	-7.9259	-138.33	841.22
12	2363.3	319.66	47.937	-7.9259	-143.78	867.11
MINIMUM	2363.3	302.94	45.008	-7.9259	-144.03	841.22
Pile N.	12	11	9	1	7	11
MAXIMUM	3586.8	394.30	50.036	-7.9259	-138.26	1027.7
Pile N.	6	6	6	1	9	6

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 139 di 271

Max. Pile N.	1.3304E-03 6	1.5884E-04 7	571.70 6	68.825 7	394.34 6	50.040 6	408.45 6	50.680 6	5142.3 6	7.8500E+06 1	7.8500E+06 1
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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	0.8609	1.0000
2	0.8005	1.0000
3	0.8005	1.0000
4	0.8005	1.0000
5	0.8010	1.0000
6	0.8661	1.0000
7	0.6281	1.0000
8	0.5327	1.0000
9	0.5308	1.0000
10	0.5308	1.0000
11	0.5319	1.0000
12	0.6209	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 30757.0	HOR. LOAD Y, KN 3431.00	HOR. LOAD Z, KN 600.000
MOMENT X, KN- M 266.000	MOMENT Y, KN- M -2.00000	MOMENT Z, KN- M 2.00000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 8.79684E-04	HORIZONTAL Y, M 1.03207E-03	HORIZONTAL Z, M 1.54359E-04
ANGLE ROT. X, RAD 6.53602E-07	ANGLE ROT. Y, RAD 8.84536E-07	ANGLE ROT. Z, RAD -5.43059E-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	9.9192E-04	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
2	9.9590E-04	1.0365E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
3	9.9988E-04	1.0335E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
4	1.0039E-03	1.0306E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
5	1.0078E-03	1.0277E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
6	1.0118E-03	1.0247E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
7	7.6745E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
8	7.6347E-04	1.0277E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
9	7.5949E-04	1.0306E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
10	7.5550E-04	1.0335E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
11	7.5152E-04	1.0365E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
12	7.4754E-04	1.0394E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2884.4	318.23	55.349	1.7310	-160.06	848.33
2	2895.8	307.21	53.716	1.7310	-157.18	827.89
3	2907.2	306.18	53.716	1.7310	-157.18	824.84
4	2918.6	305.15	53.716	1.7310	-157.18	821.80
5	2930.0	304.20	53.730	1.7310	-157.20	818.92
6	2941.4	313.73	55.485	1.7310	-160.30	834.28
7	2241.7	273.09	47.782	1.7310	-145.20	761.74

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 140 di 271

8	2230.3	255.61	44.772	1.7310	-139.52	730.30
9	2219.0	256.10	44.710	1.7310	-139.40	732.33
10	2207.6	256.98	44.710	1.7310	-139.40	735.08
11	2196.2	258.08	44.746	1.7310	-139.47	738.26
12	2184.8	276.43	47.567	1.7310	-144.80	773.61
MINIMUM	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

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	9.9192E-04	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
2	9.9590E-04	1.0365E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
3	9.9988E-04	1.0335E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
4	1.0039E-03	1.0306E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
5	1.0078E-03	1.0277E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
6	1.0118E-03	1.0247E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
7	7.6745E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
8	7.6347E-04	1.0277E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
9	7.5949E-04	1.0306E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
10	7.5550E-04	1.0335E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
11	7.5152E-04	1.0365E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
12	7.4754E-04	1.0394E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2884.4	318.23	55.349	1.7310	-160.06	848.33
2	2895.8	307.21	53.716	1.7310	-157.18	827.89
3	2907.2	306.18	53.716	1.7310	-157.18	824.84
4	2918.6	305.15	53.716	1.7310	-157.18	821.80
5	2930.0	304.20	53.730	1.7310	-157.20	818.92
6	2941.4	313.73	55.485	1.7310	-160.30	834.28
7	2241.7	273.09	47.782	1.7310	-145.20	761.74
8	2230.3	255.61	44.772	1.7310	-139.52	730.30
9	2219.0	256.10	44.710	1.7310	-139.40	732.33
10	2207.6	256.98	44.710	1.7310	-139.40	735.08
11	2196.2	258.08	44.746	1.7310	-139.47	738.26
12	2184.8	276.43	47.567	1.7310	-144.80	773.61
MINIMUM	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4222.2
2	4166.7
3	4164.2
4	4161.7
5	4159.7
6	4213.1
7	3594.9
8	3492.6
9	3492.1
10	3493.8
11	3496.7
12	3597.5
MINIMUM	3492.1
Pile N.	9
MAXIMUM	4222.2
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	-1.5691E-05	-2.5285E-06	-848.33	-160.06	-166.13	-26.880	-63.669	-10.331	1632.2	7.8500E+06	7.8500E+06

APPALTATORE: <u>Consorzio</u> HIRPINIA - ORSARA AV	<u>Soci</u> WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
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 SPALLA A E SPALLA B	COMMESSA IF3A		LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 141 di 271

x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
2	-1.5936E-05	-2.5740E-06	-827.89	-157.18	-160.63	-26.038	-60.665	-9.8551	1638.7	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.5888E-05	-2.5740E-06	-824.84	-157.18	-160.13	-26.038	-60.478	-9.8551	1645.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.5839E-05	-2.5740E-06	-821.80	-157.18	-159.64	-26.038	-60.290	-9.8552	1651.6	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.5787E-05	-2.5736E-06	-818.92	-157.20	-159.19	-26.045	-60.128	-9.8597	1658.0	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.5433E-05	-2.5244E-06	-834.28	-160.30	-163.98	-26.950	-62.947	-10.369	1664.5	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-1.6625E-05	-2.6692E-06	-761.74	-145.20	-142.71	-22.999	-51.119	-8.2574	1268.6	7.8500E+06	7.8500E+06
x(M)	8.5000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
8	-1.7306E-05	-2.7668E-06	-730.30	-139.52	-133.02	-21.344	-46.037	-7.4026	1262.1	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
9	-1.7375E-05	-2.7688E-06	-732.33	-139.40	-133.22	-21.310	-46.072	-7.3842	1255.7	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
10	-1.7429E-05	-2.7688E-06	-735.08	-139.40	-133.63	-21.310	-46.215	-7.3841	1249.2	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
11	-1.7473E-05	-2.7676E-06	-738.26	-139.47	-134.17	-21.329	-46.421	-7.3948	1242.8	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
12	-1.6928E-05	-2.6761E-06	-773.61	-144.80	-144.17	-22.885	-51.547	-8.1944	1236.3	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
Min.	-1.7473E-05	-2.7688E-06	-848.33	-160.30	-166.13	-26.950	-63.669	-10.369	1236.3	7.8500E+06	7.8500E+06
Pile N.	11	9	1	6	1	6	1	6	12	1	1

* MAXIMUM 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	1.0394E-03	1.5583E-04	453.56	73.206	318.25	55.354	327.69	55.767	4222.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.0365E-03	1.5583E-04	445.83	72.104	307.23	53.721	315.22	53.827	4166.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.0335E-03	1.5583E-04	444.45	72.104	306.20	53.720	314.18	53.827	4164.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.0306E-03	1.5583E-04	443.08	72.104	305.17	53.720	313.15	53.827	4161.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.0277E-03	1.5583E-04	441.77	72.114	304.22	53.735	312.22	53.844	4159.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.0247E-03	1.5583E-04	447.10	73.295	313.76	55.489	323.28	55.927	4213.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.0247E-03	1.5289E-04	418.29	67.297	273.10	47.786	274.77	46.661	3594.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.0277E-03	1.5289E-04	404.77	64.752	255.63	44.775	252.21	42.714	3492.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.0306E-03	1.5289E-04	405.69	64.701	256.12	44.712	252.55	42.631	3492.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.0335E-03	1.5289E-04	406.95	64.701	257.00	44.713	253.38	42.631	3493.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.0365E-03	1.5289E-04	408.40	64.730	258.10	44.749	254.51	42.679	3496.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.0394E-03	1.5289E-04	423.81	67.125	276.45	47.570	277.65	46.382	3597.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.0394E-03	1.5583E-04	453.56	73.295	318.25	55.489	327.69	55.927	4222.2	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	1	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	0.8660	1.0000
2	0.8052	1.0000
3	0.8052	1.0000
4	0.8052	1.0000
5	0.8052	1.0000
6	0.8661	1.0000
7	0.6218	1.0000
8	0.5316	1.0000
9	0.5304	1.0000
10	0.5304	1.0000
11	0.5316	1.0000
12	0.6217	1.0000

* TABLE L * COMPUTATION ON PILE CAP

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 142 di 271

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 35103.0	HOR. LOAD Y, KN 4170.00	HOR. LOAD Z, KN 105.000
MOMENT X, KN- M 52.0000	MOMENT Y, KN- M -728.000	MOMENT Z, KN- M 728.000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.00618E-03	HORIZONTAL Y, M 1.24232E-03	HORIZONTAL Z, M 2.59246E-05
ANGLE ROT. X,RAD 1.19948E-07	ANGLE ROT. Y,RAD -2.00868E-07	ANGLE ROT. Z,RAD -6.21920E-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	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
2	1.1475E-03	1.2431E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
3	1.1466E-03	1.2426E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
4	1.1457E-03	1.2420E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
5	1.1448E-03	1.2415E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
6	1.1439E-03	1.2410E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
7	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
8	8.6489E-04	1.2415E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
9	8.6580E-04	1.2420E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
10	8.6670E-04	1.2426E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
11	8.6761E-04	1.2431E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
12	8.6851E-04	1.2437E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
MINIMUM	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	7	6	7	1	1	1
MAXIMUM	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	1	1	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	3332.4	384.59	9.6933	0.3177	-28.530	1029.4
2	3329.8	372.37	9.4114	0.3177	-28.031	1007.8
3	3327.2	372.18	9.4114	0.3177	-28.031	1007.3
4	3324.6	371.99	9.4114	0.3177	-28.031	1006.7
5	3322.0	371.80	9.4115	0.3177	-28.031	1006.1
6	3319.4	383.64	9.6938	0.3177	-28.530	1026.5
7	2518.1	332.74	8.3248	0.3177	-25.831	935.53
8	2520.7	311.68	7.8329	0.3177	-24.897	896.41
9	2523.3	311.56	7.8264	0.3177	-24.884	896.38
10	2525.9	311.72	7.8263	0.3177	-24.884	896.89
11	2528.5	312.16	7.8327	0.3177	-24.897	897.92
12	2531.1	333.56	8.3240	0.3177	-25.829	938.10
MINIMUM	2518.1	311.56	7.8263	0.3177	-28.530	896.38
Pile N.	7	9	10	1	1	9
MAXIMUM	3332.4	384.59	9.6938	0.3177	-24.884	1029.4
Pile N.	1	1	6	1	9	1

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	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
2	1.1475E-03	1.2431E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
3	1.1466E-03	1.2426E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
4	1.1457E-03	1.2420E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
5	1.1448E-03	1.2415E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
6	1.1439E-03	1.2410E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
7	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
8	8.6489E-04	1.2415E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
9	8.6580E-04	1.2420E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
10	8.6670E-04	1.2426E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
11	8.6761E-04	1.2431E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 143 di 271

12	8.6851E-04	1.2437E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
MINIMUM	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	7	6	7	1	1	1
MAXIMUM	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	1	1	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	3332.4	384.59	9.6933	0.3177	-28.530	1029.4
2	3329.8	372.37	9.4114	0.3177	-28.031	1007.8
3	3327.2	372.18	9.4114	0.3177	-28.031	1007.3
4	3324.6	371.99	9.4114	0.3177	-28.031	1006.7
5	3322.0	371.80	9.4115	0.3177	-28.031	1006.1
6	3319.4	383.64	9.6938	0.3177	-28.530	1026.5
7	2518.1	332.74	8.3248	0.3177	-25.831	935.53
8	2520.7	311.68	7.8329	0.3177	-24.897	896.41
9	2523.3	311.56	7.8264	0.3177	-24.884	896.38
10	2525.9	311.72	7.8263	0.3177	-24.884	896.89
11	2528.5	312.16	7.8327	0.3177	-24.897	897.92
12	2531.1	333.56	8.3240	0.3177	-25.829	938.10
MINIMUM	2518.1	311.56	7.8263	0.3177	-28.530	896.38
Pile N.	7	9	10	1	1	9
MAXIMUM	3332.4	384.59	9.6938	0.3177	-24.884	1029.4
Pile N.	1	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4975.0
2	4908.9
3	4905.7
4	4902.6
5	4899.5
6	4959.2
7	4232.6
8	4116.7
9	4118.1
10	4121.1
11	4125.6
12	4247.7
MINIMUM	4116.7
Pile N.	8
MAXIMUM	4975.0
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	-1.8819E-05	-4.3317E-07	-1029.4	-28.530	-200.04	-4.6259	-76.782	-1.7816	1885.7	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
2	-1.9160E-05	-4.4077E-07	-1007.8	-28.031	-193.92	-4.4838	-73.340	-1.6989	1884.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.9151E-05	-4.4077E-07	-1007.3	-28.031	-193.83	-4.4838	-73.305	-1.6989	1882.8	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.9142E-05	-4.4077E-07	-1006.7	-28.031	-193.74	-4.4838	-73.271	-1.6989	1881.3	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.9133E-05	-4.4076E-07	-1006.1	-28.031	-193.65	-4.4838	-73.237	-1.6989	1879.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.8774E-05	-4.3315E-07	-1026.5	-28.530	-199.58	-4.6261	-76.607	-1.7817	1878.4	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-2.0274E-05	-4.5814E-07	-935.53	-25.831	-172.85	-3.9272	-61.834	-1.4067	1425.0	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
8	-2.1012E-05	-4.7385E-07	-896.41	-24.897	-161.29	-3.6576	-55.810	-1.2674	1426.4	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
9	-2.1033E-05	-4.7404E-07	-896.38	-24.884	-161.21	-3.6542	-55.758	-1.2657	1427.9	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.4500	9.4500	15.000	0.0000	0.0000
10	-2.1043E-05	-4.7404E-07	-896.89	-24.884	-161.29	-3.6542	-55.784	-1.2657	1429.4	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.4500	15.000	0.0000	0.0000
11	-2.1042E-05	-4.7385E-07	-897.92	-24.897	-161.52	-3.6576	-55.888	-1.2673	1430.8	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
12	-2.0323E-05	-4.5816E-07	-938.10	-25.829	-173.24	-3.9268	-61.971	-1.4065	1432.3	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
Min.	-2.1043E-05	-4.7404E-07	-1029.4	-28.530	-200.04	-4.6261	-76.782	-1.7817	1425.0	7.8500E+06	7.8500E+06
Pile N.	10	9	1	1	1	6	1	6	7	1	1

* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 144 di 271

	y-Dir M	z-Dir M	z-Dir KN- M	y-Dir KN- M	y-Dir KN	z-Dir KN	y-Dir KN/ M	z-Dir KN/ M	STRESS KN/ M**2	z-Dir KN- M**2	y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.2437E-03	2.6195E-05	545.31	12.572	384.63	9.6942	395.71	9.7208	4975.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.2431E-03	2.6195E-05	537.41	12.390	372.40	9.4123	381.73	9.3834	4908.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.2426E-03	2.6195E-05	537.16	12.390	372.21	9.4123	381.54	9.3834	4905.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.2421E-03	2.6195E-05	536.90	12.390	372.02	9.4123	381.35	9.3834	4902.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.2415E-03	2.6195E-05	536.65	12.390	371.83	9.4124	381.17	9.3835	4899.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.2410E-03	2.6195E-05	544.04	12.572	383.67	9.6947	394.76	9.7214	4959.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.2410E-03	2.5655E-05	507.94	11.503	332.77	8.3254	333.78	8.0612	4232.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.2415E-03	2.5655E-05	490.93	11.095	311.70	7.8335	306.80	7.4109	4116.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.2421E-03	2.5655E-05	490.92	11.090	311.59	7.8270	306.59	7.4022	4118.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.2426E-03	2.5655E-05	491.15	11.090	311.75	7.8269	306.74	7.4022	4121.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.2431E-03	2.5655E-05	491.62	11.095	312.18	7.8333	307.25	7.4108	4125.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.2437E-03	2.5655E-05	509.11	11.503	333.59	8.3246	334.57	8.0603	4247.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.2437E-03	2.6195E-05	545.31	12.572	384.63	9.6947	395.71	9.7214	4975.0	7.8500E+06	7.8500E+06
Pile N.	1	1	1	1	1	6	1	6	1	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	0.8635	1.0000
2	0.8029	1.0000
3	0.8029	1.0000
4	0.8029	1.0000
5	0.8032	1.0000
6	0.8661	1.0000
7	0.6249	1.0000
8	0.5321	1.0000
9	0.5306	1.0000
10	0.5306	1.0000
11	0.5317	1.0000
12	0.6213	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33123.0	3731.00	470.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2026.00	20338.0	-20338.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
9.48837E-04	1.44369E-03	1.52106E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-7.27171E-06	1.05891E-05	-1.65542E-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	1.2022E-03	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 145 di 271

2	1.2498E-03	1.3946E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
3	1.2975E-03	1.4273E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
4	1.3451E-03	1.4601E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
5	1.3928E-03	1.4928E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
6	1.4404E-03	1.5255E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
7	6.9550E-04	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
8	6.4784E-04	1.4928E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
9	6.0019E-04	1.4601E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
10	5.5254E-04	1.4273E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
11	5.0489E-04	1.3946E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
12	4.5724E-04	1.3619E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
MINIMUM	4.5724E-04	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4404E-03	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
Pile N.	6	6	7	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	3486.4	317.92	37.917	-19.258	-95.034	684.69
2	3622.8	318.04	36.673	-19.258	-92.891	699.29
3	3759.2	329.49	36.671	-19.258	-92.891	733.16
4	3895.7	340.95	36.668	-19.258	-92.891	767.03
5	4032.1	352.45	36.670	-19.258	-92.900	800.99
6	4168.5	377.46	37.954	-19.258	-95.124	858.03
7	2035.7	323.24	43.188	-19.258	-117.80	762.39
8	1899.3	290.00	40.313	-19.258	-112.45	688.77
9	1762.9	279.89	40.267	-19.258	-112.36	657.40
10	1626.5	270.17	40.270	-19.258	-112.36	626.75
11	1487.1	260.72	40.310	-19.258	-112.43	596.57
12	1346.7	270.66	43.098	-19.258	-117.61	601.65
MINIMUM	1346.7	260.72	36.668	-19.258	-117.80	596.57
Pile N.	12	11	4	1	7	11
MAXIMUM	4168.5	377.46	43.188	-19.258	-92.891	858.03
Pile N.	6	6	7	1	2	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	1.2022E-03	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
2	1.2498E-03	1.3946E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
3	1.2975E-03	1.4273E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
4	1.3451E-03	1.4601E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
5	1.3928E-03	1.4928E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
6	1.4404E-03	1.5255E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
7	6.9550E-04	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
8	6.4784E-04	1.4928E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
9	6.0019E-04	1.4601E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
10	5.5254E-04	1.4273E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
11	5.0489E-04	1.3946E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
12	4.5724E-04	1.3619E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
MINIMUM	4.5724E-04	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4404E-03	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04
Pile N.	6	6	7	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	3486.4	317.92	37.917	-19.258	-95.034	684.69
2	3622.8	318.04	36.673	-19.258	-92.891	699.29
3	3759.2	329.49	36.671	-19.258	-92.891	733.16
4	3895.7	340.95	36.668	-19.258	-92.891	767.03
5	4032.1	352.45	36.670	-19.258	-92.900	800.99
6	4168.5	377.46	37.954	-19.258	-95.124	858.03
7	2035.7	323.24	43.188	-19.258	-117.80	762.39
8	1899.3	290.00	40.313	-19.258	-112.45	688.77
9	1762.9	279.89	40.267	-19.258	-112.36	657.40
10	1626.5	270.17	40.270	-19.258	-112.36	626.75
11	1487.1	260.72	40.310	-19.258	-112.43	596.57
12	1346.7	270.66	43.098	-19.258	-117.61	601.65
MINIMUM	1346.7	260.72	36.668	-19.258	-117.80	596.57
Pile N.	12	11	4	1	7	11
MAXIMUM	4168.5	377.46	43.188	-19.258	-92.891	858.03
Pile N.	6	6	7	1	2	6

PILE GROUP STRESS, KN/ M**2

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 146 di 271

***** *****

1	4046.6
2	4166.4
3	4344.4
4	4522.4
5	4700.8
6	4948.8
7	3466.3
8	3168.5
9	2998.4
10	2830.6
11	2662.7
12	2601.2

MINIMUM	2601.2
Pile N.	12
MAXIMUM	4948.8
Pile N.	6

* 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	-1.8388E-05	-1.9683E-06	-684.69	-95.034	-193.34	-20.774	-73.967	-7.9764	1972.9	7.8500E+06	7.8500E+06
x(M)	8.5500	8.5500	0.0000	0.0000	7.2000	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
2	-1.9289E-05	-2.0009E-06	-699.29	-92.891	-192.84	-20.173	-72.700	-7.6099	2050.1	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
3	-1.9828E-05	-2.0010E-06	-733.16	-92.891	-198.28	-20.174	-74.770	-7.6102	2127.3	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
4	-2.0367E-05	-2.0011E-06	-767.03	-92.891	-203.73	-20.175	-76.840	-7.6105	2204.5	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.2000	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
5	-2.0904E-05	-2.0010E-06	-800.99	-92.900	-209.25	-20.178	-78.928	-7.6124	2281.7	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
6	-2.1041E-05	-1.9674E-06	-858.03	-95.124	-221.87	-20.802	-85.059	-7.9937	2358.9	7.8500E+06	7.8500E+06
x(M)	8.5500	8.5500	0.0000	0.0000	7.2000	7.3500	8.7000	8.7000	15.000	0.0000	0.0000
7	-2.2750E-05	-2.6958E-06	-762.39	-117.80	-192.85	-23.032	-68.848	-8.2327	1152.0	7.8500E+06	7.8500E+06
x(M)	8.8500	8.8500	0.0000	0.0000	7.5000	7.5000	9.0000	9.1500	15.000	0.0000	0.0000
8	-2.3006E-05	-2.7924E-06	-688.77	-112.45	-174.97	-21.437	-60.355	-7.4113	1074.8	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
9	-2.2428E-05	-2.7943E-06	-657.40	-112.36	-170.20	-21.408	-58.660	-7.3973	997.59	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
10	-2.1835E-05	-2.7941E-06	-626.75	-112.36	-165.66	-21.407	-57.081	-7.3969	920.39	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
11	-2.1232E-05	-2.7925E-06	-596.57	-112.43	-161.28	-21.426	-55.581	-7.4066	841.51	7.8500E+06	7.8500E+06
x(M)	9.0000	9.1500	0.0000	0.0000	7.5000	7.6500	9.1500	9.3000	15.000	0.0000	0.0000
12	-1.9912E-05	-2.6978E-06	-601.65	-117.61	-167.73	-22.966	-59.802	-8.2014	762.09	7.8500E+06	7.8500E+06
x(M)	8.8500	8.8500	0.0000	0.0000	7.5000	7.5000	9.0000	9.1500	15.000	0.0000	0.0000
Min.	-2.3006E-05	-2.7943E-06	-858.03	-117.80	-221.87	-23.032	-85.059	-8.2327	762.09	7.8500E+06	7.8500E+06
Pile N.	8	9	6	7	6	7	6	7	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	1.3619E-03	1.3574E-04	529.49	56.756	317.95	37.920	343.43	39.648	4046.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.3946E-03	1.3574E-04	537.25	55.999	318.07	36.677	342.83	38.260	4166.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.4273E-03	1.3574E-04	552.33	55.999	329.52	36.674	354.30	38.259	4344.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.4601E-03	1.3574E-04	567.41	56.000	340.97	36.671	365.77	38.258	4522.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.4928E-03	1.3574E-04	582.53	56.004	352.48	36.674	377.30	38.263	4700.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.5255E-03	1.3574E-04	606.56	56.789	377.49	37.958	403.43	39.699	4948.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7000	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.5255E-03	1.6847E-04	568.44	67.574	323.25	43.190	341.67	43.755	3466.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.4928E-03	1.6847E-04	535.02	65.278	290.01	40.315	303.68	40.109	3168.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.4601E-03	1.6847E-04	520.87	65.235	279.90	40.269	293.95	40.047	2998.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.4273E-03	1.6847E-04	507.07	65.234	270.18	40.272	284.70	40.048	2830.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.3946E-03	1.6847E-04	493.50	65.264	260.72	40.312	275.78	40.095	2662.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.3619E-03	1.6847E-04	495.80	67.490	270.67	43.100	290.28	43.627	2601.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.5255E-03	1.6847E-04	606.56	67.574	377.49	43.190	403.43	43.755	4948.8	7.8500E+06	7.8500E+06
Pile N.	6	7	6	7	6	7	6	7	6	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 147 di 271

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	0.8609	1.0000
2	0.8005	1.0000
3	0.8005	1.0000
4	0.8005	1.0000
5	0.8010	1.0000
6	0.8661	1.0000
7	0.6281	1.0000
8	0.5327	1.0000
9	0.5308	1.0000
10	0.5308	1.0000
11	0.5319	1.0000
12	0.6209	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
30757.0	3431.00	600.000
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
266.000	-2.00000	2.00000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
8.79684E-04	1.03207E-03	1.54359E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
6.53602E-07	8.84536E-07	-5.43059E-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	9.9192E-04	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
2	9.9590E-04	1.0365E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
3	9.9988E-04	1.0335E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
4	1.0078E-03	1.0306E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
5	1.0078E-03	1.0277E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
6	1.0118E-03	1.0247E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
7	7.6745E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
8	7.6347E-04	1.0277E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
9	7.5949E-04	1.0306E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
10	7.5550E-04	1.0335E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
11	7.5152E-04	1.0365E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
12	7.4754E-04	1.0394E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2884.4	318.23	55.349	1.7310	-160.06	848.33
2	2895.8	307.21	53.716	1.7310	-157.18	827.89
3	2907.2	306.18	53.716	1.7310	-157.18	824.84
4	2918.6	305.15	53.716	1.7310	-157.18	821.80
5	2930.0	304.20	53.730	1.7310	-157.20	818.92
6	2941.4	313.73	55.485	1.7310	-160.30	834.28
7	2241.7	273.09	47.782	1.7310	-145.20	761.74
8	2230.3	255.61	44.772	1.7310	-139.52	730.30
9	2219.0	256.10	44.710	1.7310	-139.40	732.33

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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 001	A	148 di 271	

10	2207.6	256.98	44.710	1.7310	-139.40	735.08
11	2196.2	258.08	44.746	1.7310	-139.47	738.26
12	2184.8	276.43	47.567	1.7310	-144.80	773.61
MINIMUM	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

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	9.9192E-04	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
2	9.9590E-04	1.0365E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
3	9.9988E-04	1.0335E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
4	1.0039E-03	1.0306E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
5	1.0078E-03	1.0277E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
6	1.0118E-03	1.0247E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
7	7.6745E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
8	7.6347E-04	1.0277E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
9	7.5949E-04	1.0306E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
10	7.5550E-04	1.0335E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
11	7.5152E-04	1.0365E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
12	7.4754E-04	1.0394E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2884.4	318.23	55.349	1.7310	-160.06	848.33
2	2895.8	307.21	53.716	1.7310	-157.18	827.89
3	2907.2	306.18	53.716	1.7310	-157.18	824.84
4	2918.6	305.15	53.716	1.7310	-157.18	821.80
5	2930.0	304.20	53.730	1.7310	-157.20	818.92
6	2941.4	313.73	55.485	1.7310	-160.30	834.28
7	2241.7	273.09	47.782	1.7310	-145.20	761.74
8	2230.3	255.61	44.772	1.7310	-139.52	730.30
9	2219.0	256.10	44.710	1.7310	-139.40	732.33
10	2207.6	256.98	44.710	1.7310	-139.40	735.08
11	2196.2	258.08	44.746	1.7310	-139.47	738.26
12	2184.8	276.43	47.567	1.7310	-144.80	773.61
MINIMUM	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

PILE GROUP STRESS, KN/ M**2

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4222.2
2	4166.7
3	4164.2
4	4161.7
5	4159.7
6	4213.1
7	3594.9
8	3492.6
9	3492.1
10	3493.8
11	3496.7
12	3597.5
MINIMUM	3492.1
Pile N.	9
MAXIMUM	4222.2
Pile N.	1

* 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	-1.5691E-05	-2.5285E-06	-848.33	-160.06	-166.13	-26.880	-63.669	-10.331	1632.2	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
2	-1.5936E-05	-2.5740E-06	-827.89	-157.18	-160.63	-26.038	-60.665	-9.8551	1638.7	7.8500E+06	7.8500E+06

APPALDATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI						
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA			RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 149 di 271	

x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.5888E-05	-2.5740E-06	-824.84	-157.18	-160.13	-26.038	-60.478	-9.8551	1645.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.5839E-05	-2.5740E-06	-821.80	-157.18	-159.64	-26.038	-60.290	-9.8552	1651.6	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.5787E-05	-2.5736E-06	-818.92	-157.20	-159.19	-26.045	-60.128	-9.8597	1658.0	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.5433E-05	-2.5244E-06	-834.28	-160.30	-163.98	-26.950	-62.947	-10.369	1664.5	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-1.6625E-05	-2.6692E-06	-761.74	-145.20	-142.71	-22.999	-51.119	-8.2574	1268.6	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
8	-1.7306E-05	-2.7668E-06	-730.30	-139.52	-133.02	-21.344	-46.037	-7.4026	1262.1	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.5000	9.3000	9.3000	15.000	0.0000	0.0000
9	-1.7375E-05	-2.7688E-06	-732.33	-139.40	-133.22	-21.310	-46.072	-7.3842	1255.7	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
10	-1.7429E-05	-2.7688E-06	-735.08	-139.40	-133.63	-21.310	-46.215	-7.3841	1249.2	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
11	-1.7473E-05	-2.7676E-06	-738.26	-139.47	-134.17	-21.329	-46.421	-7.3948	1242.8	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
12	-1.6928E-05	-2.6761E-06	-773.61	-144.80	-144.17	-22.885	-51.547	-8.1944	1236.3	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
Min. Pile N.	-1.7473E-05	-2.7688E-06	-848.33	-160.30	-166.13	-26.950	-63.669	-10.369	1236.3	7.8500E+06	7.8500E+06
	11	9	1	6	1	6	1	6	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	1.0394E-03	1.5583E-04	453.56	73.206	318.25	55.354	327.69	55.767	4222.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.0365E-03	1.5583E-04	445.83	72.104	307.23	53.721	315.22	53.827	4166.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.0335E-03	1.5583E-04	444.45	72.104	306.20	53.720	314.18	53.827	4164.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.0306E-03	1.5583E-04	443.08	72.104	305.17	53.720	313.15	53.827	4161.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.0277E-03	1.5583E-04	441.77	72.114	304.22	53.735	312.22	53.844	4159.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.0247E-03	1.5583E-04	447.10	73.295	313.76	55.489	323.28	55.927	4213.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.0247E-03	1.5289E-04	418.29	67.297	273.10	47.786	274.77	46.661	3594.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.0277E-03	1.5289E-04	404.77	64.752	255.63	44.775	252.21	42.714	3492.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.0306E-03	1.5289E-04	405.69	64.701	256.12	44.712	252.55	42.631	3492.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.1500	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.0335E-03	1.5289E-04	406.95	64.701	257.00	44.713	253.38	42.631	3493.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.0365E-03	1.5289E-04	408.40	64.730	258.10	44.749	254.51	42.679	3496.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.1500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.0394E-03	1.5289E-04	423.81	67.125	276.45	47.570	277.65	46.382	3597.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max. Pile N.	1.0394E-03	1.5583E-04	453.56	73.295	318.25	55.489	327.69	55.927	4222.2	7.8500E+06	7.8500E+06
	1	1	1	6	1	6	1	6	1	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	0.8639	1.0000
2	0.8033	1.0000
3	0.8033	1.0000
4	0.8033	1.0000
5	0.8035	1.0000
6	0.8661	1.0000
7	0.6244	1.0000
8	0.5320	1.0000
9	0.5306	1.0000
10	0.5306	1.0000
11	0.5317	1.0000
12	0.6214	1.0000

* TABLE L * COMPUTATION ON PILE CAP

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 150 di 271

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 35367.0	HOR. LOAD Y, KN 3888.00	HOR. LOAD Z, KN 440.000
MOMENT X, KN- M 2291.00	MOMENT Y, KN- M 408.000	MOMENT Z, KN- M -408.000

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.01387E-03	HORIZONTAL Y, M 1.17585E-03	HORIZONTAL Z, M 1.12528E-04
ANGLE ROT. X, RAD 7.69859E-06	ANGLE ROT. Y, RAD 8.45949E-07	ANGLE ROT. Z, RAD -6.36912E-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	1.1477E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
2	1.1515E-03	1.2278E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
3	1.1553E-03	1.1932E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
4	1.1591E-03	1.1585E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
5	1.1629E-03	1.1239E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
6	1.1667E-03	1.0892E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
7	8.8008E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
8	8.7627E-04	1.1239E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
9	8.7246E-04	1.1585E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
10	8.6866E-04	1.1932E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
11	8.6485E-04	1.2278E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
12	8.6104E-04	1.2625E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
MINIMUM	8.6104E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1667E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	6	1	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	3330.3	389.41	46.065	20.388	-133.00	1041.7
2	3341.2	365.06	44.703	20.388	-130.60	984.55
3	3352.1	352.89	44.703	20.388	-130.60	948.70
4	3363.0	340.73	44.703	20.388	-130.60	912.84
5	3373.9	328.61	44.708	20.388	-130.60	877.05
6	3384.8	327.12	46.111	20.388	-133.08	859.75
7	2564.2	283.69	29.393	20.388	-88.999	782.30
8	2553.3	275.32	27.586	20.388	-85.586	779.96
9	2542.4	285.32	27.556	20.388	-85.529	811.80
10	2531.5	295.64	27.556	20.388	-85.529	844.24
11	2520.6	306.22	27.579	20.388	-85.573	877.20
12	2509.7	337.99	29.338	20.388	-88.895	949.70
MINIMUM	2509.7	275.32	27.556	20.388	-133.08	779.96
Pile N.	12	8	9	1	6	8
MAXIMUM	3384.8	389.41	46.111	20.388	-85.529	1041.7
Pile N.	6	1	6	1	9	1

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	1.1477E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
2	1.1515E-03	1.2278E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
3	1.1553E-03	1.1932E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
4	1.1591E-03	1.1585E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
5	1.1629E-03	1.1239E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
6	1.1667E-03	1.0892E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
7	8.8008E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
8	8.7627E-04	1.1239E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
9	8.7246E-04	1.1585E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
10	8.6866E-04	1.1932E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
11	8.6485E-04	1.2278E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
12	8.6104E-04	1.2625E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05

APPALTATORE:			ITINERARIO NAPOLI – BARI					
Consorzio	Soci							
HIRPINIA - ORSARA AV	WEBUILD ITALIA	PIZZAROTTI	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE:								
Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			IF3A	02	E ZZ CL	VI0103 001	A	151 di 271

MINIMUM	8.6104E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1667E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	6	1	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	3330.3	389.41	46.065	20.388	-133.00	1041.7
2	3341.2	365.06	44.703	20.388	-130.60	984.55
3	3352.1	352.89	44.703	20.388	-130.60	948.70
4	3363.0	340.73	44.703	20.388	-130.60	912.84
5	3373.9	328.61	44.708	20.388	-130.60	877.05
6	3384.8	327.12	46.111	20.388	-133.08	859.75
7	2564.2	283.69	29.393	20.388	-88.999	782.30
8	2553.3	275.32	27.586	20.388	-85.586	779.96
9	2542.4	285.32	27.556	20.388	-85.529	811.80
10	2531.5	295.64	27.556	20.388	-85.529	844.24
11	2520.6	306.22	27.579	20.388	-85.573	877.20
12	2509.7	337.99	29.338	20.388	-88.895	949.70
MINIMUM	2509.7	275.32	27.556	20.388	-133.08	779.96
Pile N.	12	8	9	1	6	8
MAXIMUM	3384.8	389.41	46.111	20.388	-85.529	1041.7
Pile N.	6	1	6	1	9	1

PILE GROUP	STRESS, KN/ M**2
1	5034.9
2	4870.3
3	4769.8
4	4669.5
5	4569.4
6	4525.4
7	3813.1
8	3798.8
9	3887.6
10	3978.2
11	4070.5
12	4281.8

MINIMUM	3798.8
Pile N.	8
MAXIMUM	5034.9
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
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-1.9100E-05	-2.1025E-06	-1041.7	-133.00	-202.72	-22.406	-77.759	-8.6166	1884.6	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
2	-1.8880E-05	-2.1409E-06	-984.55	-130.60	-190.76	-21.700	-72.099	-8.2217	1890.7	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
3	-1.8303E-05	-2.1409E-06	-948.70	-130.60	-184.91	-21.700	-69.883	-8.2217	1896.9	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
4	-1.7727E-05	-2.1409E-06	-912.84	-130.60	-179.07	-21.700	-67.667	-8.2217	1903.1	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
5	-1.7149E-05	-2.1408E-06	-877.05	-130.60	-173.24	-21.703	-65.462	-8.2233	1909.2	7.8500E+06	7.8500E+06
x(M)	8.7000	8.7000	0.0000	0.0000	7.3500	7.5000	8.8500	8.8500	15.000	0.0000	0.0000
6	-1.6270E-05	-2.1011E-06	-859.75	-133.08	-172.69	-22.430	-66.309	-8.6298	1915.4	7.8500E+06	7.8500E+06
x(M)	8.5500	8.7000	0.0000	0.0000	7.3500	7.3500	8.7000	8.8500	15.000	0.0000	0.0000
7	-1.7550E-05	-1.6569E-06	-782.30	-88.999	-149.96	-14.215	-53.624	-5.0967	1451.0	7.8500E+06	7.8500E+06
x(M)	8.8500	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
8	-1.8820E-05	-1.7157E-06	-779.96	-85.586	-144.50	-13.219	-49.983	-4.5837	1444.9	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
9	-1.9466E-05	-1.7167E-06	-811.80	-85.529	-149.19	-13.203	-51.582	-4.5751	1438.7	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
10	-2.0099E-05	-1.7167E-06	-844.24	-85.529	-154.05	-13.203	-53.270	-4.5750	1432.5	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
11	-2.0721E-05	-1.7159E-06	-877.20	-85.573	-159.07	-13.215	-55.034	-4.5817	1426.4	7.8500E+06	7.8500E+06
x(M)	9.1500	9.1500	0.0000	0.0000	7.6500	7.8000	9.3000	9.3000	15.000	0.0000	0.0000
12	-2.0618E-05	-1.6587E-06	-949.70	-88.895	-175.69	-14.186	-62.839	-5.0804	1420.2	7.8500E+06	7.8500E+06
x(M)	9.0000	9.0000	0.0000	0.0000	7.5000	7.6500	9.1500	9.1500	15.000	0.0000	0.0000
Min.	-2.0721E-05	-2.1409E-06	-1041.7	-133.08	-202.72	-22.430	-77.759	-8.6298	1420.2	7.8500E+06	7.8500E+06
Pile N.	11	2	1	6	1	6	1	6	12	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

APPALDATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 152 di 271

*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.2625E-03	1.2985E-04	552.90	60.968	389.44	46.069	400.73	46.445	5034.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
2	1.2278E-03	1.2985E-04	528.96	60.054	365.09	44.707	374.59	44.831	4870.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
3	1.1932E-03	1.2985E-04	512.78	60.054	352.92	44.707	362.42	44.831	4769.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
4	1.1585E-03	1.2985E-04	496.60	60.054	340.76	44.707	350.26	44.830	4669.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
5	1.1239E-03	1.2985E-04	480.45	60.058	328.64	44.712	338.15	44.836	4569.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
6	1.0892E-03	1.2985E-04	470.97	60.999	327.15	46.115	338.13	46.500	4525.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.8500	5.8500	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
7	1.0892E-03	9.5206E-05	440.06	41.653	283.71	29.395	286.47	28.734	3813.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
8	1.1239E-03	9.5206E-05	439.86	40.121	275.34	27.588	272.53	26.367	3798.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
9	1.1585E-03	9.5206E-05	454.37	40.094	285.34	27.558	281.92	26.328	3887.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
10	1.1932E-03	9.5206E-05	469.15	40.094	295.66	27.559	291.72	26.328	3978.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
11	1.2278E-03	9.5206E-05	484.16	40.114	306.24	27.582	301.88	26.358	4070.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
12	1.2625E-03	9.5206E-05	516.37	41.609	338.02	29.340	339.10	28.662	4281.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.0000	6.0000	0.0000	0.0000	5.5500	5.5500	0.0000	0.0000	0.0000
Max.	1.2625E-03	1.2985E-04	552.90	60.999	389.44	46.115	400.73	46.500	5034.9	7.8500E+06	7.8500E+06
Pile N.	1	1	1	6	1	6	1	6	1	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
30757.0	3431.00	540.000	240.000	7496.00	-7496.00

* 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
8.79684E-04	1.22662E-03	1.61417E-04	5.72263E-07	4.46770E-06	-9.41554E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	6.1757E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06
Pile N.	12	6	7	1	1
MAXIMUM	1.1418E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06
Pile N.	6	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	1812.7	250.60	39.546	1.5155	-141.91
Pile N.	12	8	9	1	6
MAXIMUM	3313.5	323.25	50.641	1.5155	-119.92
Pile N.	6	1	6	1	9

* PILE TOP DISPLACEMENTS, LOCAL *

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	6.1757E-04	1.2202E-03	1.6013E-04	5.7226E-07	4.4677E-06
Pile N.	12	6	7	1	1
MAXIMUM	1.1418E-03	1.2331E-03	1.6270E-04	5.7226E-07	4.4677E-06
Pile N.	6	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	1812.7	250.60	39.546	1.5155	-141.91
Pile N.	12	8	9	1	6
MAXIMUM	3313.5	323.25	50.641	1.5155	-119.92
Pile N.	6	1	6	1	9

* 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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-3.2760E-05	-4.5488E-06	-811.60	-141.91	-124.68	-17.642	-36.913	-5.2381	1025.8

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 153 di 271

Pile N.	11	9	1	6	1	6	1	6	12
Max.	1.2331E-03	1.6270E-04	431.11	60.841	323.27	50.646	216.46	33.352	4313.2
Pile N.	1	1	1	6	1	6	1	6	6

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
50061.0	6372.00	153.000	-1188.00	7920.00	-7920.00

* 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
1.44156E-03	2.04447E-03	5.18749E-05	-4.26200E-06	4.09862E-06	-1.42465E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.0749E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8082E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	6	6	7	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	3122.0	466.54	10.588	-11.287	-41.859	1276.3
Pile N.	12	11	5	1	12	11
MAXIMUM	5221.5	605.80	15.472	-11.287	-25.335	1558.4
Pile N.	6	6	12	1	5	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.0749E-03	1.9965E-03	4.2285E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8082E-03	2.0924E-03	6.1464E-05	-4.2620E-06	4.0986E-06	-1.4247E-04
Pile N.	6	6	7	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	3122.0	466.54	10.588	-11.287	-41.859	1276.3
Pile N.	12	11	5	1	12	11
MAXIMUM	5221.5	605.80	15.472	-11.287	-25.335	1558.4
Pile N.	6	6	12	1	5	6

* 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.	-3.4017E-05	-1.0127E-06	-1558.4	-41.859	-325.82	-8.3261	-125.14	-2.9729	1766.7
Pile N.	8	10	6	12	6	12	6	12	12
Max.	2.0924E-03	6.1464E-05	888.50	24.455	605.88	15.473	598.27	15.309	7630.5
Pile N.	6	7	6	12	6	12	6	12	6

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
43114.0	3431.00	900.000	399.000	7494.00	-7494.00

* 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
1.23935E-03	1.15209E-03	2.42873E-04	1.02531E-06	4.99194E-06	-9.36460E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.7249E-04	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.5062E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05
Pile N.	6	1	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	2828.8	253.86	66.964	2.7154	-235.88	672.09
Pile N.	12	8	9	1	6	8
MAXIMUM	4356.9	320.61	83.447	2.7154	-203.92	799.41
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 154 di 271

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD				
MINIMUM	9.7249E-04	1.1405E-03	2.4057E-04	1.0253E-06	4.9919E-06	-9.3646E-05				
Pile N.	12	6	7	1	1	1				
MAXIMUM	1.5062E-03	1.1636E-03	2.4518E-04	1.0253E-06	4.9919E-06	-9.3646E-05				
Pile N.	6	1	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	2828.8	253.86	66.964	2.7154	-235.88	672.09				
Pile N.	12	8	9	1	6	8				
MAXIMUM	4356.9	320.61	83.447	2.7154	-203.92	799.41				
Pile N.	6	1	6	1	9	1				
* 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.	-1.8709E-05	-4.2616E-06	-799.41	-235.88	-176.71	-41.436	-67.704	-15.926	1600.8	
Pile N.	11	9	1	6	1	6	1	6	12	
Max.	1.1636E-03	2.4518E-04	483.72	112.74	320.64	83.457	335.78	84.671	4904.6	
Pile N.	1	1	1	6	1	6	1	6	6	
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					
43114.0	5110.00	0.00000	0.00000	-3.00000	3.00000					
* 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					
1.23935E-03	1.53699E-03	-4.43061E-09	6.53516E-12	-1.46626E-09	-8.08996E-05					
* PILE TOP DISPLACEMENTS, GLOBAL *										
DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD					
MINIMUM	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05				
Pile N.	7	1	7	1	1	1				
MAXIMUM	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05				
Pile N.	1	1	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	3071.6	381.73	-5.1973E-05	1.7307E-05	-2.1240E-03	1092.3				
Pile N.	7	9	1	9	1	9				
MAXIMUM	4114.0	470.87	4.9808E-05	1.7307E-05	-1.9905E-03	1253.8				
Pile N.	1	1	9	1	1	1				
* PILE TOP DISPLACEMENTS, LOCAL *										
DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD					
MINIMUM	1.0573E-03	1.5370E-03	-4.4453E-09	6.5352E-12	-1.4663E-09	-8.0900E-05				
Pile N.	7	1	7	1	1	1				
MAXIMUM	1.4214E-03	1.5370E-03	-4.4159E-09	6.5352E-12	-1.4663E-09	-8.0900E-05				
Pile N.	1	1	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	3071.6	381.73	-5.1973E-05	1.7307E-05	-2.1240E-03	1092.3				
Pile N.	7	9	1	9	1	9				
MAXIMUM	4114.0	470.87	4.9808E-05	1.7307E-05	-1.9905E-03	1253.8				
Pile N.	1	1	9	1	1	1				
* 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.	-2.5928E-05	-4.4453E-09	-1253.8	-2.1240E-03	-246.18	-5.1894E-05	-94.507	-2.6209E-04	1738.2	
Pile N.	9	7	1	9	1	1	1	1	7	
Max.	1.5370E-03	5.9969E-11	671.06	6.1284E-05	470.92	4.7653E-04	485.29	1.7768E-04	6089.5	
Pile N.	1	9	1	1	1	1	1	1	1	
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					
50281.0	6136.00	305.000	-1369.00	9258.00	-9258.00					

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 155 di 271

* 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
1.44796E-03	1.99402E-03	9.31230E-05	-4.97282E-06	4.97735E-06	-1.45737E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.0641E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8319E-03	2.0500E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	6	6	7	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	3091.0	447.27	23.586	-13.170	-79.706	1211.2
Pile N.	12	11	5	1	12	11
MAXIMUM	5289.2	587.23	28.194	-13.170	-62.419	1499.4
Pile N.	6	6	12	1	5	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.0641E-03	1.9381E-03	8.1934E-05	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.8319E-03	2.0500E-03	1.0431E-04	-4.9728E-06	4.9773E-06	-1.4574E-04
Pile N.	6	6	7	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	3091.0	447.27	23.586	-13.170	-79.706	1211.2
Pile N.	12	11	5	1	12	11
MAXIMUM	5289.2	587.23	28.194	-13.170	-62.419	1499.4
Pile N.	6	6	12	1	5	6

* 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.	-3.3129E-05	-1.7722E-06	-1499.4	-79.706	-317.71	-14.582	-122.05	-5.2184	1749.1
Pile N.	8	10	6	12	6	12	6	7	12
Max.	2.0500E-03	1.0431E-04	866.64	42.852	587.30	28.196	588.52	28.010	7495.4
Pile N.	6	7	6	12	6	12	6	12	6

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
30757.0	3431.00	540.000	240.000	7496.00	-7496.00

* 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
8.79684E-04	1.15060E-03	1.49973E-04	5.65930E-07	4.46057E-06	-9.35997E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.1890E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1405E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	6	1	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	1816.5	254.28	40.116	1.4988	-139.25	673.27
Pile N.	12	8	9	1	6	8
MAXIMUM	3309.7	319.50	50.046	1.4988	-120.13	794.42
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.1890E-04	1.1442E-03	1.4870E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1405E-03	1.1570E-03	1.5125E-04	5.6593E-07	4.4606E-06	-9.3600E-05
Pile N.	6	1	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	1816.5	254.28	40.116	1.4988	-139.25	673.27

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 156 di 271

Pile N.	12	8	9	1	6	8
MAXIMUM	3309.7	319.50	50.046	1.4988	-120.13	794.42
Pile N.	6	1	6	1	9	1

* 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.	-1.8621E-05	-2.5968E-06	-794.42	-139.25	-176.01	-25.176	-67.563	-9.6696	1027.9
Pile N.	11	9	1	6	1	6	1	6	12
Max.	1.1570E-03	1.5125E-04	481.18	68.550	319.52	50.050	334.64	50.974	4256.3
Pile N.	1	1	1	6	1	6	1	6	6

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
49415.0	6181.00	153.000	74.0000	-1048.00	1048.00

* 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
1.42276E-03	1.84392E-03	3.78357E-05	1.70506E-07	-2.86311E-07	-9.24162E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07
Pile N.	7	6	7	1	1
MAXIMUM	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07
Pile N.	1	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	3513.4	461.82	11.407	0.4516	-41.578
Pile N.	7	9	9	1	6
MAXIMUM	4722.5	570.03	14.122	0.4516	-36.280
Pile N.	1	1	6	1	9

* PILE TOP DISPLACEMENTS, LOCAL *

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.2116E-03	1.8420E-03	3.7452E-05	1.7051E-07	-2.8631E-07
Pile N.	7	6	7	1	1
MAXIMUM	1.6339E-03	1.8458E-03	3.8219E-05	1.7051E-07	-2.8631E-07
Pile N.	1	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	3513.4	461.82	11.407	0.4516	-41.578
Pile N.	7	9	9	1	6
MAXIMUM	4722.5	570.03	14.122	0.4516	-36.280
Pile N.	1	1	6	1	9

* 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.	-3.1223E-05	-6.9168E-07	-1526.5	-41.578	-296.79	-6.7465	-113.92	-2.5986	1988.2
Pile N.	10	9	1	6	1	6	1	6	7
Max.	1.8458E-03	3.8219E-05	808.74	18.328	570.10	14.124	575.58	13.913	7253.7
Pile N.	1	1	1	6	1	6	1	6	1

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
46543.0	5546.00	700.000	-2936.00	29635.0	-29635.0

* 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
1.33916E-03	2.13877E-03	2.25906E-04	-1.06075E-05	1.55222E-05	-2.43195E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	6.1735E-04	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05
Pile N.	12	1	1	1	1
MAXIMUM	2.0610E-03	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05
Pile N.	1	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 157 di 271

Pile N.	6	6	7	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	1812.0	388.34	54.749	-28.092	-175.29	893.68
Pile N.	12	11	5	1	7	11
MAXIMUM	5945.2	559.65	64.120	-28.092	-139.28	1277.5
Pile N.	6	6	7	1	5	6

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	6.1735E-04	2.0194E-03	2.0204E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0610E-03	2.2581E-03	2.4977E-04	-1.0607E-05	1.5522E-05	-2.4320E-04
Pile N.	6	6	7	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	1812.0	388.34	54.749	-28.092	-175.29	893.68
Pile N.	12	11	5	1	7	11
MAXIMUM	5945.2	559.65	64.120	-28.092	-139.28	1277.5
Pile N.	6	6	7	1	5	6

* 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.	-3.4096E-05	-4.1484E-06	-1277.5	-175.29	-328.66	-34.160	-126.04	-12.215	1025.4
Pile N.	8	10	6	7	6	7	6	7	12
Max.	2.2581E-03	2.4977E-04	897.95	100.21	559.72	64.125	580.28	64.814	7220.7
Pile N.	6	7	6	7	6	7	6	12	6

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
43114.0	5110.00	0.00000	0.00000	7494.00	-7494.00

* 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
1.23935E-03	1.65571E-03	1.10677E-05	-1.64179E-08	3.66272E-06	-1.20196E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	9.2771E-04	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5510E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	6	6	7	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	2700.6	380.33	-0.1240	-0.043480	4.9714	1035.0
Pile N.	12	10	9	1	6	9
MAXIMUM	4485.1	472.37	0.1295	-0.043480	5.3062	1201.1
Pile N.	6	6	1	1	10	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	9.2771E-04	1.6555E-03	1.1031E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5510E-03	1.6559E-03	1.1105E-05	-1.6418E-08	3.6627E-06	-1.2020E-04
Pile N.	6	6	7	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	2700.6	380.33	-0.1240	-0.043480	4.9714	1035.0
Pile N.	12	10	9	1	6	9
MAXIMUM	4485.1	472.37	0.1295	-0.043480	5.3062	1201.1
Pile N.	6	6	1	1	10	6

* 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.	-2.7068E-05	-1.4978E-07	-1201.1	-0.1531	-256.22	-1.1906	-98.442	-0.4439	1528.2

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 158 di 271

Pile N.	9	9	6	6	6	6	6	6	12
Max.	1.6559E-03	1.1105E-05	699.22	5.3062	472.42	0.1293	492.48	0.6545	6141.2
Pile N.	6	7	6	10	6	1	6	1	6

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
49797.0	5773.00	117.000	3090.00	5096.00	-5096.00

* 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
1.43387E-03	1.81801E-03	3.58051E-05	1.06450E-05	2.65931E-06	-1.18157E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1381E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.7296E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	6	1	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	3302.9	409.39	1.0377	28.192	-50.949	1129.2
Pile N.	12	8	9	1	6	8
MAXIMUM	4996.6	576.01	18.811	28.192	0.3015	1506.5
Pile N.	6	1	6	1	10	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1381E-03	1.6983E-03	1.1854E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.7296E-03	1.9378E-03	5.9756E-05	1.0645E-05	2.6593E-06	-1.1816E-04
Pile N.	6	1	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	3302.9	409.39	1.0377	28.192	-50.949	1129.2
Pile N.	12	8	9	1	6	8
MAXIMUM	4996.6	576.01	18.811	28.192	0.3015	1506.5
Pile N.	6	1	6	1	10	1

* 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.	-3.1355E-05	-9.2962E-07	-1506.5	-50.949	-305.74	-9.7064	-117.40	-3.7252	1869.1
Pile N.	11	5	1	6	1	6	1	6	12
Max.	1.9378E-03	5.9756E-05	833.60	26.441	576.08	18.814	580.62	19.310	7252.7
Pile N.	1	1	1	6	1	6	1	6	1

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
38547.0	3605.00	13664.0	-1835.00	14992.0	-14992.0

* 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
1.10658E-03	1.48537E-03	4.07139E-03	-3.17267E-06	2.83333E-05	-1.38430E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	4.7636E-04	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.7368E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04
Pile N.	6	6	7	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	1403.0	274.27	1073.0	-8.4023	-3909.8	700.24
Pile N.	12	11	9	1	6	11
MAXIMUM	5017.0	370.57	1329.2	-8.4023	-3420.5	902.34
Pile N.	6	6	6	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E Z CL VI0103 001 A 159 di 271

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD				
MINIMUM	4.7636E-04	1.4497E-03	4.0643E-03	-3.1727E-06	2.8333E-05	-1.3843E-04				
Pile N.	12	1	1	1	1	1				
MAXIMUM	1.7368E-03	1.5211E-03	4.0785E-03	-3.1727E-06	2.8333E-05	-1.3843E-04				
Pile N.	6	6	7	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	1403.0	274.27	1073.0	-8.4023	-3909.8	700.24				
Pile N.	12	11	9	1	6	11				
MAXIMUM	5017.0	370.57	1329.2	-8.4023	-3420.5	902.34				
Pile N.	6	6	6	1	9	6				
* 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.	-2.0133E-05	-6.3614E-05	-902.34	-3909.8	-206.66	-642.07	-80.057	-249.14	793.96	
Pile N.	9	9	6	6	6	6	6	6	12	
Max.	1.5211E-03	4.0785E-03	571.02	1751.5	370.61	1329.4	278.31	948.62	1.4877E+04	
Pile N.	6	7	6	6	6	6	6	6	6	
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					
29666.0	20989.0	21.0000	-222.000	535.000	-535.000					
* 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					
8.55242E-04	8.09913E-03	8.10632E-06	-1.26069E-06	2.91852E-07	-3.65859E-04					
* PILE TOP DISPLACEMENTS, GLOBAL *										
DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD					
MINIMUM	2.8777E-05	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04				
Pile N.	12	1	1	1	1	1				
MAXIMUM	1.6817E-03	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04				
Pile N.	6	6	7	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	84.757	1544.2	1.1811	-3.3387	-7.7579	4871.7				
Pile N.	12	10	5	1	12	11				
MAXIMUM	4859.3	1960.2	2.4214	-3.3387	-3.4207	5748.6				
Pile N.	6	6	12	1	5	6				
* PILE TOP DISPLACEMENTS, LOCAL *										
DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD					
MINIMUM	2.8777E-05	8.0850E-03	5.2698E-06	-1.2607E-06	2.9185E-07	-3.6586E-04				
Pile N.	12	1	1	1	1	1				
MAXIMUM	1.6817E-03	8.1133E-03	1.0943E-05	-1.2607E-06	2.9185E-07	-3.6586E-04				
Pile N.	6	6	7	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	84.757	1544.2	1.1811	-3.3387	-7.7579	4871.7				
Pile N.	12	10	5	1	12	11				
MAXIMUM	4859.3	1960.2	2.4214	-3.3387	-3.4207	5748.6				
Pile N.	6	6	12	1	5	6				
* 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.	-1.1994E-04	-1.6768E-07	-5748.6	-7.7579	-1070.3	-1.2337	-372.98	-0.3910	47.963	
Pile N.	8	9	6	12	6	12	6	12	12	
Max.	8.1133E-03	1.0943E-05	3039.5	3.8037	1960.5	2.4214	1401.2	1.5601	1.9996E+04	
Pile N.	6	7	6	12	6	12	6	12	6	
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					
29602.0	3572.00	13685.0	-5761.00	49852.0	-49852.0					

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 160 di 271

* 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
8.50040E-04	2.04231E-03	4.13163E-03	-1.96849E-05	4.52084E-05	-3.19583E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-3.7761E-04	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0777E-03	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	6	6	7	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	-1061.6	225.25	1075.0	-52.132	-3856.8	285.11
Pile N.	12	12	9	1	7	12
MAXIMUM	5993.0	433.10	1307.3	-52.132	-3417.2	836.63
Pile N.	6	6	6	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-3.7761E-04	1.8208E-03	4.0873E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.0777E-03	2.2638E-03	4.1759E-03	-1.9685E-05	4.5208E-05	-3.1958E-04
Pile N.	6	6	7	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	-1061.6	225.25	1075.0	-52.132	-3856.8	285.11
Pile N.	12	12	9	1	7	12
MAXIMUM	5993.0	433.10	1307.3	-52.132	-3417.2	836.63
Pile N.	6	6	6	1	9	6

* 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.	-2.6475E-05	-6.4890E-05	-836.63	-3856.8	-279.76	-641.01	-107.89	-248.80	48.769
Pile N.	8	9	6	7	6	6	6	6	10
Max.	2.2638E-03	4.1759E-03	781.07	1760.6	433.15	1307.5	344.40	939.21	1.5180E+04
Pile N.	6	7	6	7	6	6	6	6	6

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
28708.0	20815.0	0.00000	-58.0000	-66.0000	66.0000

* 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
8.27535E-04	7.99409E-03	-4.14115E-08	-3.20853E-07	-3.17163E-08	-3.59018E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9388E-05	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	1.6357E-03	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	1	6	7	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	57.104	1531.6	-0.1877	-0.8497	-0.6832	4829.5
Pile N.	7	10	1	1	12	10
MAXIMUM	4727.5	1942.0	0.1918	-0.8497	0.5537	5688.7
Pile N.	1	6	12	1	1	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9388E-05	7.9905E-03	-7.6333E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	1.6357E-03	7.9977E-03	6.8051E-07	-3.2085E-07	-3.1716E-08	-3.5902E-04
Pile N.	1	6	7	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	57.104	1531.6	-0.1877	-0.8497	-0.6832	4829.5

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 161 di 271

Pile N.	7	10	1	1	12	10
MAXIMUM	4727.5	1942.0	0.1918	-0.8497	0.5537	5688.7
Pile N.	1	6	12	1	1	6

* 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.	-1.1816E-04	-7.6333E-07	-5688.7	-0.6832	-1058.9	-0.1877	-370.16	-0.1339	32.314
Pile N.	9	1	6	12	6	1	6	1	7
Max.	7.9977E-03	6.8664E-07	3003.4	0.5537	1942.2	0.1918	1388.8	0.1171	1.9740E+04
Pile N.	6	9	6	1	6	12	6	12	6

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
38608.0	3540.00	4093.00	-1823.00	15295.0	-15295.0

* 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
1.10820E-03	1.32304E-03	1.09242E-03	-6.07158E-06	1.35575E-05	-1.36623E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
MINIMUM	6.4828E-04	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5681E-03	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	6	6	7	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	1900.6	255.38	318.10	-16.000	-1075.9	617.50
Pile N.	12	11	9	1	6	11
MAXIMUM	4534.1	359.33	375.99	-16.000	-980.40	847.69
Pile N.	6	6	6	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
MINIMUM	6.4828E-04	1.2547E-03	1.0788E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.5681E-03	1.3913E-03	1.1061E-03	-6.0716E-06	1.3558E-05	-1.3662E-04
Pile N.	6	6	7	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	1900.6	255.38	318.10	-16.000	-1075.9	617.50
Pile N.	12	11	9	1	6	11
MAXIMUM	4534.1	359.33	375.99	-16.000	-980.40	847.69
Pile N.	6	6	6	1	9	6

* 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.	-2.1202E-05	-1.9796E-05	-847.69	-1075.9	-206.00	-184.62	-79.061	-71.000	1075.5
Pile N.	8	9	6	6	6	6	6	6	12
Max.	1.3913E-03	1.1061E-03	562.70	502.11	359.37	376.04	381.10	380.25	6675.0
Pile N.	6	7	6	6	6	6	6	6	6

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
23926.0	8646.00	0.00000	-17.0000	-218.000	218.000

* 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
6.83177E-04	2.62724E-03	-3.06048E-07	-6.09169E-08	-1.05025E-07	-1.34989E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
MINIMUM	3.7827E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	9.8808E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 162 di 271

Pile N.	1	6	7	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	1114.1	638.72	-0.049231	-0.1613	-0.2925	1834.6
Pile N.	7	10	1	1	12	10
MAXIMUM	2873.4	803.08	0.047893	-0.1613	-0.010127	2143.4
Pile N.	1	6	12	1	1	6

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	3.7827E-04	2.6266E-03	-4.4311E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	7	1	1	1	1	1
MAXIMUM	9.8808E-04	2.6279E-03	-1.6899E-07	-6.0917E-08	-1.0503E-07	-1.3499E-04
Pile N.	1	6	7	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	1114.1	638.72	-0.049231	-0.1613	-0.2925	1834.6
Pile N.	7	10	1	1	12	10
MAXIMUM	2873.4	803.08	0.047893	-0.1613	-0.010127	2143.4
Pile N.	1	6	12	1	1	6

* 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.	-4.2013E-05	-4.4311E-07	-2143.4	-0.2925	-415.83	-0.049231	-159.88	-0.054743	630.47
Pile N.	9	1	6	12	6	1	6	1	7
Max.	2.6279E-03	2.2003E-08	1131.8	0.018381	803.13	0.050636	702.12	0.023924	8052.4
Pile N.	6	9	6	8	6	1	6	12	6

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
38062.0	8706.00	22.0000	-455.000	3683.00	-3683.00

* 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
1.09231E-03	2.71309E-03	1.15215E-05	-1.67480E-06	1.83330E-06	-1.57423E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	7.1748E-04	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4671E-03	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	6	6	7	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	2098.7	639.83	0.8160	-4.4354	-6.6897	1808.5
Pile N.	12	11	5	1	12	11
MAXIMUM	4245.0	815.92	2.9950	-4.4354	0.2336	2149.8
Pile N.	6	6	12	1	5	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	7.1748E-04	2.6943E-03	7.7533E-06	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.4671E-03	2.7319E-03	1.5290E-05	-1.6748E-06	1.8333E-06	-1.5742E-04
Pile N.	6	6	7	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	2098.7	639.83	0.8160	-4.4354	-6.6897	1808.5
Pile N.	12	11	5	1	12	11
MAXIMUM	4245.0	815.92	2.9950	-4.4354	0.2336	2149.8
Pile N.	6	6	12	1	5	6

* 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.	-4.3024E-05	-2.1905E-07	-2149.8	-6.6897	-427.38	-1.8170	-164.26	-0.6492	1187.6

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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
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Pile N.	8	11	6	12	6	12	6	12	12
Max.	2.7319E-03	1.5290E-05	1163.3	5.3703	816.01	2.9951	710.59	2.4932	8851.6
Pile N.	6	7	6	12	6	12	6	12	6

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
33280.0	3491.00	13665.0	-6009.00	52663.0	-52663.0

* 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
9.56721E-04	2.06059E-03	4.12768E-03	-2.07597E-05	4.64974E-05	-3.33170E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-3.1601E-04	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.2295E-03	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	6	6	7	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	-888.36	215.08	1073.6	-54.978	-3849.1	234.45
Pile N.	12	12	9	1	7	12
MAXIMUM	6427.5	429.76	1304.1	-54.978	-3411.3	807.61
Pile N.	6	6	6	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-3.1601E-04	1.8270E-03	4.0810E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	2.2295E-03	2.2941E-03	4.1744E-03	-2.0760E-05	4.6497E-05	-3.3317E-04
Pile N.	6	6	7	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	-888.36	215.08	1073.6	-54.978	-3849.1	234.45
Pile N.	12	12	9	1	7	12
MAXIMUM	6427.5	429.76	1304.1	-54.978	-3411.3	807.61
Pile N.	6	6	6	1	9	6

* 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.	-2.6594E-05	-6.4860E-05	-807.61	-3849.1	-281.41	-640.02	-108.56	-248.38	169.85
Pile N.	8	9	6	7	6	6	6	6	11
Max.	2.2941E-03	4.1744E-03	786.81	1759.1	429.81	1304.3	343.72	937.67	1.5375E+04
Pile N.	6	7	6	7	6	6	6	6	6

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
37589.0	8646.00	0.00000	-17.0000	215.000	-215.000

* 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
1.07854E-03	2.63870E-03	3.30001E-07	-6.21925E-08	1.05107E-07	-1.38282E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.6622E-04	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.3909E-03	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	6	6	7	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	2238.2	638.56	-0.041872	-0.1647	5.0817E-03	1831.0
Pile N.	12	10	2	1	12	10
MAXIMUM	4026.6	803.25	0.045450	-0.1647	0.2755	2140.4
Pile N.	6	6	12	1	1	6

* PILE TOP DISPLACEMENTS, LOCAL *

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 164 di 271

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.6622E-04	2.6380E-03	1.9007E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	12	1	1	1	1	1
MAXIMUM	1.3909E-03	2.6394E-03	4.6993E-07	-6.2193E-08	1.0511E-07	-1.3828E-04
Pile N.	6	6	7	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	2238.2	638.56	-0.041872	-0.1647	5.0817E-03	1831.0
Pile N.	12	10	2	1	12	10
MAXIMUM	4026.6	803.25	0.045450	-0.1647	0.2755	2140.4
Pile N.	6	6	12	1	1	6

* 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.	-4.2141E-05	-1.2149E-08	-2140.4	-0.012710	-417.04	-0.047061	-160.33	-0.025178	1266.6
Pile N.	9	2	6	2	6	1	6	1	12
Max.	2.6394E-03	4.6993E-07	1134.9	0.2755	803.33	0.045450	702.60	0.047647	8699.9
Pile N.	6	7	6	1	6	12	6	12	6

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
29630.0	20907.0	16.0000	368.000	16.0000	-16.0000

* 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
8.54070E-04	8.04538E-03	4.95321E-06	2.02358E-06	3.24849E-08	-3.61469E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	4.0400E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.6677E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	6	1	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	118.99	1537.8	0.065210	5.3591	-8.4116	4849.1
Pile N.	12	9	10	1	6	8
MAXIMUM	4819.3	1954.4	2.6608	5.3591	-0.1847	5731.9
Pile N.	6	1	6	1	10	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	4.0400E-05	8.0226E-03	4.0016E-07	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	12	6	7	1	1	1
MAXIMUM	1.6677E-03	8.0681E-03	9.5063E-06	2.0236E-06	3.2485E-08	-3.6147E-04
Pile N.	6	1	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	118.99	1537.8	0.065210	5.3591	-8.4116	4849.1
Pile N.	12	9	10	1	6	8
MAXIMUM	4819.3	1954.4	2.6608	5.3591	-0.1847	5731.9
Pile N.	6	1	6	1	10	1

* 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.	-1.1918E-04	-1.3564E-07	-5731.9	-8.4116	-1066.1	-1.3542	-371.94	-0.4741	67.335
Pile N.	11	2	6	1	6	1	6	6	12
Max.	8.0681E-03	9.5063E-06	3026.1	3.8198	1954.6	2.6611	1396.9	1.8443	1.9922E+04
Pile N.	1	1	1	6	1	6	1	6	1

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
30757.0	3431.00	0.00000	0.00000	4997.00	-4997.00

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 165 di 271

* 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
8.79684E-04	1.11051E-03	7.37651E-06	-9.53452E-09	2.44227E-06	-8.04885E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.7111E-04	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.0883E-03	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	6	6	7	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	1965.9	255.34	-0.083881	-0.025250	3.3173	694.73
Pile N.	12	10	9	1	6	10
MAXIMUM	3160.2	317.19	0.087588	-0.025250	3.5456	806.14
Pile N.	6	6	1	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.7111E-04	1.1104E-03	7.3551E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.0883E-03	1.1106E-03	7.3980E-06	-9.5345E-09	2.4423E-06	-8.0489E-05
Pile N.	6	6	7	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	1965.9	255.34	-0.083881	-0.025250	3.3173	694.73
Pile N.	12	10	9	1	6	10
MAXIMUM	3160.2	317.19	0.087588	-0.025250	3.5456	806.14
Pile N.	6	6	1	1	9	6

* 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.	-1.8152E-05	-9.9795E-08	-806.14	-0.1020	-171.83	-0.7933	-66.012	-0.2958	1112.5
Pile N.	9	9	6	6	6	6	6	6	12
Max.	1.1106E-03	7.3980E-06	469.02	3.5456	317.21	0.087493	330.52	0.4371	4206.8
Pile N.	5	7	6	9	6	1	6	1	6

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
35548.0	4302.00	105.000	-819.000	5354.00	-5354.00

* 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
1.01913E-03	1.37833E-03	3.54290E-05	-2.90252E-06	2.77290E-06	-9.61605E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.7158E-04	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2667E-03	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	6	6	7	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	2253.6	314.83	7.2802	-7.6868	-28.708	860.54
Pile N.	12	11	5	1	7	11
MAXIMUM	3671.1	409.28	10.600	-7.6868	-17.461	1051.8
Pile N.	6	6	7	1	2	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.7158E-04	1.3457E-03	2.8898E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2667E-03	1.4110E-03	4.1960E-05	-2.9025E-06	2.7729E-06	-9.6160E-05
Pile N.	6	6	7	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	2253.6	314.83	7.2802	-7.6868	-28.708	860.54

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 166 di 271

Pile N.	12	11	5	1	7	11
MAXIMUM	3671.1	409.28	10.600	-7.6868	-17.461	1051.8
Pile N.	6	6	7	1	2	6

* 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.	-2.2968E-05	-6.9258E-07	-1051.8	-28.708	-219.99	-5.6941	-84.502	-2.0329	1275.3
Pile N.	8	9	6	7	6	7	6	7	12
Max.	1.4110E-03	4.1960E-05	600.27	16.728	409.32	10.601	425.45	10.763	5233.3
Pile N.	6	7	6	7	6	7	6	7	6

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
30757.0	3431.00	600.000	266.000	4997.00	-4997.00

* 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
8.79684E-04	1.11117E-03	1.61735E-04	6.42170E-07	3.32778E-06	-8.05055E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.6111E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0983E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	6	1	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	1937.3	254.68	44.629	1.7007	-156.97	692.09
Pile N.	12	8	9	1	6	8
MAXIMUM	3188.9	319.20	55.563	1.7007	-135.85	812.86
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.6111E-04	1.1040E-03	1.6029E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0983E-03	1.1184E-03	1.6318E-04	6.4217E-07	3.3278E-06	-8.0505E-05
Pile N.	6	1	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	1937.3	254.68	44.629	1.7007	-156.97	692.09
Pile N.	12	8	9	1	6	8
MAXIMUM	3188.9	319.20	55.563	1.7007	-135.85	812.86
Pile N.	6	1	6	1	9	1

* 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.	-1.8232E-05	-2.8387E-06	-812.86	-156.97	-172.78	-27.567	-66.277	-10.595	1096.3
Pile N.	11	9	1	6	1	6	1	6	12
Max.	1.1184E-03	1.6318E-04	472.21	75.026	319.22	55.568	332.44	56.359	4247.5
Pile N.	1	1	1	6	1	6	1	6	6

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
30757.0	3431.00	0.00000	0.00000	-2.00000	2.00000

* 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
8.79684E-04	1.03139E-03	-2.95237E-09	3.82436E-12	-9.77495E-10	-5.42886E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 167 di 271

Pile N.	1	1	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	2213.3	256.29	-3.5087E-05	1.0128E-05	-1.4190E-03	733.01
Pile N.	7	9	1	1	9	9
MAXIMUM	2912.8	316.17	3.3628E-05	1.0128E-05	-1.3279E-03	841.39
Pile N.	1	1	9	1	1	1

* PILE TOP DISPLACEMENTS, LOCAL *						
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	7.5752E-04	1.0314E-03	-2.9610E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	7	1	7	1	1	1
MAXIMUM	1.0018E-03	1.0314E-03	-2.9438E-09	3.8244E-12	-9.7750E-10	-5.4289E-05
Pile N.	1	1	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	2213.3	256.29	-3.5087E-05	1.0128E-05	-1.4190E-03	733.01
Pile N.	7	9	1	1	9	9
MAXIMUM	2912.8	316.17	3.3628E-05	1.0128E-05	-1.3279E-03	841.39
Pile N.	1	1	9	1	1	1

* 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.	-1.7393E-05	-2.9610E-09	-841.39	-1.4190E-03	-165.14	-3.5050E-05	-63.395	-1.7497E-04	1252.5
Pile N.	9	7	1	9	1	1	1	1	7
Max.	1.0314E-03	3.9947E-11	450.27	4.0824E-05	316.20	3.1748E-04	325.73	1.1838E-04	4172.5
Pile N.	1	9	1	1	1	1	1	1	1

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
35701.0	4138.00	570.000	-785.000	3284.00	-3284.00

* 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
1.02359E-03	1.29673E-03	1.52106E-04	-2.99278E-06	2.44775E-06	-8.27276E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	8.0991E-04	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2373E-03	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	6	6	7	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	2363.3	302.94	45.008	-7.9259	-144.03	841.22
Pile N.	12	11	9	1	7	11
MAXIMUM	3586.8	394.30	50.036	-7.9259	-138.26	1027.7
Pile N.	6	6	6	1	9	6

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	8.0991E-04	1.2631E-03	1.4537E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	12	1	1	1	1	1
MAXIMUM	1.2373E-03	1.3304E-03	1.5884E-04	-2.9928E-06	2.4477E-06	-8.2728E-05
Pile N.	6	6	7	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	2363.3	302.94	45.008	-7.9259	-144.03	841.22
Pile N.	12	11	9	1	7	11
MAXIMUM	3586.8	394.30	50.036	-7.9259	-138.26	1027.7
Pile N.	6	6	6	1	9	6

* 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.	-2.1833E-05	-2.8363E-06	-1027.7	-144.03	-209.59	-24.703	-80.488	-9.4970	1337.4

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 168 di 271

Pile N.	8	9	6	7	6	6	6	6	12
Max.	1.3304E-03	1.5884E-04	571.70	68.825	394.34	50.040	408.45	50.680	5142.3
Pile N.	6	7	6	7	6	6	6	6	6

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
30757.0	3431.00	600.000	266.000	-2.00000	2.00000

* 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
8.79684E-04	1.03207E-03	1.54359E-04	6.53602E-07	8.84536E-07	-5.43059E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

* EFFECTS FOR LATERALLY LOADED 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.	-1.7473E-05	-2.7688E-06	-848.33	-160.30	-166.13	-26.950	-63.669	-10.369	1236.3
Pile N.	11	9	1	6	1	6	1	6	12
Max.	1.0394E-03	1.5583E-04	453.56	73.295	318.25	55.489	327.69	55.927	4222.2
Pile N.	1	1	1	6	1	6	1	6	1

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
35103.0	4170.00	105.000	52.0000	-728.000	728.000

* 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
1.00618E-03	1.24232E-03	2.59246E-05	1.19948E-07	-2.00868E-07	-6.21920E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	7	6	7	1	1	1
MAXIMUM	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05
Pile N.	1	1	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	2518.1	311.56	7.8263	0.3177	-28.530	896.38
Pile N.	7	9	10	1	1	9
MAXIMUM	3332.4	384.59	9.6938	0.3177	-24.884	1029.4
Pile N.	1	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 169 di 271

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD				
MINIMUM	8.6399E-04	1.2410E-03	2.5655E-05	1.1995E-07	-2.0087E-07	-6.2192E-05				
Pile N.	7	6	7	1	1	1				
MAXIMUM	1.1484E-03	1.2437E-03	2.6195E-05	1.1995E-07	-2.0087E-07	-6.2192E-05				
Pile N.	1	1	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	2518.1	311.56	7.8263	0.3177	-28.530	896.38				
Pile N.	7	9	10	1	1	9				
MAXIMUM	3332.4	384.59	9.6938	0.3177	-24.884	1029.4				
Pile N.	1	1	6	1	9	1				
* 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.	-2.1043E-05	-4.7404E-07	-1029.4	-28.530	-200.04	-4.6261	-76.782	-1.7817	1425.0	
Pile N.	10	9	1	1	1	6	1	6	7	
Max.	1.2437E-03	2.6195E-05	545.31	12.572	384.63	9.6947	395.71	9.7214	4975.0	
Pile N.	1	1	1	1	1	6	1	6	1	
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					
33123.0	3731.00	470.000	-2026.00	20338.0	-20338.0					
* 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					
9.48837E-04	1.44369E-03	1.52106E-04	-7.2717E-06	1.0589E-05	-1.6554E-04					
* PILE TOP DISPLACEMENTS, GLOBAL *										
	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD				
MINIMUM	4.5724E-04	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04				
Pile N.	12	1	1	1	1	1				
MAXIMUM	1.4404E-03	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04				
Pile N.	6	6	7	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	1346.7	260.72	36.668	-19.258	-117.80	596.57				
Pile N.	12	11	4	1	7	11				
MAXIMUM	4168.5	377.46	43.188	-19.258	-92.891	858.03				
Pile N.	6	6	7	1	2	6				
* PILE TOP DISPLACEMENTS, LOCAL *										
	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD				
MINIMUM	4.5724E-04	1.3619E-03	1.3574E-04	-7.2717E-06	1.0589E-05	-1.6554E-04				
Pile N.	12	1	1	1	1	1				
MAXIMUM	1.4404E-03	1.5255E-03	1.6847E-04	-7.2717E-06	1.0589E-05	-1.6554E-04				
Pile N.	6	6	7	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	1346.7	260.72	36.668	-19.258	-117.80	596.57				
Pile N.	12	11	4	1	7	11				
MAXIMUM	4168.5	377.46	43.188	-19.258	-92.891	858.03				
Pile N.	6	6	7	1	2	6				
* 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.	-2.3006E-05	-2.7943E-06	-858.03	-117.80	-221.87	-23.032	-85.059	-8.2327	762.09	
Pile N.	8	9	6	7	6	7	6	7	12	
Max.	1.5255E-03	1.6847E-04	606.56	67.574	377.49	43.190	403.43	43.755	4948.8	
Pile N.	6	7	6	7	6	7	6	7	6	
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					
30757.0	3431.00	600.000	266.000	-2.00000	2.00000					

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 170 di 271

* 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
8.79684E-04	1.03207E-03	1.54359E-04	6.53602E-07	8.84536E-07	-5.43059E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.4754E-04	1.0247E-03	1.5289E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.0118E-03	1.0394E-03	1.5583E-04	6.5360E-07	8.8454E-07	-5.4306E-05
Pile N.	6	1	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	2184.8	255.61	44.710	1.7310	-160.30	730.30
Pile N.	12	8	9	1	6	8
MAXIMUM	2941.4	318.23	55.485	1.7310	-139.40	848.33
Pile N.	6	1	6	1	9	1

* 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.	-1.7473E-05	-2.7688E-06	-848.33	-160.30	-166.13	-26.950	-63.669	-10.369	1236.3
Pile N.	11	9	1	6	1	6	1	6	12
Max.	1.0394E-03	1.5583E-04	453.56	73.295	318.25	55.489	327.69	55.927	4222.2
Pile N.	1	1	1	6	1	6	1	6	1

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
35367.0	3888.00	440.000	2291.00	408.000	-408.000

* 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
1.01387E-03	1.17585E-03	1.12528E-04	7.69859E-06	8.45949E-07	-6.36912E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	8.6104E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1667E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	6	1	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	2509.7	275.32	27.556	20.388	-133.08	779.96
Pile N.	12	8	9	1	6	8
MAXIMUM	3384.8	389.41	46.111	20.388	-85.529	1041.7
Pile N.	6	1	6	1	9	1

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	8.6104E-04	1.0892E-03	9.5206E-05	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	12	6	7	1	1	1
MAXIMUM	1.1667E-03	1.2625E-03	1.2985E-04	7.6986E-06	8.4595E-07	-6.3691E-05
Pile N.	6	1	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	2509.7	275.32	27.556	20.388	-133.08	779.96

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 171 di 271

Pile N.	12	8	9	1	6	8
MAXIMUM	3384.8	389.41	46.111	20.388	-85.529	1041.7
Pile N.	6	1	6	1	9	1

* 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.	-2.0721E-05	-2.1409E-06	-1041.7	-133.08	-202.72	-22.430	-77.759	-8.6298	1420.2
Pile N.	11	2	1	6	1	6	1	6	12
Max.	1.2625E-03	1.2985E-04	552.90	60.999	389.44	46.115	400.73	46.500	5034.9
Pile N.	1	1	1	6	1	6	1	6	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 172 di 271

16.2 SPB 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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Time and Date of Analysis

Date: June 22, 2022 Time: 17:06:47

***** 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	0.5845	1.0000
2	0.5126	1.0000
3	0.6449	1.0000
4	0.5359	1.0000
5	0.4686	1.0000
6	0.6004	1.0000
7	0.5648	1.0000
8	0.4960	1.0000
9	0.6263	1.0000
10	0.8221	1.0000
11	0.7691	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 44472.2	HOR. LOAD Y, KN 115.110	HOR. LOAD Z, KN 867.865
MOMENT X, KN- M 971.933	MOMENT Y, KN- M 20373.2	MOMENT Z, KN- M -20373.2

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI				
PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
<u>Mandanti</u> NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	IF3A	02	E ZZ CL	VI0103 001	A
					FOGLIO 173 di 271

1.83940E-03 2.81213E-04 5.96550E-04
ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
9.73967E-06 3.76892E-05 -6.14971E-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	1.3083E-03	3.4695E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
2	1.5850E-03	3.4695E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
3	1.8617E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
4	1.4779E-03	3.0313E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
5	1.7546E-03	3.0313E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
6	2.0313E-03	3.0313E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
7	1.6475E-03	2.5930E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
8	1.9242E-03	2.5930E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
9	2.2009E-03	2.5930E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
10	1.8171E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
11	2.0938E-03	2.1547E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
12	2.3705E-03	2.1547E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
MINIMUM	1.3083E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3705E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	12	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	2644.5	19.313	62.943	21.315	-179.39	-3.4908
2	3197.6	17.026	63.738	21.315	-189.47	-8.1018
3	3750.7	21.124	81.077	21.315	-237.64	0.3067
4	2983.4	11.526	59.397	21.315	-171.30	-29.178
5	3536.5	9.8235	60.057	21.315	-180.84	-32.465
6	4089.6	13.068	77.361	21.315	-229.28	-26.043
7	3322.4	5.7783	61.489	21.315	-176.17	-50.842
8	3875.5	4.5425	62.330	21.315	-186.28	-52.976
9	4428.6	6.8238	79.502	21.315	-234.21	-48.871
10	3661.4	2.0724	78.765	21.315	-214.45	-70.001
11	4214.5	1.4981	83.115	21.315	-233.31	-70.769
12	4767.6	2.5136	98.092	21.315	-275.07	-69.258
MINIMUM	2644.5	1.4981	59.397	21.315	-275.07	-70.769
Pile N.	1	11	4	1	12	11
MAXIMUM	4767.6	21.124	98.092	21.315	-171.30	0.3067
Pile N.	12	3	12	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	1.3083E-03	3.4695E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
2	1.5850E-03	3.4695E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
3	1.8617E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
4	1.4779E-03	3.0313E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
5	1.7546E-03	3.0313E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
6	2.0313E-03	3.0313E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
7	1.6475E-03	2.5930E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
8	1.9242E-03	2.5930E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
9	2.2009E-03	2.5930E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
10	1.8171E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
11	2.0938E-03	2.1547E-04	5.9655E-04	9.7397E-06	3.7689E-05	-6.1497E-05
12	2.3705E-03	2.1547E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
MINIMUM	1.3083E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3705E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	12	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	2644.5	19.313	62.943	21.315	-179.39	-3.4908
2	3197.6	17.026	63.738	21.315	-189.47	-8.1018
3	3750.7	21.124	81.077	21.315	-237.64	0.3067
4	2983.4	11.526	59.397	21.315	-171.30	-29.178
5	3536.5	9.8235	60.057	21.315	-180.84	-32.465

APPALTATORE: <u>Consorzio</u> HIRPINIA - ORSARA AV	<u>Soci</u> WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA
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 SPALLA A E SPALLA B	COMMESSA IF3A LOTTO 02 CODIFICA E ZZ CL DOCUMENTO VI0103 001 REV. A FOGLIO 174 di 271	

6	4089.6	13.068	77.361	21.315	-229.28	-26.043
7	3322.4	5.7783	61.489	21.315	-176.17	-50.842
8	3875.5	4.5425	62.330	21.315	-186.28	-52.976
9	4428.6	6.8238	79.502	21.315	-234.21	-48.871
10	3661.4	2.0724	78.765	21.315	-214.45	-70.001
11	4214.5	1.4981	83.115	21.315	-233.31	-70.769
12	4767.6	2.5136	98.092	21.315	-275.07	-69.258
MINIMUM	2644.5	1.4981	59.397	21.315	-275.07	-70.769
Pile N.	1	11	4	1	12	11
MAXIMUM	4767.6	21.124	98.092	21.315	-171.30	0.3067
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

1	2034.7
2	2378.4
3	2835.4
4	2209.6
5	2552.5
6	3006.5
7	2430.2
8	2774.1
9	3223.8
10	2748.7
11	3116.3
12	3548.9
MINIMUM	2034.7
Pile N.	1
MAXIMUM	3548.9
Pile N.	12

* EFFECTS FOR Laterally LOADED PILE *

* MINIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS	FLEX. RIG.	
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR		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	-6.3439E-06	-4.2365E-06	-4.4048	-179.39	-8.9297	-13.543	-3.7855	-7.9073	1496.5	7.8500E+06	7.8500E+06
x (M)	11.660	13.640	16.060	0.0000	9.4600	11.880	13.200	16.060	22.000	0.0000	0.0000
2	-6.0487E-06	-3.9098E-06	-4.2756	-189.47	-8.4518	-13.741	-3.6994	-8.3824	1809.4	7.8500E+06	7.8500E+06
x (M)	11.880	14.080	16.280	0.0000	9.6800	12.320	16.060	16.060	22.000	0.0000	0.0000
3	-6.6051E-06	-5.2098E-06	-4.4784	-237.64	-9.3366	-16.626	-4.1336	-9.4709	2122.4	7.8500E+06	7.8500E+06
x (M)	11.660	13.420	16.060	0.0000	9.4600	11.880	13.200	16.060	22.000	0.0000	0.0000
4	-7.1913E-06	-3.8809E-06	-4.3246	-171.30	-8.1426	-12.970	-3.4703	-7.7795	1688.3	7.8500E+06	7.8500E+06
x (M)	11.220	13.860	16.060	0.0000	8.8000	12.100	13.200	16.060	22.000	0.0000	0.0000
5	-7.0590E-06	-3.5729E-06	-4.3095	-180.84	-7.7524	-13.121	-3.1483	-8.0967	2001.3	7.8500E+06	7.8500E+06
x (M)	11.440	14.300	16.060	0.0000	9.0200	12.760	13.200	16.060	22.000	0.0000	0.0000
6	-7.3422E-06	-4.8489E-06	-4.3825	-229.28	-8.5269	-16.056	-3.7660	-9.4288	2314.3	7.8500E+06	7.8500E+06
x (M)	11.220	13.640	15.620	0.0000	8.8000	12.100	13.200	16.060	22.000	0.0000	0.0000
7	-9.0872E-06	-4.0945E-06	-4.7052	-176.17	-8.2668	-13.326	-3.5339	-7.8700	1880.1	7.8500E+06	7.8500E+06
x (M)	10.340	13.860	14.960	0.0000	7.7000	12.100	13.200	16.060	22.000	0.0000	0.0000
8	-9.2163E-06	-3.7803E-06	-4.6515	-186.28	-7.9469	-13.525	-3.3159	-8.2919	2193.1	7.8500E+06	7.8500E+06
x (M)	10.560	14.080	15.400	0.0000	7.9200	12.540	13.200	16.060	22.000	0.0000	0.0000
9	-9.0382E-06	-5.0764E-06	-4.7937	-234.21	-8.5689	-16.407	-3.7179	-9.4659	2506.1	7.8500E+06	7.8500E+06
x (M)	10.340	13.640	14.960	0.0000	7.7000	11.880	13.200	16.060	22.000	0.0000	0.0000
10	-1.1235E-05	-5.9883E-06	-5.5641	-214.45	-9.9646	-16.020	-3.7583	-7.5554	2071.9	7.8500E+06	7.8500E+06
x (M)	9.2400	12.760	14.080	0.0000	6.3800	11.000	13.200	16.060	22.000	0.0000	0.0000
11	-1.1473E-05	-5.9395E-06	-5.5723	-233.31	-9.7937	-16.823	-3.7161	-8.5017	2384.9	7.8500E+06	7.8500E+06
x (M)	9.2400	12.980	14.080	0.0000	6.3800	11.220	13.200	16.060	22.000	0.0000	0.0000
12	-1.1087E-05	-7.0600E-06	-5.5673	-275.07	-10.127	-19.211	-3.7939	-8.8452	2697.9	7.8500E+06	7.8500E+06
x (M)	9.2400	12.760	14.080	0.0000	6.3800	11.000	13.200	16.060	22.000	0.0000	0.0000
Min.	-1.1473E-05	-7.0600E-06	-5.5723	-275.07	-10.127	-19.211	-4.1336	-9.4709	1496.5	7.8500E+06	7.8500E+06
Pile N.	11	11	11	12	12	12	3	3	1	1	1

* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL STRESS	FLEX. RIG.	
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR		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	3.4696E-04	5.5272E-04	60.524	80.922	19.313	62.949	5.0045	11.362	2034.7	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	5.0600	7.4800	0.0000	0.0000	3.3000	4.1800	0.0000	0.0000	0.0000
2	3.4696E-04	5.9655E-04	58.589	82.998	17.026	63.746	4.4326	11.149	2378.4	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	5.0600	7.7000	0.0000	0.0000	3.3000	4.1800	0.0000	0.0000	0.0000
3	3.4696E-04	6.4038E-04	62.114	97.547	21.124	81.089	5.4761	14.686	2835.4	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	5.0600	7.4800	0.0000	0.0000	3.3000	4.1800	0.0000	0.0000	0.0000
4	3.0313E-04	5.5272E-04	58.210	78.265	11.525	59.404	3.6889	10.563	2209.6	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	4.1800	7.4800	0.0000	0.0000	3.0800	4.1800	0.0000	0.0000	0.0000
5	3.0313E-04	5.9655E-04	56.917	80.154	9.8219	60.066	3.2499	10.343	2552.5	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	3.9600	7.7000	0.0000	0.0000	3.0800	4.4000	0.0000	0.0000	0.0000
6	3.0313E-04	6.4038E-04	59.448	94.898	13.067	77.374	4.1036	13.839	3006.5	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	4.1800	7.4800	0.0000	0.0000	3.0800	4.1800	0.0000	0.0000	0.0000
7	2.5930E-04	5.5272E-04	61.479	79.892	5.7759	61.497	2.9435	11.039	2430.2	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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 175 di 271

x(M)	0.0000	0.0000	2.8600	7.4800	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
8	2.5930E-04	5.9655E-04	60.962	81.976	4.5397	62.341	2.5976	10.842	2774.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	2.6400	7.7000	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
9	2.5930E-04	6.4038E-04	62.015	96.488	6.8208	79.517	3.2489	14.333	3223.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.0800	7.4800	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
10	2.1547E-04	5.5272E-04	72.140	92.462	2.0688	78.776	3.0053	15.114	2748.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	1.5400	7.0400	0.0000	0.0000	2.4200	3.9600	0.0000	0.0000	0.0000
11	2.1547E-04	5.9655E-04	72.233	97.320	1.8918	83.129	2.8158	15.652	3116.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	1.3200	7.0400	16.500	0.0000	2.4200	3.9600	0.0000	0.0000	0.0000
12	2.1547E-04	6.4038E-04	72.097	109.54	2.5090	98.110	3.1614	18.763	3548.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	1.5400	7.0400	0.0000	0.0000	2.4200	3.9600	0.0000	0.0000	0.0000
Max.	3.4696E-04	6.4038E-04	72.233	109.54	21.124	98.110	5.4761	18.763	3548.9	7.8500E+06	7.8500E+06
Pile N.	1	3	11	12	3	12	3	12	12	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	0.5845	1.0000
2	0.5747	1.0000
3	0.8525	1.0000
4	0.4984	1.0000
5	0.4933	1.0000
6	0.7927	1.0000
7	0.5007	1.0000
8	0.4952	1.0000
9	0.7941	1.0000
10	0.6041	1.0000
11	0.5943	1.0000
12	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
70885.7	4451.74	1097.71
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
892.414	5605.86	-5605.86

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.94228E-03	2.58293E-03	6.34743E-04
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
5.74697E-06	1.56056E-05	-6.31659E-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	2.5527E-03	2.6217E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
2	2.8369E-03	2.6217E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
3	3.1212E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
4	2.6229E-03	2.5959E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
5	2.9072E-03	2.5959E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
6	3.1914E-03	2.5959E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
7	2.6932E-03	2.5700E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
8	2.9774E-03	2.5700E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
9	3.2616E-03	2.5700E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
10	2.7634E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
11	3.0476E-03	2.5441E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
12	3.3319E-03	2.5441E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
MINIMUM	2.5527E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	3.3319E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	12	1	3	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 176 di 271

* 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	5131.6	359.62	83.020	12.577	-277.13	1205.6
2	5699.8	355.71	85.956	12.577	-288.81	1196.8
3	6267.9	453.66	114.50	12.577	-358.48	1418.6
4	5272.0	322.28	75.198	12.577	-258.58	1112.4
5	5840.1	320.08	78.186	12.577	-270.32	1107.4
6	6408.2	429.08	109.48	12.577	-347.46	1359.4
7	5412.4	319.59	75.397	12.577	-259.08	1101.6
8	5980.5	317.28	78.360	12.577	-270.76	1096.3
9	6548.6	424.85	109.59	12.577	-347.72	1344.8
10	5552.7	355.04	84.706	12.577	-281.13	1180.9
11	6120.8	351.31	87.731	12.577	-293.03	1172.6
12	6651.2	443.26	115.59	12.577	-360.91	1379.8
MINIMUM	5131.6	317.28	75.198	12.577	-360.91	1096.3
Pile N.	1	8	4	1	12	8
MAXIMUM	6651.2	453.66	115.59	12.577	-258.58	1418.6
Pile N.	12	3	12	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	2.5527E-03	2.6217E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
2	2.8369E-03	2.6217E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
3	3.1212E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
4	2.6229E-03	2.5959E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
5	2.9072E-03	2.5959E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
6	3.1914E-03	2.5959E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
7	2.6932E-03	2.5700E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
8	2.9774E-03	2.5700E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
9	3.2616E-03	2.5700E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
10	2.7634E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
11	3.0476E-03	2.5441E-03	6.3474E-04	5.7470E-06	1.5606E-05	-6.3166E-05
12	3.3319E-03	2.5441E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
MINIMUM	2.5527E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	3.3319E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	12	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	5131.6	359.62	83.020	12.577	-277.13	1205.6
2	5699.8	355.71	85.956	12.577	-288.81	1196.8
3	6267.9	453.66	114.50	12.577	-358.48	1418.6
4	5272.0	322.28	75.198	12.577	-258.58	1112.4
5	5840.1	320.08	78.186	12.577	-270.32	1107.4
6	6408.2	429.08	109.48	12.577	-347.46	1359.4
7	5412.4	319.59	75.397	12.577	-259.08	1101.6
8	5980.5	317.28	78.360	12.577	-270.76	1096.3
9	6548.6	424.85	109.59	12.577	-347.72	1344.8
10	5552.7	355.04	84.706	12.577	-281.13	1180.9
11	6120.8	351.31	87.731	12.577	-293.03	1172.6
12	6651.2	443.26	115.59	12.577	-360.91	1379.8
MINIMUM	5131.6	317.28	75.198	12.577	-360.91	1096.3
Pile N.	1	8	4	1	12	8
MAXIMUM	6651.2	453.66	115.59	12.577	-258.58	1418.6
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

1	6615.1
2	6918.9
3	7936.5
4	6409.5
5	6724.7
6	7835.5
7	6457.6
8	6772.0
9	7872.8
10	6784.0
11	7089.6
12	8042.4
MINIMUM	6409.5
Pile N.	4

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 177 di 271

MAXIMUM 8042.4
Pile N. 12

* 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	-1.7066E-05	-3.9840E-06	-1205.6	-277.13	-67.321	-15.608	-41.887	-9.6933	2903.9	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
2	-1.6803E-05	-4.0731E-06	-1196.8	-288.81	-66.782	-16.160	-41.719	-10.089	3225.4	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
3	-2.5515E-05	-6.4222E-06	-1418.6	-358.48	-81.078	-20.441	-41.157	-10.386	3546.9	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.440	11.440	16.060	16.060	22.000	0.0000	0.0000
4	-1.4360E-05	-3.3827E-06	-1112.4	-258.58	-61.213	-14.340	-39.044	-9.1360	2983.3	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
5	-1.4226E-05	-3.4807E-06	-1107.4	-270.32	-60.913	-14.891	-38.868	-9.4997	3304.8	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
6	-2.3432E-05	-5.9494E-06	-1359.4	-347.46	-77.540	-19.750	-41.651	-10.623	3626.3	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.660	11.660	16.060	16.060	22.000	0.0000	0.0000
7	-1.4308E-05	-3.4013E-06	-1101.6	-259.08	-60.753	-14.379	-38.729	-9.1574	3062.8	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
8	-1.4158E-05	-3.4968E-06	-1096.3	-270.76	-60.434	-14.926	-38.544	-9.5195	3384.2	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
9	-2.3275E-05	-5.9646E-06	-1344.8	-347.72	-76.820	-19.769	-41.189	-10.619	3705.7	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.660	11.660	16.060	16.060	22.000	0.0000	0.0000
10	-1.7237E-05	-4.1346E-06	-1180.9	-281.13	-66.406	-15.879	-40.900	-9.7695	3142.2	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.320	12.320	16.060	16.060	22.000	0.0000	0.0000
11	-1.6973E-05	-4.2314E-06	-1172.6	-293.03	-65.917	-16.450	-40.776	-10.179	3463.7	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
12	-2.5296E-05	-6.5450E-06	-1379.8	-360.91	-79.221	-20.598	-39.599	-10.323	3763.8	7.8500E+06	7.8500E+06
x(M)	12.980	12.980	0.0000	0.0000	11.220	11.440	16.060	16.060	22.000	0.0000	0.0000
Min.	-2.5515E-05	-6.5450E-06	-1418.6	-360.91	-81.078	-20.598	-41.887	-10.623	2903.9	7.8500E+06	7.8500E+06
Pile N.	3	12	3	12	3	12	1	6	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	2.6217E-03	6.0888E-04	389.96	90.484	359.70	83.040	61.205	14.154	6615.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
2	2.6217E-03	6.3474E-04	387.42	93.772	355.81	85.979	60.365	14.595	6918.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
3	2.6217E-03	6.6060E-04	452.32	114.01	453.79	114.54	83.084	20.960	7936.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
4	2.5959E-03	6.0888E-04	362.51	84.968	322.36	75.217	53.174	12.426	6409.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.4000	0.0000	0.0000	0.0000
5	2.5959E-03	6.3474E-04	361.11	88.286	320.17	78.208	52.729	12.884	6724.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
6	2.5959E-03	6.6060E-04	435.43	110.86	429.20	109.51	77.535	19.768	7835.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
7	2.5700E-03	6.0888E-04	359.52	85.125	319.68	75.417	52.796	12.471	6457.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
8	2.5700E-03	6.3474E-04	358.03	88.426	317.37	78.382	52.324	12.923	6772.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
9	2.5700E-03	6.6060E-04	431.35	110.94	424.97	109.62	76.820	19.796	7872.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
10	2.5441E-03	6.0888E-04	383.27	91.679	355.13	84.728	60.871	14.536	6784.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
11	2.5441E-03	6.3474E-04	380.91	95.048	351.41	87.756	60.065	14.996	7089.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
12	2.5441E-03	6.6060E-04	441.42	114.70	443.39	115.63	81.519	21.231	8042.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
Max.	2.6217E-03	6.6060E-04	452.32	114.70	453.79	115.63	83.084	21.231	8042.4	7.8500E+06	7.8500E+06
Pile N.	1	3	3	12	3	12	3	12	12	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	0.5058	1.0000
3	0.6198	1.0000
4	0.5396	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 178 di 271

5	0.4660	1.0000
6	0.5771	1.0000
7	0.5710	1.0000
8	0.4960	1.0000
9	0.6065	1.0000
10	0.8412	1.0000
11	0.7848	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 44472.2	HOR. LOAD Y, KN 164.379	HOR. LOAD Z, KN 1446.44
MOMENT X, KN- M 1619.94	MOMENT Y, KN- M 20396.7	MOMENT Z, KN- M -20396.7

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.83940E-03	HORIZONTAL Y, M 3.13436E-04	HORIZONTAL Z, M 9.20732E-04
ANGLE ROT. X, RAD 1.64907E-05	ANGLE ROT. Y, RAD 4.10021E-05	ANGLE ROT. Z, RAD -6.21030E-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	1.2832E-03	4.2475E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
2	1.5626E-03	4.2475E-04	9.2073E-04	1.6491E-05	4.1002E-05	-6.2103E-05
3	1.8421E-03	4.2475E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
4	1.4677E-03	3.5054E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
5	1.7471E-03	3.5054E-04	9.2073E-04	1.6491E-05	4.1002E-05	-6.2103E-05
6	2.0266E-03	3.5054E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
7	1.6522E-03	2.7633E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
8	1.9317E-03	2.7633E-04	9.2073E-04	1.6491E-05	4.1002E-05	-6.2103E-05
9	2.2111E-03	2.7633E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
10	1.8367E-03	2.0212E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
11	2.1162E-03	2.0212E-04	9.2073E-04	1.6491E-05	4.1002E-05	-6.2103E-05
12	2.3956E-03	2.0212E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
MINIMUM	1.2832E-03	2.0212E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3956E-03	4.2475E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
Pile N.	12	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	2594.3	30.682	105.33	36.090	-326.04	36.170
2	3152.9	27.219	106.17	36.090	-341.60	28.826
3	3711.4	32.129	132.34	36.090	-416.40	39.396
4	2963.1	18.095	100.03	36.090	-313.80	-6.3201
5	3521.6	15.679	100.73	36.090	-328.66	-11.257
6	4080.2	19.246	126.45	36.090	-402.90	-3.8117
7	3331.9	8.0887	103.69	36.090	-322.42	-43.493
8	3890.4	6.5586	104.79	36.090	-338.51	-46.257
9	4449.0	8.7656	130.47	36.090	-412.28	-42.118
10	3700.6	-0.5926	132.79	36.090	-387.48	-79.945
11	4259.2	-1.0901	140.29	36.090	-419.61	-80.511
12	4817.7	-0.4009	163.36	36.090	-485.56	-79.599
MINIMUM	2594.3	-1.0901	100.03	36.090	-485.56	-80.511
Pile N.	1	11	4	1	12	11
MAXIMUM	4817.7	32.129	163.36	36.090	-313.80	39.396
Pile N.	12	3	12	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
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 180 di 271

x(M)	8.8000	12.980	13.860	0.0000	5.9400	11.220	13.200	16.060	22.000	0.0000	0.0000
11	-1.2955E-05	-8.7117E-06	-5.9203	-419.61	-10.471	-26.693	-3.6368	-13.883	2410.2	7.8500E+06	7.8500E+06
x(M)	8.8000	13.200	14.080	0.0000	5.9400	11.440	13.200	16.060	22.000	0.0000	0.0000
12	-1.2513E-05	-1.0318E-05	-5.8624	-485.56	-10.732	-30.364	-3.6667	-14.643	2726.3	7.8500E+06	7.8500E+06
x(M)	8.8000	12.980	13.860	0.0000	5.9400	11.220	13.200	16.060	22.000	0.0000	0.0000
Min.	-1.2955E-05	-1.0318E-05	-39.396	-485.56	-10.732	-30.364	-4.9220	-15.393	1468.1	7.8500E+06	7.8500E+06
Pile N.	11	12	3	12	12	12	2	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	4.2475E-04	8.4652E-04	67.449	124.33	30.684	105.34	6.8062	18.445	2452.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.7000	0.0000	0.0000	3.5200	4.1800	0.0000	0.0000	0.0000
2	4.2475E-04	9.2073E-04	64.465	127.92	27.220	106.18	5.9751	18.008	2812.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
3	4.2475E-04	9.9494E-04	68.751	150.01	32.131	132.36	7.1719	23.224	3355.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.7000	0.0000	0.0000	3.5200	4.1800	0.0000	0.0000	0.0000
4	3.5054E-04	8.4652E-04	59.920	120.47	18.094	100.04	4.6978	17.260	2618.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	7.7000	0.0000	0.0000	3.3000	4.4000	0.0000	0.0000	0.0000
5	3.5054E-04	9.2073E-04	57.849	123.82	15.678	100.74	4.1008	16.828	2979.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	8.1400	0.0000	0.0000	3.3000	4.4000	0.0000	0.0000	0.0000
6	3.5054E-04	9.9494E-04	60.970	145.85	19.246	126.47	4.9968	21.892	3517.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	7.7000	0.0000	0.0000	3.3000	4.4000	0.0000	0.0000	0.0000
7	2.7633E-04	8.4652E-04	60.599	123.24	8.0867	103.71	3.3084	18.086	2861.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.7000	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
8	2.7633E-04	9.2073E-04	59.720	126.99	6.5561	104.81	2.8916	17.721	3226.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
9	2.7633E-04	9.9494E-04	61.068	148.80	8.7630	130.49	3.5038	22.810	3760.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.5200	7.7000	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
10	2.0212E-04	8.4652E-04	79.945	143.46	1.9467	132.81	2.6966	24.913	3281.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
11	2.0212E-04	9.2073E-04	80.511	152.16	1.9601	140.32	2.5180	25.854	3692.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
12	2.0212E-04	9.9494E-04	79.599	171.14	1.9435	163.39	2.7746	30.569	4202.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
Max.	4.2475E-04	9.9494E-04	80.511	171.14	32.131	163.39	7.1719	30.569	4202.4	7.8500E+06	7.8500E+06
Pile N.	1	3	11	12	3	12	3	12	12	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	0.5855	1.0000
2	0.5798	1.0000
3	0.8661	1.0000
4	0.4958	1.0000
5	0.4951	1.0000
6	0.8048	1.0000
7	0.4957	1.0000
8	0.4950	1.0000
9	0.8047	1.0000
10	0.5845	1.0000
11	0.5789	1.0000
12	0.8654	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 69512.9	HOR. LOAD Y, KN 3665.15	HOR. LOAD Z, KN -159.038
MOMENT X, KN- M 1307.58	MOMENT Y, KN- M -2334.58	MOMENT Z, KN- M 2334.58

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 2.88347E-03	HORIZONTAL Y, M 2.05350E-03	HORIZONTAL Z, M -1.06249E-04
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APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 181 di 271

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
 1.34908E-05 -4.67281E-06 -3.10245E-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	2.7754E-03	2.1446E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
2	2.9150E-03	2.1446E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
3	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
4	2.7544E-03	2.0839E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
5	2.8940E-03	2.0839E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
6	3.0336E-03	2.0839E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
7	2.7333E-03	2.0232E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
8	2.8729E-03	2.0232E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
9	3.0126E-03	2.0232E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
10	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
11	2.8519E-03	1.9624E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
12	2.9915E-03	1.9624E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5576.7	305.39	-22.569	29.525	74.837	1050.2
2	5855.8	303.52	-13.369	29.525	42.225	1045.9
3	6134.8	387.64	-5.7245	29.525	12.962	1236.7
4	5534.7	267.63	-20.350	29.525	69.570	949.31
5	5813.8	267.36	-12.088	29.525	39.209	948.78
6	6092.8	359.67	-5.4372	29.525	12.364	1162.6
7	5492.7	259.36	-20.348	29.525	69.563	918.89
8	5771.7	259.10	-12.087	29.525	39.205	918.39
9	6050.8	348.64	-5.4371	29.525	12.363	1125.7
10	5450.7	277.80	-22.549	29.525	74.785	952.27
11	5729.7	276.09	-13.357	29.525	42.193	948.38
12	6008.7	352.95	-5.7222	29.525	12.956	1122.6
MINIMUM	5450.7	259.10	-22.569	29.525	12.363	918.39
Pile N.	10	8	1	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837	1236.7
Pile N.	3	3	9	1	1	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	2.7754E-03	2.1446E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
2	2.9150E-03	2.1446E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
3	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
4	2.7544E-03	2.0839E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
5	2.8940E-03	2.0839E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
6	3.0336E-03	2.0839E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
7	2.7333E-03	2.0232E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
8	2.8729E-03	2.0232E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
9	3.0126E-03	2.0232E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
10	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
11	2.8519E-03	1.9624E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
12	2.9915E-03	1.9624E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5576.7	305.39	-22.569	29.525	74.837	1050.2
2	5855.8	303.52	-13.369	29.525	42.225	1045.9
3	6134.8	387.64	-5.7245	29.525	12.962	1236.7
4	5534.7	267.63	-20.350	29.525	69.570	949.31
5	5813.8	267.36	-12.088	29.525	39.209	948.78
6	6092.8	359.67	-5.4372	29.525	12.364	1162.6
7	5492.7	259.36	-20.348	29.525	69.563	918.89

APPALTA TORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 182 di 271

8	5771.7	259.10	-12.087	29.525	39.205	918.39
9	6050.8	348.64	-5.4371	29.525	12.363	1125.7
10	5450.7	277.80	-22.549	29.525	74.785	952.27
11	5729.7	276.09	-13.357	29.525	42.193	948.38
12	6008.7	352.95	-5.7222	29.525	12.956	1122.6
MINIMUM	5450.7	259.10	-22.569	29.525	12.363	918.39
Pile N.	10	8	1	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837	1236.7
Pile N.	3	3	9	1	1	3

PILE GROUP	STRESS, KN/ M**2
1	6314.3
2	6453.9
3	7181.9
4	5987.6
5	6138.7
6	6935.8
7	5872.8
8	6023.8
9	6801.4
10	5950.1
11	6090.3
12	6768.3
MINIMUM	5872.8
Pile N.	7
MAXIMUM	7181.9
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
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-1.3664E-05	-1.6696E-04	-1050.2	-24.797	-55.750	-22.575	-35.063	-3.8602	3155.8	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.9200	12.540	0.0000	16.060	4.4000	22.000	0.0000	0.0000
2	-1.3546E-05	-1.0625E-04	-1045.9	-15.603	-55.495	-13.373	-34.975	-2.3279	3313.7	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.7000	12.760	0.0000	16.060	4.1800	22.000	0.0000	0.0000
3	-2.0723E-05	-4.5540E-05	-1236.7	-7.8433	-67.589	-5.7256	-34.517	-1.1795	3471.6	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	6.3800	11.440	0.0000	16.060	3.7400	22.000	0.0000	0.0000
4	-1.1217E-05	-1.6696E-04	-949.31	-23.221	-49.460	-20.355	-31.817	-3.3696	3132.0	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	8.1400	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
5	-1.1213E-05	-1.0625E-04	-948.78	-14.660	-49.444	-12.091	-31.806	-2.0446	3289.9	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.9200	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
6	-1.8626E-05	-4.5540E-05	-1162.6	-7.6286	-63.397	-5.4382	-34.283	-1.1078	3447.8	7.8500E+06	7.8500E+06
x(M)	13.420	0.0000	0.0000	6.6000	11.660	0.0000	16.060	3.7400	22.000	0.0000	0.0000
7	-1.0898E-05	-1.6696E-04	-918.89	-23.218	-47.989	-20.353	-30.860	-3.3690	3108.2	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	8.1400	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
8	-1.0894E-05	-1.0625E-04	-918.39	-14.658	-47.975	-12.090	-30.850	-2.0443	3265.1	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.9200	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
9	-1.8098E-05	-4.5540E-05	-1125.7	-7.6282	-61.511	-5.4381	-33.239	-1.1078	3424.0	7.8500E+06	7.8500E+06
x(M)	13.420	0.0000	0.0000	6.6000	11.660	0.0000	16.060	3.7400	22.000	0.0000	0.0000
10	-1.2518E-05	-1.6696E-04	-952.27	-24.780	-50.886	-22.555	-31.969	-3.8553	3084.4	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.9200	12.540	0.0000	16.060	4.4000	22.000	0.0000	0.0000
11	-1.2411E-05	-1.0625E-04	-948.38	-15.592	-50.649	-13.360	-31.889	-2.3249	3242.3	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.7000	12.640	0.0000	16.060	4.1800	22.000	0.0000	0.0000
12	-1.8999E-05	-4.5540E-05	-1122.6	-7.8407	-61.717	-5.7233	-31.458	-1.1788	3400.2	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	6.3800	11.440	0.0000	16.060	3.7400	22.000	0.0000	0.0000
Min.	-2.0723E-05	-1.6696E-04	-1236.7	-24.797	-67.589	-22.575	-35.063	-3.8602	3084.4	7.8500E+06	7.8500E+06
Pile N.	3	1	3	1	3	1	1	1	10	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	2.1446E-03	1.1047E-06	321.20	74.837	305.47	4.2745	51.473	2.6454	6314.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.000	8.1400	0.0000	0.0000	12.540	4.4000	16.060	0.0000	0.0000	0.0000
2	2.1446E-03	7.3405E-07	320.05	42.225	303.60	2.6624	51.068	1.6171	6453.9	7.8500E+06	7.8500E+06
x(M)	0.0000	14.000	8.1400	0.0000	0.0000	12.320	4.4000	16.060	0.0000	0.0000	0.0000
3	2.1446E-03	6.0890E-07	374.70	12.962	387.75	1.3333	70.550	0.6006	7181.9	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.340	4.1800	13.200	0.0000	0.0000	0.0000
4	2.0839E-03	9.3013E-07	292.31	69.570	267.71	3.9129	43.673	2.4883	5987.6	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.980	4.6200	16.060	0.0000	0.0000	0.0000
5	2.0839E-03	6.2351E-07	292.20	39.209	267.44	2.4522	43.625	1.5358	6138.7	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.760	4.6200	16.060	0.0000	0.0000	0.0000
6	2.0839E-03	5.7387E-07	353.58	12.364	359.77	1.2857	64.571	0.5502	6935.8	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.560	4.1800	16.060	0.0000	0.0000	0.0000
7	2.0231E-03	9.2976E-07	283.67	69.563	259.43	3.9122	42.340	2.4879	5872.8	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.980	4.6200	16.060	0.0000	0.0000	0.0000
8	2.0231E-03	6.2333E-07	283.57	39.205	259.18	2.4518	42.294	1.5356	6023.8	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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 183 di 271

x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.760	4.6200	16.060	0.0000	0.0000	0.0000
9	2.0231E-03	5.7375E-07	343.17	12.363	348.73	1.2856	62.614	0.5502	6801.4	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.560	4.1800	16.060	0.0000	0.0000	0.0000
10	1.9624E-03	1.1022E-06	293.41	74.785	277.87	4.2703	46.870	2.6440	5950.1	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.540	4.4000	16.060	0.0000	0.0000	0.0000
11	1.9624E-03	7.3267E-07	292.36	42.193	276.17	2.6598	46.501	1.6164	6090.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.320	4.4000	16.060	0.0000	0.0000	0.0000
12	1.9624E-03	6.0836E-07	342.44	12.956	353.04	1.3326	64.300	0.5999	6768.3	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.340	4.1800	13.200	0.0000	0.0000	0.0000
Max.	2.1446E-03	1.1047E-06	374.70	74.837	387.75	4.2745	70.550	2.6454	7181.9	7.8500E+06	7.8500E+06
Pile N.	1	1	3	1	3	1	3	1	3	1	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	0.5785	1.0000
3	0.8643	1.0000
4	0.4959	1.0000
5	0.4949	1.0000
6	0.8037	1.0000
7	0.4962	1.0000
8	0.4951	1.0000
9	0.8038	1.0000
10	0.5871	1.0000
11	0.5811	1.0000
12	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
70885.7	4451.74	229.847
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-79.7489	17794.6	-17794.6

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.95742E-03	2.72656E-03	2.36806E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.86050E-06	3.26086E-05	-1.04062E-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	2.2690E-03	2.7140E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
2	2.7373E-03	2.7140E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
3	3.2056E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
4	2.4158E-03	2.7224E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
5	2.8840E-03	2.7224E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
6	3.3523E-03	2.7224E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
7	2.5625E-03	2.7308E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
8	3.0308E-03	2.7308E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
9	3.4991E-03	2.7308E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
10	2.7092E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
11	3.1775E-03	2.7391E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
12	3.6458E-03	2.7391E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
MINIMUM	2.2690E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.6458E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	12	10	1	1	1	1

* PILE TOP REACTIONS *

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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 001	A	184 di 271	

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	4564.7	351.79	19.393	-4.0717	-30.887	1129.5
2	5500.6	349.24	17.967	-4.0717	-26.134	1124.2
3	6436.6	449.44	22.944	-4.0717	-34.580	1349.2
4	4858.0	318.13	17.037	-4.0717	-25.768	1051.8
5	5793.9	317.46	15.851	-4.0717	-21.559	1050.9
6	6680.4	430.80	21.675	-4.0717	-32.055	1310.6
7	5151.3	319.31	17.038	-4.0717	-25.797	1056.3
8	6087.2	318.62	15.851	-4.0717	-21.584	1055.3
9	6889.5	432.32	21.674	-4.0717	-32.070	1315.8
10	5444.5	356.32	19.440	-4.0717	-31.064	1145.3
11	6380.5	353.75	18.011	-4.0717	-26.303	1139.9
12	7098.6	454.58	22.965	-4.0717	-34.674	1366.1
MINIMUM	4564.7	317.46	15.851	-4.0717	-34.674	1050.9
Pile N.	1	5	5	1	12	5
MAXIMUM	7098.6	454.58	22.965	-4.0717	-21.559	1366.1
Pile N.	12	12	12	1	5	12

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	2.7140E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
2	2.7373E-03	2.7140E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
3	3.2056E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
4	2.4158E-03	2.7224E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
5	2.8840E-03	2.7224E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
6	3.3523E-03	2.7224E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
7	2.5625E-03	2.7308E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
8	3.0308E-03	2.7308E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
9	3.4991E-03	2.7308E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
10	2.7092E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
11	3.1775E-03	2.7391E-03	2.3681E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
12	3.6458E-03	2.7391E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
MINIMUM	2.2690E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.6458E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	12	10	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	4564.7	351.79	19.393	-4.0717	-30.887	1129.5
2	5500.6	349.24	17.967	-4.0717	-26.134	1124.2
3	6436.6	449.44	22.944	-4.0717	-34.580	1349.2
4	4858.0	318.13	17.037	-4.0717	-25.768	1051.8
5	5793.9	317.46	15.851	-4.0717	-21.559	1050.9
6	6680.4	430.80	21.675	-4.0717	-32.055	1310.6
7	5151.3	319.31	17.038	-4.0717	-25.797	1056.3
8	6087.2	318.62	15.851	-4.0717	-21.584	1055.3
9	6889.5	432.32	21.674	-4.0717	-32.070	1315.8
10	5444.5	356.32	19.440	-4.0717	-31.064	1145.3
11	6380.5	353.75	18.011	-4.0717	-26.303	1139.9
12	7098.6	454.58	22.965	-4.0717	-34.674	1366.1
MINIMUM	4564.7	317.46	15.851	-4.0717	-34.674	1050.9
Pile N.	1	5	5	1	12	5
MAXIMUM	7098.6	454.58	22.965	-4.0717	-21.559	1366.1
Pile N.	12	12	12	1	5	12

PILE GROUP STRESS, KN/ M**2

*****	*****
1	5972.8
2	6486.3
3	7691.1
4	5905.4
5	6431.9
6	7713.3
7	6084.8
8	6611.2
9	7847.3
10	6518.1
11	7031.3
12	8116.7
MINIMUM	5905.4
Pile N.	4
MAXIMUM	8116.7
Pile N.	12

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 186 di 271

7	0.5752	1.0000
8	0.4961	1.0000
9	0.5924	1.0000
10	0.8542	1.0000
11	0.7955	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 44472.2	HOR. LOAD Y, KN 115.110	HOR. LOAD Z, KN 1446.44
MOMENT X, KN- M 1620.04	MOMENT Y, KN- M 12247.7	MOMENT Z, KN- M -12247.7

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.83940E-03	HORIZONTAL Y, M 2.01193E-04	HORIZONTAL Z, M 8.76969E-04
ANGLE ROT. X, RAD 1.65088E-05	ANGLE ROT. Y, RAD 2.78933E-05	ANGLE ROT. Z, RAD -3.74854E-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	1.4824E-03	3.1263E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
2	1.6511E-03	3.1263E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
3	1.8198E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
4	1.6079E-03	2.3834E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
5	1.7766E-03	2.3834E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
6	1.9453E-03	2.3834E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
7	1.7335E-03	1.6405E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
8	1.9022E-03	1.6405E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
9	2.0708E-03	1.6405E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
10	1.8590E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
11	2.0277E-03	8.9759E-05	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
12	2.1964E-03	8.9759E-05	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
MINIMUM	1.4824E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.1964E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	12	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	2992.6	26.961	105.71	36.129	-342.86	51.872
2	3329.7	24.000	106.10	36.129	-357.13	45.359
3	3666.9	27.531	130.30	36.129	-427.61	53.185
4	3243.4	14.806	100.80	36.129	-331.43	10.153
5	3580.6	12.925	101.13	36.129	-345.18	6.1553
6	3917.7	15.219	124.62	36.129	-414.40	11.085
7	3494.3	4.5222	104.60	36.129	-340.39	-27.608
8	3831.5	3.5867	105.40	36.129	-355.57	-29.295
9	4168.6	4.7118	128.99	36.129	-424.69	-27.216
10	3745.2	-6.3680	133.97	36.129	-406.39	-68.198
11	4082.3	-6.4230	141.53	36.129	-438.55	-68.003
12	4419.5	-6.3625	163.29	36.129	-501.72	-68.203
MINIMUM	2992.6	-6.4230	100.80	36.129	-501.72	-68.203
Pile N.	1	11	4	1	12	12
MAXIMUM	4419.5	27.531	163.29	36.129	-331.43	53.185
Pile N.	12	3	12	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	1.4824E-03	3.1263E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 187 di 271

2	1.6511E-03	3.1263E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
3	1.8198E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
4	1.6079E-03	2.3834E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
5	1.7766E-03	2.3834E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
6	1.9453E-03	2.3834E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
7	1.7335E-03	1.6405E-04	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
8	1.9022E-03	1.6405E-04	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
9	2.0708E-03	1.6405E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
10	1.8590E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
11	2.0277E-03	8.9759E-05	8.7697E-04	1.6509E-05	2.7893E-05	-3.7485E-05
12	2.1964E-03	8.9759E-05	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
MINIMUM	1.4824E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.1964E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	12	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	2992.6	26.961	105.71	36.129	-342.86	51.872
2	3329.7	24.000	106.10	36.129	-357.13	45.359
3	3666.9	27.531	130.30	36.129	-427.61	53.185
4	3243.4	14.806	100.80	36.129	-331.43	10.153
5	3580.6	12.925	101.13	36.129	-345.18	6.1553
6	3917.7	15.219	124.62	36.129	-414.40	11.085
7	3494.3	4.5222	104.60	36.129	-340.39	-27.608
8	3831.5	3.5867	105.40	36.129	-355.57	-29.295
9	4168.6	4.7118	128.99	36.129	-424.69	-27.216
10	3745.2	-6.3680	133.97	36.129	-406.39	-68.198
11	4082.3	-6.4230	141.53	36.129	-438.55	-68.003
12	4419.5	-6.3625	163.29	36.129	-501.72	-68.203
MINIMUM	2992.6	-6.4230	100.80	36.129	-501.72	-68.203
Pile N.	1	11	4	1	12	12
MAXIMUM	4419.5	27.531	163.29	36.129	-331.43	53.185
Pile N.	12	3	12	1	4	3

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2733.8
2	2964.2
3	3367.7
4	2830.2
5	3061.9
6	3460.6
7	3001.9
8	3238.5
9	3635.6
10	3355.6
11	3641.5
12	4019.9
MINIMUM	2733.8
Pile N.	1
MAXIMUM	4019.9
Pile N.	12

* 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	-3.3470E-06	-5.3719E-06	-51.872	-342.86	-7.5224	-20.304	-3.8739	-12.482	1693.5	7.8500E+06	7.8500E+06
x(M)	12.760	14.000	0.0000	0.0000	11.000	12.320	16.060	16.060	22.000	0.0000	0.0000
2	-2.9489E-06	-4.9631E-06	-45.359	-357.13	-6.9917	-20.524	-3.8566	-13.007	1884.2	7.8500E+06	7.8500E+06
x(M)	13.200	14.520	0.0000	0.0000	11.440	12.980	16.060	16.060	22.000	0.0000	0.0000
3	-3.4433E-06	-6.4623E-06	-53.185	-427.61	-7.6329	-24.593	-3.8655	-15.090	2075.0	7.8500E+06	7.8500E+06
x(M)	12.760	14.000	0.0000	0.0000	10.780	12.320	16.060	16.060	22.000	0.0000	0.0000
4	-3.4254E-06	-4.9710E-06	-10.153	-331.43	-5.7121	-19.533	-2.6640	-12.218	1835.4	7.8500E+06	7.8500E+06
x(M)	12.320	14.300	0.0000	0.0000	10.120	12.760	16.060	16.060	22.000	0.0000	0.0000
5	-3.1411E-06	-4.5993E-06	-6.1553	-345.18	-5.3352	-19.665	-2.6939	-12.499	2026.2	7.8500E+06	7.8500E+06
x(M)	12.540	14.740	0.0000	0.0000	10.560	13.200	16.060	16.060	22.000	0.0000	0.0000
6	-3.4935E-06	-6.0017E-06	-11.085	-414.40	-5.8051	-23.715	-2.6492	-14.823	2217.0	7.8500E+06	7.8500E+06
x(M)	12.320	14.300	0.0000	0.0000	10.120	12.540	16.060	16.060	22.000	0.0000	0.0000
7	-5.2250E-06	-5.2899E-06	-2.8013	-340.39	-5.0437	-20.154	-2.1855	-12.439	1977.4	7.8500E+06	7.8500E+06
x(M)	10.560	14.000	15.180	0.0000	8.1400	12.540	13.200	16.060	22.000	0.0000	0.0000
8	-5.2580E-06	-4.9210E-06	-2.7537	-355.57	-4.8075	-20.429	-2.0173	-12.954	2168.2	7.8500E+06	7.8500E+06
x(M)	10.780	14.520	15.400	0.0000	8.1400	12.980	13.200	16.060	22.000	0.0000	0.0000
9	-5.2309E-06	-6.3708E-06	-2.8183	-424.69	-5.1011	-24.414	-2.2223	-15.047	2358.9	7.8500E+06	7.8500E+06
x(M)	10.560	14.000	15.180	0.0000	7.9200	12.540	13.200	16.060	22.000	0.0000	0.0000
10	-1.2619E-05	-8.0291E-06	-4.3137	-406.39	-8.6785	-24.476	-1.8770	-12.147	2119.3	7.8500E+06	7.8500E+06
x(M)	7.0400	12.980	13.420	0.0000	3.9600	11.220	13.200	16.060	22.000	0.0000	0.0000
11	-1.3056E-05	-8.0775E-06	-4.4208	-438.55	-8.5640	-25.940	-1.9167	-13.722	2310.1	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B								
			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 188 di 271

x(M)	7.0400	13.200	13.420	0.0000	3.9600	11.440	13.200	16.060	22.000	0.0000	0.0000
12	-1.2547E-05	-9.5198E-06	-4.2959	-501.72	-8.7066	-29.397	-1.8694	-14.579	2500.9	7.8500E+06	7.8500E+06
x(M)	7.0400	12.980	13.420	0.0000	3.9600	11.220	13.200	16.060	22.000	0.0000	0.0000
Min.	-1.3056E-05	-9.5198E-06	-53.185	-501.72	-8.7066	-29.397	-3.8739	-15.090	1693.5	7.8500E+06	7.8500E+06
Pile N.	11	12	3	12	12	12	1	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	3.1263E-04	8.0268E-04	47.305	118.53	26.963	105.72	5.4649	18.187	2733.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3800	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
2	3.1263E-04	8.7697E-04	44.814	122.08	24.002	106.12	4.7719	17.664	2964.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.6000	8.1400	0.0000	0.0000	3.9600	4.4000	0.0000	0.0000	0.0000
3	3.1263E-04	9.5126E-04	47.819	142.56	27.534	130.32	5.6054	22.408	3367.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3800	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
4	2.3834E-04	8.0268E-04	38.084	115.10	14.807	100.82	3.4372	17.103	2830.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7200	7.9200	0.0000	0.0000	3.5200	4.4000	0.0000	0.0000	0.0000
5	2.3834E-04	8.7697E-04	36.427	118.45	12.926	101.15	2.9847	16.592	3061.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7200	8.1400	0.0000	0.0000	3.5200	4.6200	0.0000	0.0000	0.0000
6	2.3834E-04	9.5126E-04	38.473	138.65	15.220	124.65	3.5414	21.149	3460.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0000	7.9200	0.0000	0.0000	3.5200	4.4000	0.0000	0.0000	0.0000
7	1.6405E-04	8.0268E-04	36.854	117.82	4.5209	104.62	1.9528	17.949	3001.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
8	1.6405E-04	8.7697E-04	36.346	121.64	3.5851	105.42	1.6948	17.520	3238.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.0800	8.1400	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
9	1.6405E-04	9.5126E-04	36.978	141.73	4.7182	129.02	2.0084	22.126	3635.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
10	8.9759E-05	8.0268E-04	68.198	137.69	1.3967	133.99	0.8919	24.800	3355.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	15.620	0.0000	1.5400	3.9600	0.0000	0.0000	0.0000
11	8.9759E-05	8.7697E-04	68.003	146.52	1.4136	141.55	0.8299	25.756	3641.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.4800	15.840	0.0000	1.5400	4.1800	0.0000	0.0000	0.0000
12	8.9759E-05	9.5126E-04	68.203	164.55	1.3947	163.33	0.9043	30.141	4019.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	15.620	0.0000	1.5400	3.9600	0.0000	0.0000	0.0000
Max.	3.1263E-04	9.5126E-04	68.203	164.55	27.534	163.33	5.6054	30.141	4019.9	7.8500E+06	7.8500E+06
Pile N.	1	3	12	12	3	12	3	12	12	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	0.5855	1.0000
2	0.5798	1.0000
3	0.8661	1.0000
4	0.4958	1.0000
5	0.4951	1.0000
6	0.8048	1.0000
7	0.4957	1.0000
8	0.4950	1.0000
9	0.8047	1.0000
10	0.5845	1.0000
11	0.5789	1.0000
12	0.8654	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 69512.9	HOR. LOAD Y, KN 3665.15	HOR. LOAD Z, KN -159.038
MOMENT X, KN- M 1307.58	MOMENT Y, KN- M -2334.58	MOMENT Z, KN- M 2334.58

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 2.88347E-03	HORIZONTAL Y, M 2.05350E-03	HORIZONTAL Z, M -1.06249E-04
ANGLE ROT. X, RAD 1.34908E-05	ANGLE ROT. Y, RAD -4.67281E-06	ANGLE ROT. Z, RAD -3.10245E-05

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA												
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA													
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	<table border="0"> <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 001</td> <td>A</td> <td>189 di 271</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF3A	02	E ZZ CL	VI0103 001	A	189 di 271
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF3A	02	E ZZ CL	VI0103 001	A	189 di 271								

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	2.7754E-03	2.1446E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
2	2.9150E-03	2.1446E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
3	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
4	2.7544E-03	2.0839E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
5	2.8940E-03	2.0839E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
6	3.0336E-03	2.0839E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
7	2.7333E-03	2.0232E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
8	2.8729E-03	2.0232E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
9	3.0126E-03	2.0232E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
10	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
11	2.8519E-03	1.9624E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
12	2.9915E-03	1.9624E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5576.7	305.39	-22.569	29.525	74.837	1050.2
2	5855.8	303.52	-13.369	29.525	42.225	1045.9
3	6134.8	387.64	-5.7245	29.525	12.962	1236.7
4	5534.7	267.63	-20.350	29.525	69.570	949.31
5	5813.8	267.36	-12.088	29.525	39.209	948.78
6	6092.8	359.67	-5.4372	29.525	12.364	1162.6
7	5492.7	259.36	-20.348	29.525	69.563	918.89
8	5771.7	259.10	-12.087	29.525	39.205	918.39
9	6050.8	348.64	-5.4371	29.525	12.363	1125.7
10	5450.7	277.80	-22.549	29.525	74.785	952.27
11	5729.7	276.09	-13.357	29.525	42.193	948.38
12	6008.7	352.95	-5.7222	29.525	12.956	1122.6
MINIMUM	5450.7	259.10	-22.569	29.525	12.363	918.39
Pile N.	10	8	1	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837	1236.7
Pile N.	3	3	9	1	1	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	2.7754E-03	2.1446E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
2	2.9150E-03	2.1446E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
3	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
4	2.7544E-03	2.0839E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
5	2.8940E-03	2.0839E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
6	3.0336E-03	2.0839E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
7	2.7333E-03	2.0232E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
8	2.8729E-03	2.0232E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
9	3.0126E-03	2.0232E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
10	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
11	2.8519E-03	1.9624E-03	-1.0625E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
12	2.9915E-03	1.9624E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-05
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5576.7	305.39	-22.569	29.525	74.837	1050.2
2	5855.8	303.52	-13.369	29.525	42.225	1045.9
3	6134.8	387.64	-5.7245	29.525	12.962	1236.7
4	5534.7	267.63	-20.350	29.525	69.570	949.31
5	5813.8	267.36	-12.088	29.525	39.209	948.78
6	6092.8	359.67	-5.4372	29.525	12.364	1162.6
7	5492.7	259.36	-20.348	29.525	69.563	918.89
8	5771.7	259.10	-12.087	29.525	39.205	918.39
9	6050.8	348.64	-5.4371	29.525	12.363	1125.7

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 191 di 271

x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.560	4.1800	16.060	0.0000	0.0000	0.0000
10	1.9624E-03	1.1022E-06	293.41	74.785	277.87	4.2703	46.870	2.6440	5950.1	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.540	4.4000	16.060	0.0000	0.0000	0.0000
11	1.9624E-03	7.3267E-07	292.36	42.193	276.17	2.6598	46.501	1.6164	6090.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.320	4.4000	16.060	0.0000	0.0000	0.0000
12	1.9624E-03	6.0836E-07	342.44	12.956	353.04	1.3326	64.300	0.5999	6768.3	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.340	4.1800	13.200	0.0000	0.0000	0.0000
Max.	2.1446E-03	1.1047E-06	374.70	74.837	387.75	4.2745	70.550	2.6454	7181.9	7.8500E+06	7.8500E+06
Pile N.	1	1	3	1	3	1	3	1	3	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	0.5845	1.0000
2	0.5542	1.0000
3	0.7878	1.0000
4	0.5115	1.0000
5	0.4850	1.0000
6	0.7327	1.0000
7	0.5235	1.0000
8	0.4954	1.0000
9	0.7411	1.0000
10	0.6864	1.0000
11	0.6593	1.0000
12	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
65458.0	1267.40	947.515
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-8.09890	22911.0	-22911.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.71699E-03	9.58470E-04	6.53139E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-8.14965E-07	4.28874E-05	-8.17323E-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	2.0597E-03	9.5297E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
2	2.4275E-03	9.5297E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
3	2.7953E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
4	2.2527E-03	9.5664E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
5	2.6205E-03	9.5664E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
6	2.9883E-03	9.5664E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
7	2.4457E-03	9.6030E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
8	2.8135E-03	9.6030E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
9	3.1813E-03	9.6030E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
10	2.6387E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
11	3.0065E-03	9.6397E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
12	3.3743E-03	9.6397E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
MINIMUM	2.0597E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	3.3743E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	12	10	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
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 192 di 271

	1	2	3	4	5	6	7	8	9	10	11	12
*****	4146.3	4881.4	5616.5	4532.0	5267.1	6002.2	4917.8	5652.9	6388.0	5303.5	6038.6	6711.6
	99.442	95.799	121.78	91.181	87.817	116.51	93.122	89.584	118.01	112.72	109.58	131.85
	75.713	72.518	90.703	69.297	66.355	86.463	70.338	67.275	87.085	84.087	81.244	96.438
	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836	-1.7836
	-219.05	-211.16	-251.11	-204.29	-196.85	-241.96	-206.80	-199.09	-243.40	-238.11	-231.18	-263.59
	258.01	249.99	307.32	240.02	232.44	296.92	245.28	237.33	301.05	290.02	283.35	331.35
MINIMUM	4146.3	4881.4	5616.5	4532.0	5267.1	6002.2	4917.8	5652.9	6388.0	5303.5	6038.6	6711.6
Pile N.	1	2	3	4	5	6	7	8	9	10	11	12
MAXIMUM	6711.6	6038.6	6388.0	6711.6	6038.6	6388.0	6711.6	6038.6	6388.0	6711.6	6038.6	6388.0
Pile N.	12	11	10	12	11	10	12	11	10	12	11	10

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	2.0597E-03	9.5297E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
2	2.4275E-03	9.5297E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
3	2.7953E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
4	2.2527E-03	9.5664E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
5	2.6205E-03	9.5664E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
6	2.9883E-03	9.5664E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
7	2.4457E-03	9.6030E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
8	2.8135E-03	9.6030E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
9	3.1813E-03	9.6030E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
10	2.6387E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
11	3.0065E-03	9.6397E-04	6.5314E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
12	3.3743E-03	9.6397E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
MINIMUM	2.0597E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	3.3743E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	12	10	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	4146.3	99.442	75.713	-1.7836	-219.05	258.01
2	4881.4	95.799	72.518	-1.7836	-211.16	249.99
3	5616.5	121.78	90.703	-1.7836	-251.11	307.32
4	4532.0	91.181	69.297	-1.7836	-204.29	240.02
5	5267.1	87.817	66.355	-1.7836	-196.85	232.44
6	6002.2	116.51	86.463	-1.7836	-241.96	296.92
7	4917.8	93.122	70.338	-1.7836	-206.80	245.28
8	5652.9	89.584	67.275	-1.7836	-199.09	237.33
9	6388.0	118.01	87.085	-1.7836	-243.40	301.05
10	5303.5	112.72	84.087	-1.7836	-238.11	290.02
11	6038.6	109.58	81.244	-1.7836	-231.18	283.35
12	6711.6	131.85	96.438	-1.7836	-263.59	331.35
MINIMUM	4146.3	87.817	66.355	-1.7836	-263.59	232.44
Pile N.	1	5	5	1	12	5
MAXIMUM	6711.6	131.85	96.438	-1.7836	-196.85	331.35
Pile N.	12	12	12	1	5	12

PILE GROUP STRESS, KN/ M**2

*****	*****
1	3361.7
2	3744.0
3	4368.9
4	3510.2
5	3894.4
6	4545.6
7	3745.4
8	4128.2
9	4776.3
10	4126.9
11	4514.2
12	5068.2
MINIMUM	3361.7
Pile N.	1
MAXIMUM	5068.2
Pile N.	12

* EFFECTS FOR LATERALLY LOADED PILE *

APPALDATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 193 di 271

* 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	-8.0884E-06	-4.9875E-06	-258.01	-219.05	-23.129	-16.162	-13.027	-9.4781	2346.3	7.8500E+06	7.8500E+06
x(M)	13.420	13.640	0.0000	0.0000	11.660	11.880	16.060	16.060	22.000	0.0000	0.0000
2	-7.6875E-06	-4.7231E-06	-249.99	-211.16	-22.552	-15.666	-12.963	-9.3359	2762.3	7.8500E+06	7.8500E+06
x(M)	13.640	13.860	0.0000	0.0000	11.880	12.100	16.060	16.060	22.000	0.0000	0.0000
3	-1.0783E-05	-6.7207E-06	-307.32	-251.11	-26.795	-18.509	-12.426	-9.0996	3178.3	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	10.780	11.000	16.060	16.060	22.000	0.0000	0.0000
4	-7.1073E-06	-4.3635E-06	-240.02	-204.29	-21.753	-15.122	-12.820	-9.1947	2564.6	7.8500E+06	7.8500E+06
x(M)	13.860	14.080	0.0000	0.0000	12.100	12.320	16.060	16.060	22.000	0.0000	0.0000
5	-6.7706E-06	-4.1217E-06	-232.44	-196.85	-21.206	-14.644	-12.640	-8.9716	2980.6	7.8500E+06	7.8500E+06
x(M)	13.860	14.300	0.0000	0.0000	12.100	12.540	16.060	16.060	22.000	0.0000	0.0000
6	-1.0126E-05	-6.2593E-06	-296.92	-241.96	-25.986	-17.883	-12.806	-9.2874	3396.6	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	11.000	11.220	16.060	16.060	22.000	0.0000	0.0000
7	-7.2958E-06	-4.4679E-06	-245.28	-206.80	-22.104	-15.311	-12.952	-9.2634	2782.9	7.8500E+06	7.8500E+06
x(M)	13.640	14.080	0.0000	0.0000	11.880	12.320	16.060	16.060	22.000	0.0000	0.0000
8	-6.9408E-06	-4.2219E-06	-237.33	-199.09	-21.534	-14.813	-12.783	-9.0478	3198.9	7.8500E+06	7.8500E+06
x(M)	13.860	14.080	0.0000	0.0000	12.100	12.540	16.060	16.060	22.000	0.0000	0.0000
9	-1.0276E-05	-6.3461E-06	-301.05	-243.40	-26.248	-17.993	-12.829	-9.2648	3614.8	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	11.000	11.220	16.060	16.060	22.000	0.0000	0.0000
10	-9.5470E-06	-5.9010E-06	-290.02	-238.11	-25.355	-17.518	-13.120	-9.5112	3001.2	7.8500E+06	7.8500E+06
x(M)	12.980	13.200	0.0000	0.0000	11.220	11.440	16.060	16.060	22.000	0.0000	0.0000
11	-9.1953E-06	-5.6577E-06	-283.35	-231.18	-24.882	-17.094	-13.199	-9.4807	3417.1	7.8500E+06	7.8500E+06
x(M)	13.200	13.420	0.0000	0.0000	11.220	11.660	16.060	16.060	22.000	0.0000	0.0000
12	-1.1859E-05	-7.3834E-06	-331.35	-263.59	-28.446	-19.411	-12.311	-8.7336	3798.0	7.8500E+06	7.8500E+06
x(M)	12.540	12.760	0.0000	0.0000	10.560	10.780	13.200	16.060	22.000	0.0000	0.0000
Min.	-1.1859E-05	-7.3834E-06	-331.35	-263.59	-28.446	-19.411	-13.199	-9.5112	2346.3	7.8500E+06	7.8500E+06
Pile N.	12	12	12	12	12	12	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	9.5297E-04	6.5681E-04	140.16	96.255	99.457	75.726	18.562	13.617	3361.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.0400	7.4800	0.0000	0.0000	3.9600	4.1800	0.0000	0.0000	0.0000
2	9.5297E-04	6.5314E-04	137.36	93.791	95.816	72.532	17.732	12.936	3744.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	3.9600	4.1800	0.0000	0.0000	0.0000
3	9.5297E-04	6.4947E-04	157.23	107.00	121.80	90.723	23.910	17.242	4368.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.7400	3.9600	0.0000	0.0000	0.0000
4	9.5664E-04	6.5681E-04	133.73	91.351	91.196	69.310	16.648	12.174	3510.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
5	9.5664E-04	6.5314E-04	131.06	89.034	87.834	66.369	15.909	11.558	3894.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.4000	0.0000	0.0000	0.0000
6	9.5664E-04	6.4947E-04	153.54	104.00	116.54	86.483	22.587	16.229	4545.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
7	9.6030E-04	6.5681E-04	135.43	92.205	93.139	70.352	17.058	12.412	3745.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
8	9.6030E-04	6.5314E-04	132.65	89.785	89.602	67.291	16.278	11.768	4128.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
9	9.6030E-04	6.4947E-04	154.81	104.49	118.04	87.107	22.912	16.384	4776.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
10	9.6397E-04	6.5681E-04	150.78	102.55	112.74	84.105	21.586	15.572	4126.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4000	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
11	9.6397E-04	6.5314E-04	148.56	100.42	109.61	81.263	20.859	14.950	4514.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.0400	7.2600	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
12	9.6397E-04	6.4947E-04	164.90	110.99	131.88	96.462	26.286	18.649	5068.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.6000	6.8200	0.0000	0.0000	3.7400	3.9600	0.0000	0.0000	0.0000
Max.	9.6397E-04	6.5681E-04	164.90	110.99	131.88	96.462	26.286	18.649	5068.2	7.8500E+06	7.8500E+06
Pile N.	10	1	12	12	12	12	12	12	12	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	0.5010	1.0000
3	0.6018	1.0000
4	0.5421	1.0000
5	0.4642	1.0000
6	0.5604	1.0000
7	0.5752	1.0000
8	0.4961	1.0000

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 194 di 271

9	0.5924	1.0000
10	0.8542	1.0000
11	0.7955	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 45334.1	HOR. LOAD Y, KN 115.110	HOR. LOAD Z, KN 1446.44
MOMENT X, KN- M 1620.04	MOMENT Y, KN- M 12247.7	MOMENT Z, KN- M -12247.7

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.87533E-03	HORIZONTAL Y, M 2.01203E-04	HORIZONTAL Z, M 8.77011E-04
ANGLE ROT. X, RAD 1.65094E-05	ANGLE ROT. Y, RAD 2.78937E-05	ANGLE ROT. Z, RAD -3.74857E-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	1.5184E-03	3.1264E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
2	1.6871E-03	3.1264E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
3	1.8557E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
4	1.6439E-03	2.3835E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
5	1.8126E-03	2.3835E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
6	1.9813E-03	2.3835E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
7	1.7694E-03	1.6406E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
8	1.9381E-03	1.6406E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
9	2.1068E-03	1.6406E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
10	1.8949E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
11	2.0636E-03	8.9765E-05	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
12	2.2323E-03	8.9765E-05	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
MINIMUM	1.5184E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2323E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	12	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	3064.4	26.961	105.71	36.131	-342.89	51.881
2	3401.5	24.000	106.10	36.131	-357.15	45.368
3	3738.7	27.531	130.30	36.131	-427.63	53.194
4	3315.3	14.806	100.80	36.131	-331.45	10.161
5	3652.4	12.925	101.13	36.131	-345.20	6.1632
6	3989.5	15.219	124.62	36.131	-414.43	11.093
7	3566.1	4.5223	104.60	36.131	-340.41	-27.601
8	3903.3	3.5867	105.40	36.131	-355.59	-29.288
9	4240.4	4.7118	128.99	36.131	-424.71	-27.209
10	3817.0	-6.3677	133.97	36.131	-406.42	-68.192
11	4154.1	-6.4227	141.53	36.131	-438.57	-67.997
12	4491.3	-6.3622	163.29	36.131	-501.74	-68.197
MINIMUM	3064.4	-6.4227	100.80	36.131	-501.74	-68.197
Pile N.	1	11	4	1	12	12
MAXIMUM	4491.3	27.531	163.29	36.131	-331.45	53.194
Pile N.	12	3	12	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	1.5184E-03	3.1264E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
2	1.6871E-03	3.1264E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
3	1.8557E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 195 di 271

4	1.6439E-03	2.3835E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
5	1.8126E-03	2.3835E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
6	1.9813E-03	2.3835E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
7	1.7694E-03	1.6406E-04	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
8	1.9381E-03	1.6406E-04	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
9	2.1068E-03	1.6406E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
10	1.8949E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
11	2.0636E-03	8.9765E-05	8.7701E-04	1.6509E-05	2.7894E-05	-3.7486E-05
12	2.2323E-03	8.9765E-05	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
MINIMUM	1.5184E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2323E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	12	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	3064.4	26.961	105.71	36.131	-342.89	51.881
2	3401.5	24.000	106.10	36.131	-357.15	45.368
3	3738.7	27.531	130.30	36.131	-427.63	53.194
4	3315.3	14.806	100.80	36.131	-331.45	10.161
5	3652.4	12.925	101.13	36.131	-345.20	6.1632
6	3989.5	15.219	124.62	36.131	-414.43	11.093
7	3566.1	4.5223	104.60	36.131	-340.41	-27.601
8	3903.3	3.5867	105.40	36.131	-355.59	-29.288
9	4240.4	4.7118	128.99	36.131	-424.71	-27.209
10	3817.0	-6.3677	133.97	36.131	-406.42	-68.192
11	4154.1	-6.4227	141.53	36.131	-438.57	-67.997
12	4491.3	-6.3622	163.29	36.131	-501.74	-68.197
MINIMUM	3064.4	-6.4227	100.80	36.131	-501.74	-68.197
Pile N.	1	11	4	1	12	12
MAXIMUM	4491.3	27.531	163.29	36.131	-331.45	53.194
Pile N.	12	3	12	1	4	3

PILE GROUP	STRESS, KN/ M**2
1	2774.5
2	3004.9
3	3408.4
4	2870.9
5	3102.6
6	3501.3
7	3042.6
8	3279.2
9	3676.3
10	3396.3
11	3682.2
12	4060.6
MINIMUM	2774.5
Pile N.	1
MAXIMUM	4060.6
Pile N.	12

* 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	-3.3480E-06	-5.3735E-06	-51.881	-342.89	-7.5235	-20.307	-3.8743	-12.484	1734.1	7.8500E+06	7.8500E+06
x(M)	12.760	14.080	0.0000	0.0000	11.000	12.320	16.060	16.060	22.000	0.0000	0.0000
2	-2.9498E-06	-4.9646E-06	-45.368	-357.15	-6.9928	-20.527	-3.8571	-13.009	1924.9	7.8500E+06	7.8500E+06
x(M)	13.200	14.520	0.0000	0.0000	11.440	12.980	16.060	16.060	22.000	0.0000	0.0000
3	-3.4443E-06	-6.4641E-06	-53.194	-427.63	-7.6341	-24.597	-3.8659	-15.092	2115.7	7.8500E+06	7.8500E+06
x(M)	12.760	14.080	0.0000	0.0000	10.780	12.320	16.060	16.060	22.000	0.0000	0.0000
4	-3.4263E-06	-4.9725E-06	-10.161	-331.45	-5.7130	-19.536	-2.6643	-12.219	1876.1	7.8500E+06	7.8500E+06
x(M)	12.320	14.300	0.0000	0.0000	10.120	12.760	16.060	16.060	22.000	0.0000	0.0000
5	-3.1420E-06	-4.6007E-06	-6.1632	-345.20	-5.3361	-19.668	-2.6942	-12.501	2066.8	7.8500E+06	7.8500E+06
x(M)	12.540	14.740	0.0000	0.0000	10.560	13.200	16.060	16.060	22.000	0.0000	0.0000
6	-3.4943E-06	-6.0034E-06	-11.093	-414.43	-5.8059	-23.719	-2.6495	-14.825	2257.6	7.8500E+06	7.8500E+06
x(M)	12.320	14.300	0.0000	0.0000	10.120	12.540	16.060	16.060	22.000	0.0000	0.0000
7	-5.2258E-06	-5.2915E-06	-2.8017	-340.41	-5.0443	-20.157	-2.1858	-12.440	2018.0	7.8500E+06	7.8500E+06
x(M)	10.560	14.080	0.0000	0.0000	8.1400	12.540	13.200	16.060	22.000	0.0000	0.0000
8	-5.2589E-06	-4.9225E-06	-2.7541	-355.59	-4.8081	-20.433	-2.0176	-12.956	2208.8	7.8500E+06	7.8500E+06
x(M)	10.780	14.520	0.0000	0.0000	8.1400	12.980	13.200	16.060	22.000	0.0000	0.0000
9	-5.2317E-06	-6.3727E-06	-2.8187	-424.71	-5.1017	-24.417	-2.2226	-15.049	2399.6	7.8500E+06	7.8500E+06
x(M)	10.560	14.080	0.0000	0.0000	7.9200	12.540	13.200	16.060	22.000	0.0000	0.0000
10	-1.2619E-05	-8.0313E-06	-4.3139	-406.42	-8.6786	-24.479	-1.8771	-12.147	2160.0	7.8500E+06	7.8500E+06
x(M)	7.0400	12.980	0.0000	0.0000	3.9600	11.220	13.200	16.060	22.000	0.0000	0.0000
11	-1.3056E-05	-8.0797E-06	-4.4210	-438.57	-8.5641	-25.943	-1.9168	-13.724	2350.8	7.8500E+06	7.8500E+06
x(M)	7.0400	13.200	0.0000	0.0000	3.9600	11.440	13.200	16.060	22.000	0.0000	0.0000
12	-1.2547E-05	-9.5223E-06	-4.2961	-501.74	-8.7067	-29.401	-1.8695	-14.580	2541.6	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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 196 di 271

x(M)	7.0400	12.980	13.420	0.0000	3.9600	11.220	13.200	16.060	22.000	0.0000	0.0000
Min. Pile N.	-1.3056E-05	-9.5223E-06	-53.194	-501.74	-8.7067	-29.401	-3.8743	-15.092	1734.1	7.8500E+06	7.8500E+06
	11	12	3	12	12	12	1	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	3.1264E-04	8.0272E-04	47.309	118.54	26.963	105.72	5.4652	18.188	2774.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3800	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
2	3.1264E-04	8.7701E-04	44.817	122.09	24.002	106.12	4.7721	17.665	3004.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.6000	8.1400	0.0000	0.0000	3.9600	4.4000	0.0000	0.0000	0.0000
3	3.1264E-04	9.5130E-04	47.823	142.57	27.534	130.32	5.6056	22.409	3408.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.3800	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
4	2.3835E-04	8.0272E-04	38.087	115.11	14.807	100.82	3.4374	17.104	2870.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7200	7.9200	0.0000	0.0000	3.5200	4.4000	0.0000	0.0000	0.0000
5	2.3835E-04	8.7701E-04	36.429	118.46	12.925	101.14	2.9849	16.593	3102.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.7200	8.1400	0.0000	0.0000	3.5200	4.6200	0.0000	0.0000	0.0000
6	2.3835E-04	9.5130E-04	38.475	138.66	15.220	124.65	3.5416	21.150	3501.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.5000	7.9200	0.0000	0.0000	3.5200	4.4000	0.0000	0.0000	0.0000
7	1.6406E-04	8.0272E-04	36.854	117.83	4.5209	104.62	1.9529	17.950	3042.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
8	1.6406E-04	8.7701E-04	36.346	121.65	3.5851	105.42	1.6949	17.521	3279.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.0800	8.1400	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
9	1.6406E-04	9.5130E-04	36.978	141.74	4.7102	129.02	2.0086	22.127	3676.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
10	8.9765E-05	8.0272E-04	68.192	137.71	1.3968	133.99	0.8920	24.801	3396.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	15.620	0.0000	1.5400	3.9600	0.0000	0.0000	0.0000
11	8.9765E-05	8.7701E-04	67.997	146.53	1.4137	141.55	0.8300	25.757	3682.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.4800	15.840	0.0000	1.5400	4.1800	0.0000	0.0000	0.0000
12	8.9765E-05	9.5130E-04	68.197	164.56	1.3948	163.33	0.9044	30.142	4060.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	15.620	0.0000	1.5400	3.9600	0.0000	0.0000	0.0000
Max. Pile N.	3.1264E-04	9.5130E-04	68.197	164.56	27.534	163.33	5.6056	30.142	4060.6	7.8500E+06	7.8500E+06
	1	3	12	12	3	12	3	12	12	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	0.5742	1.0000
3	0.8509	1.0000
4	0.4988	1.0000
5	0.4931	1.0000
6	0.7912	1.0000
7	0.5013	1.0000
8	0.4952	1.0000
9	0.7928	1.0000
10	0.6064	1.0000
11	0.5961	1.0000
12	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
70885.7	4451.74	1097.71
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
892.414	17794.6	-17794.6

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.95843E-03	2.72708E-03	7.12267E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
5.75003E-06	3.77651E-05	-1.04386E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 197 di 271

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	2.2338E-03	2.7659E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
2	2.7035E-03	2.7659E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
3	3.1732E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
4	2.4037E-03	2.7400E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
5	2.8735E-03	2.7400E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
6	3.3432E-03	2.7400E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
7	2.5737E-03	2.7141E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
8	3.0434E-03	2.7141E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
9	3.5131E-03	2.7141E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
10	2.7436E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
11	3.2133E-03	2.6883E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
12	3.6831E-03	2.6883E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
MINIMUM	2.2338E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	1	10	1	1	1	1
MAXIMUM	3.6831E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	12	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	4494.2	359.42	82.865	12.584	-250.56	1156.2
2	5433.1	355.13	85.685	12.584	-262.10	1146.9
3	6371.9	454.60	115.18	12.584	-333.11	1370.8
4	4833.9	321.55	74.730	12.584	-231.65	1062.5
5	5772.7	318.97	77.616	12.584	-243.26	1057.0
6	6667.3	429.57	109.91	12.584	-321.79	1311.0
7	5173.6	318.93	74.950	12.584	-232.23	1051.9
8	6112.4	316.22	77.806	12.584	-243.78	1046.1
9	6909.5	425.38	110.03	12.584	-322.10	1296.6
10	5513.2	355.67	84.795	12.584	-255.17	1133.7
11	6452.0	351.58	87.715	12.584	-266.97	1124.9
12	7151.7	444.72	116.43	12.584	-335.95	1333.3
MINIMUM	4494.2	316.22	74.730	12.584	-335.95	1046.1
Pile N.	1	8	4	1	12	8
MAXIMUM	7151.7	454.60	116.43	12.584	-231.65	1370.8
Pile N.	12	3	12	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	2.2338E-03	2.7659E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
2	2.7035E-03	2.7659E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
3	3.1732E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
4	2.4037E-03	2.7400E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
5	2.8735E-03	2.7400E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
6	3.3432E-03	2.7400E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
7	2.5737E-03	2.7141E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
8	3.0434E-03	2.7141E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
9	3.5131E-03	2.7141E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
10	2.7436E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
11	3.2133E-03	2.6883E-03	7.1227E-04	5.7500E-06	3.7765E-05	-1.0439E-04
12	3.6831E-03	2.6883E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
MINIMUM	2.2338E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	1	10	1	1	1	1
MAXIMUM	3.6831E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	12	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	4494.2	359.42	82.865	12.584	-250.56	1156.2
2	5433.1	355.13	85.685	12.584	-262.10	1146.9
3	6371.9	454.60	115.18	12.584	-333.11	1370.8
4	4833.9	321.55	74.730	12.584	-231.65	1062.5
5	5772.7	318.97	77.616	12.584	-243.26	1057.0
6	6667.3	429.57	109.91	12.584	-321.79	1311.0
7	5173.6	318.93	74.950	12.584	-232.23	1051.9
8	6112.4	316.22	77.806	12.584	-243.78	1046.1
9	6909.5	425.38	110.03	12.584	-322.10	1296.6
10	5513.2	355.67	84.795	12.584	-255.17	1133.7
11	6452.0	351.58	87.715	12.584	-266.97	1124.9

APPALDATORE: 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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 198 di 271

12	7151.7	444.72	116.43	12.584	-335.95	1333.3
MINIMUM	4494.2	316.22	74.730	12.584	-335.95	1046.1
Pile N.	1	8	4	1	12	8
MAXIMUM	7151.7	454.60	116.43	12.584	-231.65	1370.8
Pile N.	12	3	12	1	4	3

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	6092.3
2	6603.7
3	7837.7
4	5997.7
5	6520.5
6	7822.6
7	6159.4
8	6681.3
9	7917.9
10	6606.1
11	7119.6
12	8172.0
MINIMUM	5997.7
Pile N.	4
MAXIMUM	8172.0
Pile N.	12

* 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	-1.8787E-05	-4.9854E-06	-1156.2	-250.56	-69.903	-17.054	-42.761	-10.170	2543.2	7.8500E+06	7.8500E+06
x(M)	14.080	13.860	0.0000	0.0000	12.320	12.100	16.060	16.060	22.000	0.0000	0.0000
2	-1.8510E-05	-5.0508E-06	-1146.9	-262.10	-69.347	-17.590	-42.619	-10.580	3074.5	7.8500E+06	7.8500E+06
x(M)	14.080	13.860	0.0000	0.0000	12.320	12.320	16.060	16.060	22.000	0.0000	0.0000
3	-2.8033E-05	-7.8062E-06	-1370.8	-333.11	-84.176	-22.153	-41.526	-10.576	3605.8	7.8500E+06	7.8500E+06
x(M)	12.980	12.760	0.0000	0.0000	11.220	11.000	16.060	16.060	22.000	0.0000	0.0000
4	-1.5835E-05	-4.2398E-06	-1062.5	-231.65	-63.726	-15.729	-40.143	-9.7287	2735.4	7.8500E+06	7.8500E+06
x(M)	14.520	14.300	0.0000	0.0000	12.760	12.540	16.060	16.060	22.000	0.0000	0.0000
5	-1.5712E-05	-4.3266E-06	-1057.0	-243.26	-63.428	-16.274	-39.976	-10.099	3266.7	7.8500E+06	7.8500E+06
x(M)	14.520	14.300	0.0000	0.0000	12.980	12.760	16.060	16.060	22.000	0.0000	0.0000
6	-2.5799E-05	-7.2674E-06	-1311.0	-321.79	-80.537	-21.401	-42.125	-10.872	3772.9	7.8500E+06	7.8500E+06
x(M)	13.200	12.980	0.0000	0.0000	11.440	11.220	16.060	16.060	22.000	0.0000	0.0000
7	-1.5795E-05	-4.2657E-06	-1051.9	-232.23	-63.311	-15.779	-39.840	-9.7513	2927.6	7.8500E+06	7.8500E+06
x(M)	14.520	14.300	0.0000	0.0000	12.760	12.540	16.060	16.060	22.000	0.0000	0.0000
8	-1.5665E-05	-4.3513E-06	-1046.1	-243.78	-62.981	-16.318	-39.665	-10.121	3458.9	7.8500E+06	7.8500E+06
x(M)	14.520	14.300	0.0000	0.0000	12.980	12.760	16.060	16.060	22.000	0.0000	0.0000
9	-2.5653E-05	-7.2887E-06	-1296.6	-322.10	-79.844	-21.428	-41.659	-10.866	3910.0	7.8500E+06	7.8500E+06
x(M)	13.200	12.980	0.0000	0.0000	11.440	11.220	16.060	16.060	22.000	0.0000	0.0000
10	-1.9111E-05	-5.1887E-06	-1133.7	-255.17	-69.231	-17.392	-41.775	-10.231	3119.8	7.8500E+06	7.8500E+06
x(M)	13.860	13.640	0.0000	0.0000	12.320	12.100	16.060	16.060	22.000	0.0000	0.0000
11	-1.8801E-05	-5.2674E-06	-1124.9	-266.97	-68.733	-17.954	-41.684	-10.657	3651.1	7.8500E+06	7.8500E+06
x(M)	13.860	13.860	0.0000	0.0000	12.320	12.100	16.060	16.060	22.000	0.0000	0.0000
12	-2.7879E-05	-7.9743E-06	-1333.3	-335.95	-82.481	-22.368	-39.912	-10.491	4047.1	7.8500E+06	7.8500E+06
x(M)	12.980	12.760	0.0000	0.0000	11.220	11.000	16.060	16.060	22.000	0.0000	0.0000
Min.	-2.8033E-05	-7.9743E-06	-1370.8	-335.95	-84.176	-22.368	-42.761	-10.872	2543.2	7.8500E+06	7.8500E+06
Pile N.	3	12	3	12	3	12	1	6	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	2.7659E-03	6.8639E-04	408.14	100.70	359.49	82.881	62.121	14.670	6092.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.7000	7.4800	0.0000	0.0000	4.4000	4.1800	0.0000	0.0000	0.0000
2	2.7659E-03	7.1227E-04	405.40	103.87	355.22	85.705	61.216	15.084	6603.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.7000	0.0000	0.0000	4.4000	4.1800	0.0000	0.0000	0.0000
3	2.7659E-03	7.3814E-04	473.57	125.68	454.72	115.21	84.505	21.763	7837.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
4	2.7400E-03	6.8639E-04	379.73	94.629	321.62	74.746	53.986	12.855	5997.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.7000	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
5	2.7400E-03	7.1227E-04	378.19	97.837	319.06	77.636	53.470	13.292	6520.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
6	2.7400E-03	7.3814E-04	455.74	122.21	429.69	109.94	78.766	20.492	7822.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.2600	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
7	2.7141E-03	6.8639E-04	376.92	94.836	319.01	74.967	53.636	12.907	6159.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.7000	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
8	2.7141E-03	7.1227E-04	375.22	98.012	316.31	77.827	53.091	13.338	6681.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
9	2.7141E-03	7.3814E-04	451.79	122.32	425.51	110.07	78.074	20.525	7917.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.2600	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
10	2.6883E-03	6.8639E-04	402.61	102.25	355.76	84.814	62.030	15.124	6606.1	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 199 di 271

x(M)	0.0000	0.0000	7.7000	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
11	2.6883E-03	7.1227E-04	400.03	105.45	351.68	87.739	61.147	15.560	7119.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.7000	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
12	2.6883E-03	7.3814E-04	463.36	126.61	444.85	116.46	83.093	22.080	8172.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
Max.	2.7659E-03	7.3814E-04	473.57	126.61	454.72	116.46	84.505	22.080	8172.0	7.8500E+06	7.8500E+06
Pile N.	1	3	3	12	3	12	3	12	12	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	0.8661	1.0000
2	0.8051	1.0000
3	0.8658	1.0000
4	0.5793	1.0000
5	0.4962	1.0000
6	0.5790	1.0000
7	0.5448	1.0000
8	0.4626	1.0000
9	0.5444	1.0000
10	0.5849	1.0000
11	0.4967	1.0000
12	0.5845	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
36714.0	115.110	-15505.3
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-4662.91	-39558.9	39558.9

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.51745E-03	-3.33413E-04	-0.0106992
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.65411E-05	-1.57945E-04	1.15540E-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	3.1035E-03	-7.1507E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
2	2.5836E-03	-7.1507E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
3	2.0636E-03	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
4	2.3927E-03	-4.6063E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
5	1.8728E-03	-4.6063E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
6	1.3529E-03	-4.6063E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
7	1.6820E-03	-2.0620E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
8	1.1621E-03	-2.0620E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
9	6.4214E-04	-2.0620E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
10	9.7125E-04	4.8240E-05	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
11	4.5132E-04	4.8240E-05	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
12	-6.8606E-05	4.8240E-05	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
MINIMUM	-6.8606E-05	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.1035E-03	4.8240E-05	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	1	10	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	6232.5	-49.710	-1592.5	-123.74	5414.4	-38.402

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 200 di 271

2	5193.4	-45.909	-1544.3	-123.74	5347.5	-30.113
3	4154.2	-48.490	-1645.5	-123.74	5635.0	-35.392
4	4812.0	-2.2932	-1223.2	-123.74	4508.8	117.43
5	3772.8	-0.2544	-1125.7	-123.74	4298.6	121.27
6	2733.7	-1.9460	-1265.0	-123.74	4696.9	118.53
7	3391.4	28.882	-1176.7	-123.74	4386.9	236.96
8	2352.3	27.681	-1077.3	-123.74	4168.3	232.37
9	1312.4	28.716	-1217.2	-123.74	4570.9	236.78
10	1970.9	61.234	-1233.4	-123.74	4527.5	360.68
11	922.38	56.655	-1129.0	-123.74	4300.1	347.39
12	-133.91	60.545	-1275.6	-123.74	4716.3	359.19
MINIMUM	-133.91	-49.710	-1645.5	-123.74	4168.3	-38.402
Pile N.	12	1	3	1	8	1
MAXIMUM	6232.5	61.234	-1077.3	-123.74	5635.0	360.68
Pile N.	1	10	8	1	3	10

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	3.1035E-03	-7.1507E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
2	2.5836E-03	-7.1507E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
3	2.0636E-03	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
4	2.3927E-03	-4.6063E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
5	1.8728E-03	-4.6063E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
6	1.3529E-03	-4.6063E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
7	1.6820E-03	-2.0620E-04	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
8	1.1621E-03	-2.0620E-04	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
9	6.4214E-04	-2.0620E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
10	9.7125E-04	4.8240E-05	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
11	4.5132E-04	4.8240E-05	-0.010699	-5.6541E-05	-1.5794E-04	1.1554E-04
12	-6.8606E-05	4.8240E-05	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
MINIMUM	-6.8606E-05	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.1035E-03	4.8240E-05	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	1	10	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	6232.5	-49.710	-1592.5	-123.74	5414.4	-38.402
2	5193.4	-45.909	-1544.3	-123.74	5347.5	-30.113
3	4154.2	-48.490	-1645.5	-123.74	5635.0	-35.392
4	4812.0	-2.2932	-1223.2	-123.74	4508.8	117.43
5	3772.8	-0.2544	-1125.7	-123.74	4298.6	121.27
6	2733.7	-1.9460	-1265.0	-123.74	4696.9	118.53
7	3391.4	28.882	-1176.7	-123.74	4386.9	236.96
8	2352.3	27.681	-1077.3	-123.74	4168.3	232.37
9	1312.4	28.716	-1217.2	-123.74	4570.9	236.78
10	1970.9	61.234	-1233.4	-123.74	4527.5	360.68
11	922.38	56.655	-1129.0	-123.74	4300.1	347.39
12	-133.91	60.545	-1275.6	-123.74	4716.3	359.19
MINIMUM	-133.91	-49.710	-1645.5	-123.74	4168.3	-38.402
Pile N.	12	1	3	1	8	1
MAXIMUM	6232.5	61.234	-1077.3	-123.74	5635.0	360.68
Pile N.	1	10	8	1	3	10

PILE GROUP STRESS, KN/ M**2

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.9771E+04
2	1.8981E+04
3	1.9256E+04
4	1.6254E+04
5	1.5036E+04
6	1.5642E+04
7	1.5099E+04
8	1.3855E+04
9	1.4474E+04
10	1.4741E+04
11	1.3464E+04
12	1.4266E+04
MINIMUM	1.3464E+04
Pile N.	11
MAXIMUM	1.9771E+04
Pile N.	1

* EFFECTS FOR LATERALLY LOADED PILE *

* MINIMUM VALUES AND LOCATIONS *

APPALDATTORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.			RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 201 di 271

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	-7.1507E-04	-0.010445	-123.54	-1719.2	-49.713	-1592.9	-12.638	-284.68	3526.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.5000	7.9200	0.0000	0.0000	3.5200	3.9600	22.000	0.0000	0.0000
2	-7.1507E-04	-0.010699	-120.02	-1705.1	-45.911	-1544.7	-11.586	-269.03	2938.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.5000	8.1400	0.0000	0.0000	3.5200	4.1800	22.000	0.0000	0.0000
3	-7.1507E-04	-0.010954	-122.36	-1790.9	-48.492	-1645.8	-12.247	-290.50	2350.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.5000	7.9200	0.0000	0.0000	3.5200	4.1800	22.000	0.0000	0.0000
4	-4.6063E-04	-0.010445	-120.46	-1461.8	-3.2055	-1223.5	-3.8913	-195.09	2723.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	1.5400	8.5800	0.0000	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
5	-4.6063E-04	-0.010699	-121.67	-1406.9	-3.1244	-1125.9	-3.2656	-170.30	2135.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.8800	9.0200	17.160	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
6	-4.6063E-04	-0.010954	-120.74	-1524.1	-3.1578	-1265.2	-3.7634	-198.88	1546.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	1.5400	8.8000	16.940	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
7	-2.0620E-04	-0.010445	-236.96	-1426.3	-5.8747	-1176.9	-2.4396	-184.15	1919.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	8.8000	15.840	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
8	-2.0620E-04	-0.010699	-232.37	-1369.0	-5.9442	-1077.5	-2.4232	-159.40	1331.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	9.0200	16.060	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
9	-2.0620E-04	-0.010954	-236.78	-1488.1	-5.8910	-1217.3	-2.4598	-187.70	742.65	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	8.8000	15.840	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
10	-1.0676E-06	-0.010445	-360.68	-1465.1	-10.612	-1233.5	-5.2152	-196.81	1115.3	7.8500E+06	7.8500E+06
x(M)	16.280	0.0000	0.0000	8.5800	16.720	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
11	-1.1060E-06	-0.010699	-347.39	-1405.2	-10.905	-1129.1	-4.7283	-170.43	521.96	7.8500E+06	7.8500E+06
x(M)	16.720	0.0000	0.0000	9.0200	15.400	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
12	-1.0778E-06	-0.010954	-359.19	-1527.3	-10.676	-1275.6	-5.2019	-200.64	75.778	7.8500E+06	7.8500E+06
x(M)	16.280	0.0000	0.0000	8.5800	14.960	0.0000	4.1800	22.000	0.0000	0.0000	0.0000
Min.	-7.1507E-04	-0.010954	-360.68	-1790.9	-49.713	-1645.8	-12.638	-290.50	75.778	7.8500E+06	7.8500E+06
Pile N.	1	3	10	3	1	3	1	3	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	1.0999E-05	8.0406E-05	38.402	5414.4	19.891	319.10	9.4914	180.25	1.9771E+04	7.8500E+06	7.8500E+06
x(M)	11.660	13.640	0.0000	0.0000	9.6800	11.880	13.200	16.060	0.0000	0.0000	0.0000
2	1.0393E-05	7.5017E-05	30.113	5347.5	19.081	314.79	8.7775	179.60	1.8981E+04	7.8500E+06	7.8500E+06
x(M)	11.880	13.860	0.0000	0.0000	9.9000	12.320	13.200	16.060	0.0000	0.0000	0.0000
3	1.0674E-05	8.1774E-05	35.392	5635.0	19.652	333.12	9.3409	187.14	1.9256E+04	7.8500E+06	7.8500E+06
x(M)	11.880	13.640	0.0000	0.0000	9.6800	12.100	13.200	16.060	0.0000	0.0000	0.0000
4	1.6942E-05	5.3563E-05	8.6271	4508.8	15.001	258.13	6.3974	147.34	1.6254E+04	7.8500E+06	7.8500E+06
x(M)	10.340	14.740	14.960	0.0000	7.7000	13.200	13.200	16.060	0.0000	0.0000	0.0000
5	1.7373E-05	4.8290E-05	8.4817	4298.6	14.334	249.12	5.9734	133.68	1.5036E+04	7.8500E+06	7.8500E+06
x(M)	10.340	15.180	15.180	0.0000	7.7000	13.640	13.200	16.060	0.0000	0.0000	0.0000
6	1.6699E-05	5.4974E-05	8.5194	4696.9	14.863	269.29	6.3510	151.66	1.5642E+04	7.8500E+06	7.8500E+06
x(M)	10.340	14.740	14.960	0.0000	7.7000	13.420	13.200	16.060	0.0000	0.0000	0.0000
7	7.6700E-05	5.0684E-05	20.186	4386.9	29.894	250.87	6.8337	141.18	1.5099E+04	7.8500E+06	7.8500E+06
x(M)	6.1600	14.960	13.420	0.0000	2.6400	13.420	13.200	16.060	0.0000	0.0000	0.0000
8	8.1829E-05	4.5883E-05	21.162	4168.3	28.510	244.50	7.1364	126.03	1.3855E+04	7.8500E+06	7.8500E+06
x(M)	6.1600	15.400	13.640	0.0000	2.4200	13.860	13.200	16.060	0.0000	0.0000	0.0000
9	7.7014E-05	5.2248E-05	20.283	4570.9	29.692	262.30	6.8825	145.23	1.4474E+04	7.8500E+06	7.8500E+06
x(M)	6.1600	14.960	13.420	0.0000	2.6400	13.420	13.200	16.060	0.0000	0.0000	0.0000
10	2.2611E-04	5.3504E-05	41.879	4527.5	61.243	258.33	8.5583	148.02	1.4741E+04	7.8500E+06	7.8500E+06
x(M)	3.5200	14.740	11.220	0.0000	0.0000	13.200	8.3600	16.060	0.0000	0.0000	0.0000
11	2.3287E-04	4.7869E-05	41.537	4300.1	56.659	248.38	8.1057	133.47	1.3464E+04	7.8500E+06	7.8500E+06
x(M)	3.7400	15.180	11.660	0.0000	0.0000	13.640	13.200	16.060	0.0000	0.0000	0.0000
12	2.2682E-04	5.4916E-05	42.006	4716.3	60.544	269.41	8.4180	152.31	1.4266E+04	7.8500E+06	7.8500E+06
x(M)	3.5200	14.740	11.220	0.0000	0.0000	13.200	8.3600	16.060	0.0000	0.0000	0.0000
Max.	2.3287E-04	8.1774E-05	42.006	5635.0	61.243	333.12	9.4914	187.14	1.9771E+04	7.8500E+06	7.8500E+06
Pile N.	11	3	12	3	10	3	1	3	1	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	0.5845	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	0.4955	1.0000
8	0.4951	1.0000
9	0.8053	1.0000
10	0.5845	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 202 di 271

11 0.5791 1.0000
12 0.8661 1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 48151.6 HOR. LOAD Y, KN 19812.7 HOR. LOAD Z, KN 31.4860
MOMENT X, KN- M -3455.99 MOMENT Y, KN- M 821.370 MOMENT Z, KN- M -821.370

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.99281E-03 HORIZONTAL Y, M 0.0153112 HORIZONTAL Z, M 5.03642E-05
ANGLE ROT. X, RAD -5.03968E-05 ANGLE ROT. Y, RAD 1.58939E-06 ANGLE ROT. Z, RAD -2.35455E-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	9.2254E-04	0.014971	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
2	1.9821E-03	0.014971	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
3	3.0416E-03	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
4	9.2969E-04	0.015198	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
5	1.9892E-03	0.015198	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
6	3.0488E-03	0.015198	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
7	9.3684E-04	0.015425	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
8	1.9964E-03	0.015425	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
9	3.0559E-03	0.015425	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
10	9.4399E-04	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
11	2.0035E-03	0.015651	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
12	3.0631E-03	0.015651	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1549.1	29.905	-110.29	-118.29	5966.3
2	3991.2	1537.2	4.8195	-110.29	-17.740	5942.3
3	6108.8	1985.1	-25.669	-110.29	96.870	7087.3
4	1887.8	1410.5	26.838	-110.29	-110.11	5632.4
5	4005.5	1407.0	4.3287	-110.29	-16.447	5630.4
6	6123.1	1913.9	-24.396	-110.29	93.718	6952.7
7	1902.1	1425.3	26.698	-110.29	-109.77	5707.4
8	4019.8	1421.9	4.3049	-110.29	-16.389	5705.4
9	6137.4	1933.3	-24.264	-110.29	93.415	7042.2
10	1916.4	1598.0	29.429	-110.29	-117.15	6205.1
11	4034.1	1585.7	4.7390	-110.29	-17.549	6180.2
12	6151.7	2045.7	-25.249	-110.29	95.916	7362.6
MINIMUM	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

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	9.2254E-04	0.014971	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
2	1.9821E-03	0.014971	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
3	3.0416E-03	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
4	9.2969E-04	0.015198	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
5	1.9892E-03	0.015198	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04

APPALDATTORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA							
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO		
IF3A	02	E ZZ CL	VI0103 001	A	203 di 271		

6	3.0488E-03	0.015198	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
7	9.3684E-04	0.015425	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
8	1.9964E-03	0.015425	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
9	3.0559E-03	0.015425	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
10	9.4399E-04	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
11	2.0035E-03	0.015651	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
12	3.0631E-03	0.015651	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04

MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1549.1	29.905	-110.29	-118.29	5966.3
2	3991.2	1537.2	4.8195	-110.29	-17.740	5942.3
3	6108.8	1985.1	-25.669	-110.29	96.870	7087.3
4	1887.8	1410.5	26.838	-110.29	-110.11	5632.4
5	4005.5	1407.0	4.3287	-110.29	-16.447	5630.4
6	6123.1	1913.9	-24.396	-110.29	93.718	6952.7
7	1902.1	1425.3	26.698	-110.29	-109.77	5707.4
8	4019.8	1421.9	4.3049	-110.29	-16.389	5705.4
9	6137.4	1933.3	-24.264	-110.29	93.415	7042.2
10	1916.4	1598.0	29.429	-110.29	-117.15	6205.1
11	4034.1	1585.7	4.7390	-110.29	-17.549	6180.2
12	6151.7	2045.7	-25.249	-110.29	95.916	7362.6
MINIMUM	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

PILE GROUP	STRESS, KN/ M**2
1	1.8963E+04
2	2.0085E+04
3	2.4721E+04
4	1.7969E+04
5	1.9158E+04
6	2.4325E+04
7	1.8202E+04
8	1.9391E+04
9	2.4601E+04
10	1.9703E+04
11	2.0824E+04
12	2.5571E+04
MINIMUM	1.7969E+04
Pile N.	4
MAXIMUM	2.5571E+04
Pile N.	12

* 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	-7.1520E-05	-1.3167E-06	-5966.3	-118.29	-365.08	-6.9217	-185.76	-3.5189	1060.2	7.8500E+06	7.8500E+06
x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
2	-7.1517E-05	-2.4407E-07	-5942.3	-17.740	-364.87	-1.1876	-184.87	-0.5992	2258.6	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.640	13.420	16.060	16.060	22.000	0.0000	0.0000
3	-9.7430E-05	-1.7647E-04	-7087.3	-28.596	-446.26	-25.677	-226.59	-4.1142	3456.9	7.8500E+06	7.8500E+06
x(M)	13.860	0.2200	0.0000	8.5800	12.320	0.0000	16.060	4.1800	22.000	0.0000	0.0000
4	-6.6885E-05	-1.2166E-06	-5632.4	-110.11	-354.70	-6.6554	-166.55	-3.0923	1068.3	7.8500E+06	7.8500E+06
x(M)	15.400	15.620	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
5	-6.7276E-05	-2.2388E-07	-5630.4	-16.447	-355.24	-1.1275	-166.75	-0.5360	2266.6	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	13.860	16.060	16.060	22.000	0.0000	0.0000
6	-9.2046E-05	-1.7648E-04	-6952.7	-27.779	-436.56	-24.404	-222.84	-3.8094	3465.0	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000
7	-6.7859E-05	-1.2181E-06	-5707.4	-109.77	-360.45	-6.6594	-168.20	-3.0758	1076.4	7.8500E+06	7.8500E+06
x(M)	15.400	15.620	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
8	-6.8258E-05	-2.2384E-07	-5705.4	-16.389	-361.00	-1.1277	-168.40	-0.5331	2274.7	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	13.860	16.060	16.060	22.000	0.0000	0.0000
9	-9.2792E-05	-1.7648E-04	-7042.2	-27.732	-442.72	-24.272	-225.08	-3.7779	3473.1	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.8400	22.000	0.0000	0.0000
10	-7.4126E-05	-1.3123E-06	-6205.1	-117.15	-382.33	-6.9220	-191.39	-3.4626	1084.5	7.8500E+06	7.8500E+06
x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
11	-7.4236E-05	-2.4226E-07	-6180.2	-17.549	-382.09	-1.1852	-190.48	-0.5895	2282.8	7.8500E+06	7.8500E+06
x(M)	15.180	14.960	0.0000	0.0000	13.420	13.420	16.060	16.060	22.000	0.0000	0.0000
12	-9.9829E-05	-1.7648E-04	-7362.6	-28.457	-465.45	-25.257	-233.84	-4.0026	3481.2	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000

APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 204 di 271

Min. -9.9829E-05 -1.7648E-04 -7362.6 -118.29 -465.45 -25.677 -233.84 -4.1142 1060.2 7.8500E+06 7.8500E+06
Pile N. 12 6 12 1 12 3 12 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	0.014971	2.7715E-04	2023.1	37.959	1549.3	29.908	227.38	4.3330	1.8963E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
2	0.014971	5.0364E-05	2018.3	6.6561	1537.6	4.8205	225.44	0.7249	2.0085E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
3	0.014971	1.1200E-06	2352.4	96.870	1985.7	5.4774	328.10	2.8802	2.4721E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
4	0.015198	2.7715E-04	1930.2	35.691	1410.6	26.841	196.75	3.6916	1.7969E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.4600	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
5	0.015198	5.0364E-05	1931.8	6.2655	1407.3	4.3296	196.59	0.6205	1.9158E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
6	0.015198	1.0470E-06	2317.9	93.718	1914.5	5.2739	308.51	2.7792	2.4325E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
7	0.015425	2.7715E-04	1956.4	35.643	1425.5	26.701	198.15	3.6608	1.8202E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.4600	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
8	0.015425	5.0364E-05	1958.0	6.2541	1422.2	4.3058	198.00	0.6153	1.9391E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
9	0.015425	1.0417E-06	2348.5	93.415	1933.9	5.2684	310.42	2.7640	2.4601E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
10	0.015651	2.7715E-04	2106.7	37.769	1598.2	29.432	232.32	4.2263	1.9703E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
11	0.015651	5.0364E-05	2101.6	6.6192	1586.1	4.7400	230.33	0.7052	2.0824E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
12	0.015651	1.0997E-06	2447.5	95.916	2046.3	5.4608	334.29	2.8372	2.5571E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
Max.	0.015651	2.7715E-04	2447.5	96.870	2046.3	29.908	334.29	4.3330	2.5571E+04	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	1	12	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	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4955	1.0000
8	0.4951	1.0000
9	0.8053	1.0000
10	0.5845	1.0000
11	0.5791	1.0000
12	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
48127.9	19530.2	62.9720
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-3471.49	1326.62	-1326.62

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.99182E-03	0.0149853	7.69851E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.06220E-05	2.60482E-06	-2.32903E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI		ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA		RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 205 di 271

* PILE TOP DISPLACEMENTS *

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	9.2617E-04	0.014644	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
2	1.9742E-03	0.014644	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
3	3.0223E-03	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
4	9.3790E-04	0.014871	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
5	1.9860E-03	0.014871	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
6	3.0340E-03	0.014871	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
7	9.4962E-04	0.015099	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
8	1.9977E-03	0.015099	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
9	3.0457E-03	0.015099	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
10	9.6134E-04	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
11	2.0094E-03	0.015327	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
12	3.0575E-03	0.015327	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
MINIMUM	9.2617E-04	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0575E-03	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	12	10	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	1880.8	1526.3	32.765	-110.79	-128.27	5857.3
2	3975.5	1514.6	7.3504	-110.79	-26.765	5833.7
3	6070.2	1956.7	-22.775	-110.79	87.034	6961.0
4	1904.2	1389.7	29.382	-110.79	-119.29	5530.4
5	3998.9	1386.4	6.5969	-110.79	-24.788	5528.6
6	6093.7	1886.8	-21.651	-110.79	84.250	6830.6
7	1927.7	1404.8	29.223	-110.79	-118.90	5606.0
8	4022.4	1401.4	6.5592	-110.79	-24.697	5604.1
9	6117.1	1906.4	-21.531	-110.79	83.975	6920.7
10	1951.1	1575.6	32.225	-110.79	-126.98	6098.0
11	4045.8	1563.5	7.2233	-110.79	-26.465	6073.6
12	6140.5	2017.9	-22.396	-110.79	86.173	7238.7
MINIMUM	1880.8	1386.4	-22.775	-110.79	-128.27	5528.6
Pile N.	1	5	3	1	1	5
MAXIMUM	6140.5	2017.9	32.765	-110.79	87.034	7238.7
Pile N.	12	12	1	1	3	12

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	9.2617E-04	0.014644	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
2	1.9742E-03	0.014644	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
3	3.0223E-03	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
4	9.3790E-04	0.014871	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
5	1.9860E-03	0.014871	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
6	3.0340E-03	0.014871	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
7	9.4962E-04	0.015099	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
8	1.9977E-03	0.015099	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
9	3.0457E-03	0.015099	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
10	9.6134E-04	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
11	2.0094E-03	0.015327	7.6985E-05	-5.0622E-05	2.6048E-06	-2.3290E-04
12	3.0575E-03	0.015327	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
MINIMUM	9.2617E-04	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0575E-03	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	12	10	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	1880.8	1526.3	32.765	-110.79	-128.27	5857.3
2	3975.5	1514.6	7.3504	-110.79	-26.765	5833.7
3	6070.2	1956.7	-22.775	-110.79	87.034	6961.0
4	1904.2	1389.7	29.382	-110.79	-119.29	5530.4
5	3998.9	1386.4	6.5969	-110.79	-24.788	5528.6
6	6093.7	1886.8	-21.651	-110.79	84.250	6830.6
7	1927.7	1404.8	29.223	-110.79	-118.90	5606.0
8	4022.4	1401.4	6.5592	-110.79	-24.697	5604.1
9	6117.1	1906.4	-21.531	-110.79	83.975	6920.7
10	1951.1	1575.6	32.225	-110.79	-126.98	6098.0
11	4045.8	1563.5	7.2233	-110.79	-26.465	6073.6
12	6140.5	2017.9	-22.396	-110.79	86.173	7238.7

APPALTATORE: <u>Consorzio</u> <u>Soci</u>			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI								
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 206 di 271

MINIMUM	1880.8	1386.4	-22.775	-110.79	-128.27	5528.6
Pile N.	1	5	3	1	1	5
MAXIMUM	6140.5	2017.9	32.765	-110.79	87.034	7238.7
Pile N.	12	12	1	1	3	12

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.8641E+04
2	1.9751E+04
3	2.4320E+04
4	1.7673E+04
5	1.8849E+04
6	2.3942E+04
7	1.7913E+04
8	1.9089E+04
9	2.4225E+04
10	1.9402E+04
11	2.0510E+04
12	2.5192E+04

MINIMUM	1.7673E+04
Pile N.	4
MAXIMUM	2.5192E+04
Pile N.	12

* EFFECTS FOR LATERALLY LOADED PILE *

* MINIMUM 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	-7.0246E-05	-1.4532E-06	-5857.3	-128.27	-357.02	-7.5612	-183.07	-3.8756	1064.3	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.420	13.640	16.060	16.060	22.000	0.0000	0.0000
2	-7.0244E-05	-3.7519E-07	-5833.7	-26.765	-356.73	-1.8086	-182.20	-0.9183	2249.7	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.640	13.420	16.060	16.060	22.000	0.0000	0.0000
3	-9.6312E-05	-1.5112E-04	-6961.0	-24.782	-437.06	-22.782	-223.12	-3.6633	3435.0	7.8500E+06	7.8500E+06
x(M)	13.860	0.2200	0.0000	0.0000	12.320	0.0000	16.060	4.1800	22.000	0.0000	0.0000
4	-6.5486E-05	-1.3396E-06	-5530.4	-119.29	-346.62	-7.2537	-164.19	-3.4095	1077.6	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
5	-6.5862E-05	-3.4252E-07	-5528.6	-24.788	-347.24	-1.7126	-164.39	-0.8222	2262.9	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	13.860	13.860	16.060	16.060	22.000	0.0000	0.0000
6	-9.0911E-05	-1.5113E-04	-6830.6	-24.063	-427.76	-21.658	-219.67	-3.3682	3448.3	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	0.0000	12.540	0.0000	16.060	4.8400	22.000	0.0000	0.0000
7	-6.6464E-05	-1.3391E-06	-5606.0	-118.90	-352.40	-7.2583	-165.87	-3.3909	1090.8	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
8	-6.6848E-05	-3.4246E-07	-5604.1	-24.697	-352.92	-1.7128	-166.07	-0.8177	2276.2	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	13.860	16.060	16.060	22.000	0.0000	0.0000
9	-9.1673E-05	-1.5113E-04	-6920.7	-24.025	-433.97	-21.538	-221.94	-3.3400	3461.6	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	0.0000	12.540	0.0000	16.060	4.8400	22.000	0.0000	0.0000
10	-7.2878E-05	-1.4454E-06	-6098.0	-126.98	-374.27	-7.5620	-188.77	-3.8120	1104.1	7.8500E+06	7.8500E+06
x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
11	-7.2862E-05	-3.7238E-07	-6073.6	-26.465	-374.04	-1.8051	-187.86	-0.9029	2289.5	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.640	13.420	16.060	16.060	22.000	0.0000	0.0000
12	-9.8517E-05	-1.5112E-04	-7238.7	-24.659	-456.40	-22.403	-230.51	-3.5353	3474.8	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.320	0.0000	16.060	4.8400	22.000	0.0000	0.0000
Min. Pile N.	-9.8517E-05	-1.5113E-04	-7238.7	-128.27	-456.40	-22.782	-230.51	-3.8756	1064.3	7.8500E+06	7.8500E+06
	12	6	12	1	12	3	12	1	1	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	0.014644	3.0478E-04	1983.0	41.687	1526.4	32.768	225.01	4.7845	1.8641E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
2	0.014644	7.6985E-05	1978.3	10.175	1514.9	7.3519	223.08	1.1161	1.9751E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
3	0.014644	9.5891E-07	2306.5	87.034	1957.3	4.7524	325.12	2.5404	2.4320E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
4	0.014871	3.0478E-04	1892.7	39.164	1389.9	29.385	194.75	4.0754	1.7673E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	0.0000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
5	0.014871	7.6985E-05	1894.2	9.5771	1386.7	6.5983	194.60	0.9531	1.8849E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
6	0.014871	8.9633E-07	2274.0	84.250	1887.4	4.5751	305.77	2.4504	2.3942E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
7	0.015099	3.0478E-04	1919.1	39.103	1404.9	29.226	196.18	4.0406	1.7913E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.4600	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
8	0.015099	7.6985E-05	1920.7	9.5593	1401.7	6.5606	196.03	0.9449	1.9089E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
9	0.015099	8.9149E-07	2304.8	83.975	1907.0	4.5702	307.72	2.4367	2.4225E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.980	16.060	0.0000	0.0000	0.0000	0.0000
10	0.015327	3.0478E-04	2067.2	41.476	1575.8	32.228	230.04	4.6636	1.9402E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
11	0.015327	7.6985E-05	2062.3	10.117	1563.9	7.2248	228.07	1.0846	2.0510E+04	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 207 di 271

x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
12	0.015327	9.4076E-07	2402.5	86.173	2018.6	4.7387	331.43	2.5020	2.5192E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
Max.	0.015327	3.0478E-04	2402.5	87.034	2018.6	32.768	331.43	4.7845	2.5192E+04	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	1	12	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	0.8661	1.0000
2	0.8032	1.0000
3	0.8635	1.0000
4	0.5820	1.0000
5	0.4961	1.0000
6	0.5782	1.0000
7	0.5479	1.0000
8	0.4629	1.0000
9	0.5440	1.0000
10	0.5883	1.0000
11	0.4975	1.0000
12	0.5845	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 43307.3	HOR. LOAD Y, KN 597.975	HOR. LOAD Z, KN -15527.3
MOMENT X, KN- M -4482.15	MOMENT Y, KN- M -1.32328E+05	MOMENT Z, KN- M 1.32328E+05

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.93039E-03	HORIZONTAL Y, M -1.20505E-03	HORIZONTAL Z, M -0.0115831
ANGLE ROT. X, RAD -5.40545E-05	ANGLE ROT. Y, RAD -3.42463E-04	ANGLE ROT. Z, RAD 4.26818E-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	6.1627E-03	-1.5699E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
2	4.2420E-03	-1.5699E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
3	2.3213E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
4	4.6216E-03	-1.3267E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
5	2.7009E-03	-1.3267E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
6	7.8025E-04	-1.3267E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
7	3.0805E-03	-1.0834E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
8	1.1599E-03	-1.0834E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
9	-7.6083E-04	-1.0834E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
10	1.5394E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
11	-3.8123E-04	-8.4019E-04	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
12	-2.3019E-03	-8.4019E-04	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	1.0200E+04	-8.3202	-1596.7	-118.30	5277.7	466.59
2	7948.3	-3.8631	-1544.8	-118.30	5195.7	475.55
3	4669.2	-7.3502	-1648.1	-118.30	5479.2	472.42

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 208 di 271

4	8489.3	39.412	-1224.9	-118.30	4363.7	611.51
5	5427.9	41.895	-1122.8	-118.30	4133.9	614.39
6	1589.2	39.392	-1264.9	-118.30	4528.9	616.17
7	6186.6	68.856	-1179.4	-118.30	4241.4	725.23
8	2347.8	68.125	-1076.0	-118.30	4002.3	720.09
9	-1479.2	68.316	-1218.6	-118.30	4401.3	728.91
10	3106.5	98.720	-1239.3	-118.30	4384.3	845.16
11	-744.12	95.009	-1131.2	-118.30	4137.5	832.05
12	-4434.7	97.784	-1280.5	-118.30	4550.2	847.41
MINIMUM	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

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	6.1627E-03	-1.5699E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
2	4.2420E-03	-1.5699E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
3	2.3213E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
4	4.6216E-03	-1.3267E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
5	2.7009E-03	-1.3267E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
6	7.8025E-04	-1.3267E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
7	3.0805E-03	-1.0834E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
8	1.1599E-03	-1.0834E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
9	-7.6083E-04	-1.0834E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
10	1.5394E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
11	-3.8123E-04	-8.4019E-04	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
12	-2.3019E-03	-8.4019E-04	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	1.0200E+04	-8.3202	-1596.7	-118.30	5277.7	466.59
2	7948.3	-3.8631	-1544.8	-118.30	5195.7	475.55
3	4669.2	-7.3502	-1648.1	-118.30	5479.2	472.42
4	8489.3	39.412	-1224.9	-118.30	4363.7	611.51
5	5427.9	41.895	-1122.8	-118.30	4133.9	614.39
6	1589.2	39.392	-1264.9	-118.30	4528.9	616.17
7	6186.6	68.856	-1179.4	-118.30	4241.4	725.23
8	2347.8	68.125	-1076.0	-118.30	4002.3	720.09
9	-1479.2	68.316	-1218.6	-118.30	4401.3	728.91
10	3106.5	98.720	-1239.3	-118.30	4384.3	845.16
11	-744.12	95.009	-1131.2	-118.30	4137.5	832.05
12	-4434.7	97.784	-1280.5	-118.30	4550.2	847.41
MINIMUM	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

PILE GROUP STRESS, KN/ M**2

*****	*****
1	2.1667E+04
2	2.0150E+04
3	1.9141E+04
4	1.8023E+04
5	1.5609E+04
6	1.4611E+04
7	1.6410E+04
8	1.3528E+04
9	1.4221E+04
10	1.5153E+04
11	1.3082E+04
12	1.6395E+04
MINIMUM	1.3082E+04
Pile N.	11
MAXIMUM	2.1667E+04
Pile N.	1

* EFFECTS FOR Laterally Loaded Pile *

* MINIMUM VALUES AND LOCATIONS *

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 210 di 271

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 53582.4	HOR. LOAD Y, KN 6438.35	HOR. LOAD Z, KN 31.4860
MOMENT X, KN- M -1044.56	MOMENT Y, KN- M 829.135	MOMENT Z, KN- M -829.135

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 2.21925E-03	HORIZONTAL Y, M 3.65510E-03	HORIZONTAL Z, M 2.62799E-05
ANGLE ROT. X, RAD -1.04052E-05	ANGLE ROT. Y, RAD 1.52680E-06	ANGLE ROT. Z, RAD -6.90257E-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	1.8983E-03	3.5849E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
2	2.2089E-03	3.5849E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
3	2.5196E-03	3.5849E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
4	1.9052E-03	3.6317E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
5	2.2158E-03	3.6317E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
6	2.5264E-03	3.6317E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
7	1.9121E-03	3.6785E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
8	2.2227E-03	3.6785E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
9	2.5333E-03	3.6785E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
10	1.9189E-03	3.7253E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
11	2.2295E-03	3.7253E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
12	2.5402E-03	3.7253E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
MINIMUM	1.8983E-03	3.5849E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5402E-03	3.7253E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
Pile N.	12	10	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	3823.8	501.45	10.162	-22.772	-34.336	1701.7
2	4444.6	498.35	3.1105	-22.772	-9.3012	1694.9
3	5065.4	637.67	-4.8550	-22.772	17.892	2010.4
4	3837.5	459.40	9.1788	-22.772	-31.995	1609.7
5	4458.3	458.95	2.8079	-22.772	-8.5959	1609.1
6	5079.1	618.38	-4.6612	-22.772	17.451	1977.8
7	3851.3	465.77	9.1788	-22.772	-31.995	1633.1
8	4472.1	465.31	2.8079	-22.772	-8.5959	1632.5
9	5092.9	626.89	-4.6612	-22.772	17.451	2006.2
10	3865.0	522.54	10.162	-22.772	-34.336	1776.7
11	4485.8	519.31	3.1104	-22.772	-9.3014	1769.6
12	5106.6	664.34	-4.8550	-22.772	17.892	2098.1
MINIMUM	3823.8	458.95	-4.8550	-22.772	-34.336	1609.1
Pile N.	1	5	3	1	1	5
MAXIMUM	5106.6	664.34	10.162	-22.772	17.892	2098.1
Pile N.	12	12	1	1	3	12

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	1.8983E-03	3.5849E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
2	2.2089E-03	3.5849E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
3	2.5196E-03	3.5849E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
4	1.9052E-03	3.6317E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
5	2.2158E-03	3.6317E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
6	2.5264E-03	3.6317E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
7	1.9121E-03	3.6785E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 211 di 271

8	2.2227E-03	3.6785E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
9	2.5333E-03	3.6785E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
10	1.9189E-03	3.7253E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
11	2.2295E-03	3.7253E-03	2.6280E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
12	2.5402E-03	3.7253E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
MINIMUM	1.8983E-03	3.5849E-03	-2.0544E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5402E-03	3.7253E-03	7.3104E-05	-1.0405E-05	1.5268E-06	-6.9026E-05
Pile N.	12	10	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	3823.8	501.45	10.162	-22.772	-34.336	1701.7
2	4444.6	498.35	3.1105	-22.772	-9.3012	1694.9
3	5065.4	637.67	-4.8550	-22.772	17.892	2010.4
4	3837.5	459.40	9.1788	-22.772	-31.995	1609.7
5	4458.3	458.95	2.8079	-22.772	-8.5959	1609.1
6	5079.1	618.38	-4.6612	-22.772	17.451	1977.8
7	3851.3	465.77	9.1788	-22.772	-31.995	1633.1
8	4472.1	465.31	2.8079	-22.772	-8.5959	1632.5
9	5092.9	626.89	-4.6612	-22.772	17.451	2006.2
10	3865.0	522.54	10.162	-22.772	-34.336	1776.7
11	4485.8	519.31	3.1104	-22.772	-9.3014	1769.6
12	5106.6	664.34	-4.8550	-22.772	17.892	2098.1
MINIMUM	3823.8	458.95	-4.8550	-22.772	-34.336	1609.1
Pile N.	1	5	3	1	1	5
MAXIMUM	5106.6	664.34	10.162	-22.772	17.892	2098.1
Pile N.	12	12	1	1	3	12

PILE GROUP STRESS, KN/ M**2

1	7269.9
2	7600.0
3	8897.8
4	7001.7
5	7350.4
6	8807.9
7	7079.7
8	7428.3
9	8900.9
10	7518.2
11	7847.4
12	9184.4
MINIMUM	7001.7
Pile N.	4
MAXIMUM	9184.4
Pile N.	12

* 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	-2.2932E-05	-4.6940E-07	-1701.7	-34.336	-92.380	-1.8804	-57.852	-1.1753	2163.8	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
2	-2.2775E-05	-1.9152E-07	-1694.9	-9.3012	-92.003	-0.6480	-57.735	-0.3858	2515.1	7.8500E+06	7.8500E+06
x(M)	14.300	13.860	0.0000	0.0000	12.540	12.100	16.060	16.060	22.000	0.0000	0.0000
3	-3.4900E-05	-2.1081E-05	-2010.4	-3.8946	-112.18	-4.8563	-56.802	-0.8315	2866.4	7.8500E+06	7.8500E+06
x(M)	13.200	0.6600	0.0000	8.1400	11.440	0.0000	16.060	4.4000	22.000	0.0000	0.0000
4	-1.9612E-05	-3.9646E-07	-1609.7	-31.995	-85.594	-1.7199	-54.903	-1.1013	2171.6	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
5	-1.9637E-05	-1.6305E-07	-1609.1	-8.5959	-85.639	-0.5981	-54.921	-0.3690	2522.9	7.8500E+06	7.8500E+06
x(M)	14.740	14.300	0.0000	0.0000	12.980	12.540	16.060	16.060	22.000	0.0000	0.0000
6	-3.2706E-05	-2.1092E-05	-1977.8	-3.7899	-109.82	-4.6625	-58.970	-0.7862	2874.2	7.8500E+06	7.8500E+06
x(M)	13.200	0.6600	0.0000	8.1400	11.660	0.0000	16.060	4.4000	22.000	0.0000	0.0000
7	-1.9855E-05	-3.9648E-07	-1633.1	-31.995	-86.720	-1.7199	-55.636	-1.1014	2179.4	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
8	-1.9880E-05	-1.6306E-07	-1632.5	-8.5959	-86.765	-0.5981	-55.655	-0.3690	2530.7	7.8500E+06	7.8500E+06
x(M)	14.740	14.300	0.0000	0.0000	12.980	12.540	16.060	16.060	22.000	0.0000	0.0000
9	-3.3104E-05	-2.1092E-05	-2006.2	-3.7900	-111.27	-4.6624	-59.775	-0.7862	2882.0	7.8500E+06	7.8500E+06
x(M)	13.200	0.6600	0.0000	8.1400	11.660	0.0000	16.060	4.4000	22.000	0.0000	0.0000
10	-2.3794E-05	-4.6947E-07	-1776.7	-34.336	-96.085	-1.8806	-60.222	-1.1754	2187.1	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
11	-2.3629E-05	-1.9155E-07	-1769.6	-9.3014	-95.692	-0.6481	-60.099	-0.3858	2538.4	7.8500E+06	7.8500E+06
x(M)	14.300	13.860	0.0000	0.0000	12.540	12.100	16.060	16.060	22.000	0.0000	0.0000
12	-3.6215E-05	-2.1081E-05	-2098.1	-3.8947	-116.69	-4.8563	-59.166	-0.8315	2889.7	7.8500E+06	7.8500E+06
x(M)	13.200	0.6600	0.0000	8.1400	11.440	0.0000	16.060	4.4000	22.000	0.0000	0.0000
Min.	-3.6215E-05	-2.1092E-05	-2098.1	-34.336	-116.69	-4.8563	-60.222	-1.1754	2163.8	7.8500E+06	7.8500E+06
Pile N.	12	6	12	1	12	3	10	10	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 212 di 271

* 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	3.5849E-03	7.3103E-05	534.41	10.887	501.54	10.164	84.830	1.7221	7269.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
2	3.5849E-03	2.6280E-05	532.53	3.8400	498.45	3.1111	84.181	0.5523	7600.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.4800	0.0000	0.0000	4.4000	4.1800	0.0000	0.0000	0.0000
3	3.5849E-03	1.7258E-07	623.99	17.892	637.82	0.7287	116.50	0.4241	8897.8	7.8500E+06	7.8500E+06
x(M)	0.0000	13.640	7.4800	0.0000	0.0000	12.100	4.1800	16.060	0.0000	0.0000	0.0000
4	3.6317E-03	7.3103E-05	507.28	10.197	459.49	9.1806	75.205	1.5057	7001.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
5	3.6317E-03	2.6280E-05	507.27	3.6109	459.05	2.8085	75.149	0.4845	7350.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	7.7000	0.0000	0.0000	4.6200	4.4000	0.0000	0.0000	0.0000
6	3.6317E-03	1.5981E-07	614.60	17.451	618.52	0.7043	111.41	0.4290	8807.9	7.8500E+06	7.8500E+06
x(M)	0.0000	13.860	7.4800	0.0000	0.0000	12.320	4.1800	16.060	0.0000	0.0000	0.0000
7	3.6785E-03	7.3103E-05	513.93	10.197	465.86	9.1805	76.228	1.5057	7079.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
8	3.6785E-03	2.6280E-05	513.92	3.6110	465.41	2.8085	76.170	0.4845	7428.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	7.7000	0.0000	0.0000	4.6200	4.4000	0.0000	0.0000	0.0000
9	3.6785E-03	1.5981E-07	622.61	17.451	627.03	0.7043	112.92	0.4290	8900.9	7.8500E+06	7.8500E+06
x(M)	0.0000	13.860	7.4800	0.0000	0.0000	12.320	4.1800	16.060	0.0000	0.0000	0.0000
10	3.7253E-03	7.3103E-05	555.61	10.888	522.63	10.164	88.332	1.7222	7518.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
11	3.7253E-03	2.6280E-05	553.64	3.8402	519.42	3.1110	87.656	0.5523	7847.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.4800	0.0000	0.0000	4.4000	4.1800	0.0000	0.0000	0.0000
12	3.7253E-03	1.7261E-07	648.79	17.892	664.49	0.7287	121.29	0.4242	9184.4	7.8500E+06	7.8500E+06
x(M)	0.0000	13.640	7.4800	0.0000	0.0000	12.100	4.1800	16.060	0.0000	0.0000	0.0000
Max.	3.7253E-03	7.3103E-05	648.79	17.892	664.49	10.164	121.29	1.7222	9184.4	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	10	12	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	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4955	1.0000
8	0.4951	1.0000
9	0.8053	1.0000
10	0.5845	1.0000
11	0.5791	1.0000
12	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
46799.7	19221.4	1.20100E-07
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-3445.13	62.9771	-62.9771

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.93644E-03	0.0146035	2.15947E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-4.95393E-05	1.64505E-07	-2.24669E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

* PILE TOP DISPLACEMENTS *

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 213 di 271

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	9.2432E-04	0.014269	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
2	1.9353E-03	0.014269	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
3	2.9463E-03	0.014269	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
4	9.2506E-04	0.014492	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
5	1.9361E-03	0.014492	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
6	2.9471E-03	0.014492	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
7	9.2580E-04	0.014715	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
8	1.9368E-03	0.014715	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
9	2.9478E-03	0.014715	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
10	9.2654E-04	0.014938	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
11	1.9375E-03	0.014938	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
12	2.9486E-03	0.014938	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
MINIMUM	9.2432E-04	0.014269	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9486E-03	0.014938	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	12	10	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	1877.1	1501.8	27.385	-108.42	-108.94	5745.9
2	3897.8	1490.4	2.3338	-108.42	-9.1580	5722.7
3	5918.4	1926.3	-28.936	-108.42	106.62	6830.3
4	1878.6	1367.3	24.582	-108.42	-101.49	5424.6
5	3899.2	1364.1	2.1036	-108.42	-8.5477	5422.7
6	5919.9	1857.5	-27.479	-108.42	103.05	6702.5
7	1880.1	1382.2	24.451	-108.42	-101.17	5499.1
8	3900.7	1378.9	2.0922	-108.42	-8.5200	5497.1
9	5921.4	1876.8	-27.323	-108.42	102.69	6791.0
10	1881.5	1550.6	26.938	-108.42	-107.87	5982.5
11	3902.2	1538.8	2.2952	-108.42	-9.0661	5958.4
12	5922.8	1986.8	-28.443	-108.42	105.51	7103.6
MINIMUM	1877.1	1364.1	-28.936	-108.42	-108.94	5422.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5922.8	1986.8	27.385	-108.42	106.62	7103.6
Pile N.	12	12	1	1	3	12

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	9.2432E-04	0.014269	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
2	1.9353E-03	0.014269	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
3	2.9463E-03	0.014269	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
4	9.2506E-04	0.014492	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
5	1.9361E-03	0.014492	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
6	2.9471E-03	0.014492	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
7	9.2580E-04	0.014715	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
8	1.9368E-03	0.014715	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
9	2.9478E-03	0.014715	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
10	9.2654E-04	0.014938	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
11	1.9375E-03	0.014938	2.1595E-05	-4.9539E-05	1.6451E-07	-2.2467E-04
12	2.9486E-03	0.014938	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
MINIMUM	9.2432E-04	0.014269	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9486E-03	0.014938	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	12	10	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	1877.1	1501.8	27.385	-108.42	-108.94	5745.9
2	3897.8	1490.4	2.3338	-108.42	-9.1580	5722.7
3	5918.4	1926.3	-28.936	-108.42	106.62	6830.3
4	1878.6	1367.3	24.582	-108.42	-101.49	5424.6
5	3899.2	1364.1	2.1036	-108.42	-8.5477	5422.7
6	5919.9	1857.5	-27.479	-108.42	103.05	6702.5
7	1880.1	1382.2	24.451	-108.42	-101.17	5499.1
8	3900.7	1378.9	2.0922	-108.42	-8.5200	5497.1
9	5921.4	1876.8	-27.323	-108.42	102.69	6791.0
10	1881.5	1550.6	26.938	-108.42	-107.87	5982.5
11	3902.2	1538.8	2.2952	-108.42	-9.0661	5958.4
12	5922.8	1986.8	-28.443	-108.42	105.51	7103.6
MINIMUM	1877.1	1364.1	-28.936	-108.42	-108.94	5422.7
Pile N.	1	5	3	1	1	5

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 215 di 271

x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
Max.	0.014938	2.4452E-04	2348.8	106.62	1987.4	27.388	328.05	3.9797	2.4665E+04	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	1	12	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	0.8661	1.0000
2	0.8032	1.0000
3	0.8635	1.0000
4	0.5820	1.0000
5	0.4961	1.0000
6	0.5782	1.0000
7	0.5479	1.0000
8	0.4629	1.0000
9	0.5440	1.0000
10	0.5883	1.0000
11	0.4975	1.0000
12	0.5845	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 43307.3	HOR. LOAD Y, KN 597.975	HOR. LOAD Z, KN -15527.3
MOMENT X, KN- M -4482.15	MOMENT Y, KN- M -1.32328E+05	MOMENT Z, KN- M 1.32328E+05

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.93039E-03	HORIZONTAL Y, M -1.20505E-03	HORIZONTAL Z, M -0.0115831
ANGLE ROT. X, RAD -5.40545E-05	ANGLE ROT. Y, RAD -3.42463E-04	ANGLE ROT. Z, RAD 4.26818E-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	6.1627E-03	-1.5699E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
2	4.2420E-03	-1.5699E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
3	2.3213E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
4	4.6216E-03	-1.3267E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
5	2.7009E-03	-1.3267E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
6	7.8025E-04	-1.3267E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
7	3.0805E-03	-1.0834E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
8	1.1599E-03	-1.0834E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
9	-7.6083E-04	-1.0834E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
10	1.5394E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
11	-3.8123E-04	-8.4019E-04	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
12	-2.3019E-03	-8.4019E-04	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	1.0200E+04	-8.3202	-1596.7	-118.30	5277.7	466.59
2	7948.3	-3.8631	-1544.8	-118.30	5195.7	475.55
3	4669.2	-7.3502	-1648.1	-118.30	5479.2	472.42
4	8489.3	39.412	-1224.9	-118.30	4363.7	611.51
5	5427.9	41.895	-1122.8	-118.30	4133.9	614.39

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B								
			COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
			IF3A	02	E ZZ CL	VI0103 001	A	216 di 271

6	1589.2	39.392	-1264.9	-118.30	4528.9	616.17
7	6186.6	68.856	-1179.4	-118.30	4241.4	725.23
8	2347.8	68.125	-1076.0	-118.30	4002.3	720.09
9	-1479.2	68.316	-1218.6	-118.30	4401.3	728.91
10	3106.5	98.720	-1239.3	-118.30	4384.3	845.16
11	-744.12	95.009	-1131.2	-118.30	4137.5	832.05
12	-4434.7	97.784	-1280.5	-118.30	4550.2	847.41
MINIMUM	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

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	6.1627E-03	-1.5699E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
2	4.2420E-03	-1.5699E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
3	2.3213E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
4	4.6216E-03	-1.3267E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
5	2.7009E-03	-1.3267E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
6	7.8025E-04	-1.3267E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
7	3.0805E-03	-1.0834E-03	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
8	1.1599E-03	-1.0834E-03	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
9	-7.6083E-04	-1.0834E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
10	1.5394E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
11	-3.8123E-04	-8.4019E-04	-0.011583	-5.4055E-05	-3.4246E-04	4.2682E-04
12	-2.3019E-03	-8.4019E-04	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	1.0200E+04	-8.3202	-1596.7	-118.30	5277.7	466.59
2	7948.3	-3.8631	-1544.8	-118.30	5195.7	475.55
3	4669.2	-7.3502	-1648.1	-118.30	5479.2	472.42
4	8489.3	39.412	-1224.9	-118.30	4363.7	611.51
5	5427.9	41.895	-1122.8	-118.30	4133.9	614.39
6	1589.2	39.392	-1264.9	-118.30	4528.9	616.17
7	6186.6	68.856	-1179.4	-118.30	4241.4	725.23
8	2347.8	68.125	-1076.0	-118.30	4002.3	720.09
9	-1479.2	68.316	-1218.6	-118.30	4401.3	728.91
10	3106.5	98.720	-1239.3	-118.30	4384.3	845.16
11	-744.12	95.009	-1131.2	-118.30	4137.5	832.05
12	-4434.7	97.784	-1280.5	-118.30	4550.2	847.41
MINIMUM	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

PILE GROUP STRESS, KN/ M**2

*****	*****
1	2.1667E+04
2	2.0150E+04
3	1.9141E+04
4	1.8023E+04
5	1.5609E+04
6	1.4611E+04
7	1.6410E+04
8	1.3528E+04
9	1.4221E+04
10	1.5153E+04
11	1.3082E+04
12	1.6395E+04
MINIMUM	1.3082E+04
Pile N.	11
MAXIMUM	2.1667E+04
Pile N.	1

* 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
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APPALDATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 217 di 271

*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.5699E-03	-0.011340	-479.36	-1837.0	-12.515	-1597.5	-17.832	-289.56	5772.3	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	1.5400	7.9200	16.500	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
2	-1.5699E-03	-0.011583	-481.24	-1815.2	-12.477	-1545.4	-16.268	-272.79	4497.8	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	1.1000	7.9200	16.500	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
3	-1.5699E-03	-0.011826	-480.84	-1900.3	-12.338	-1648.4	-17.273	-294.31	2642.2	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	1.3200	7.9200	16.500	0.0000	2.8600	4.1800	22.000	0.0000	0.0000
4	-1.3267E-03	-0.011340	-611.51	-1564.1	-14.181	-1225.4	-8.2815	-199.13	4804.0	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	16.500	0.0000	2.4200	4.1800	22.000	0.0000	0.0000
5	-1.3267E-03	-0.011583	-614.39	-1497.1	-14.330	-1123.1	-6.9089	-172.92	3071.6	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.8000	16.720	0.0000	2.4200	4.1800	22.000	0.0000	0.0000
6	-1.3267E-03	-0.011826	-616.17	-1615.6	-13.988	-1265.0	-7.9881	-201.60	899.28	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	16.500	0.0000	2.4200	4.1800	22.000	0.0000	0.0000
7	-1.0834E-03	-0.011340	-725.23	-1526.1	-16.870	-1179.8	-7.0317	-188.19	3500.9	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	16.280	0.0000	17.600	4.1800	22.000	0.0000	0.0000
8	-1.0834E-03	-0.011583	-720.09	-1454.8	-17.196	-1076.1	-6.9854	-161.97	1328.6	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	9.0200	16.500	0.0000	17.820	4.1800	22.000	0.0000	0.0000
9	-1.0834E-03	-0.011826	-728.91	-1574.5	-16.721	-1218.5	-6.9748	-190.37	837.08	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	16.280	0.0000	17.600	4.1800	22.000	0.0000	0.0000
10	-8.4019E-04	-0.011340	-845.16	-1565.9	-20.269	-1239.5	-8.5628	-201.20	1757.9	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	15.840	0.0000	17.160	4.1800	22.000	0.0000	0.0000
11	-8.4019E-04	-0.011583	-832.05	-1493.4	-20.457	-1131.1	-8.4257	-173.41	421.08	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.8000	16.060	0.0000	17.380	4.1800	22.000	0.0000	0.0000
12	-8.4019E-04	-0.011826	-847.41	-1617.2	-20.166	-1280.2	-8.5459	-203.71	2509.5	7.8500E+06	7.8500E+06
x (M)	0.0000	0.0000	0.0000	8.5800	15.840	0.0000	17.160	4.1800	22.000	0.0000	0.0000
Min.	-1.5699E-03	-0.011826	-847.41	-1900.3	-20.457	-1648.4	-17.832	-294.31	421.08	7.8500E+06	7.8500E+06
Pile N.	1	3	12	3	11	3	1	3	11	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	6.7351E-05	8.9982E-05	35.885	5277.7	65.349	340.13	26.577	185.44	2.1667E+04	7.8500E+06	7.8500E+06
x (M)	9.4600	13.420	14.300	0.0000	6.8200	11.880	13.200	16.060	0.0000	0.0000	0.0000
2	6.8042E-05	8.3069E-05	35.623	5195.7	63.555	333.95	26.026	183.49	2.0150E+04	7.8500E+06	7.8500E+06
x (M)	9.6800	13.640	14.300	0.0000	6.8200	12.100	13.200	16.060	0.0000	0.0000	0.0000
3	6.6037E-05	8.9551E-05	35.327	5479.2	64.362	351.46	26.339	190.75	1.9141E+04	7.8500E+06	7.8500E+06
x (M)	9.4600	13.640	14.300	0.0000	6.8200	11.880	13.200	16.060	0.0000	0.0000	0.0000
4	1.0919E-04	6.0018E-05	44.294	4363.7	68.014	276.29	24.191	152.29	1.8023E+04	7.8500E+06	7.8500E+06
x (M)	8.5800	14.740	14.080	0.0000	5.5000	12.980	13.200	16.060	0.0000	0.0000	0.0000
5	1.1642E-04	5.3371E-05	45.162	4133.9	65.626	261.52	23.679	138.02	1.5609E+04	7.8500E+06	7.8500E+06
x (M)	8.5800	15.180	14.300	0.0000	5.5000	13.640	13.200	16.060	0.0000	0.0000	0.0000
6	1.0801E-04	6.0201E-05	43.804	4528.9	67.074	283.45	24.017	155.42	1.4611E+04	7.8500E+06	7.8500E+06
x (M)	8.5800	14.740	14.080	0.0000	5.5000	13.200	13.200	16.060	0.0000	0.0000	0.0000
7	1.6874E-04	5.6793E-05	56.207	4241.4	81.998	266.41	24.557	146.32	1.6410E+04	7.8500E+06	7.8500E+06
x (M)	7.4800	14.740	13.860	0.0000	4.1800	13.200	13.200	16.060	0.0000	0.0000	0.0000
8	1.8147E-04	5.0368E-05	58.238	4002.3	78.859	255.13	24.686	130.35	1.3528E+04	7.8500E+06	7.8500E+06
x (M)	7.4800	15.180	13.860	0.0000	4.1800	13.860	13.200	16.060	0.0000	0.0000	0.0000
9	1.6809E-04	5.6752E-05	55.936	4401.3	81.001	274.37	24.512	148.82	1.4221E+04	7.8500E+06	7.8500E+06
x (M)	7.4800	14.960	13.860	0.0000	4.1800	13.420	13.200	16.060	0.0000	0.0000	0.0000
10	2.4370E-04	5.9466E-05	68.309	4384.3	104.30	275.66	24.631	152.88	1.5153E+04	7.8500E+06	7.8500E+06
x (M)	6.3800	14.520	13.420	0.0000	2.8600	12.980	13.200	16.060	0.0000	0.0000	0.0000
11	2.6078E-04	5.2419E-05	71.642	4137.5	99.578	259.92	25.665	137.70	1.3082E+04	7.8500E+06	7.8500E+06
x (M)	6.3800	15.180	13.640	0.0000	2.8600	13.640	13.200	16.060	0.0000	0.0000	0.0000
12	2.4390E-04	5.9529E-05	68.324	4550.2	103.17	282.54	24.759	155.97	1.6395E+04	7.8500E+06	7.8500E+06
x (M)	6.3800	14.740	13.420	0.0000	2.8600	13.200	13.200	16.060	0.0000	0.0000	0.0000
Max.	2.6078E-04	8.9982E-05	71.642	5479.2	104.30	351.46	26.577	190.75	2.1667E+04	7.8500E+06	7.8500E+06
Pile N.	11	1	11	3	10	3	1	3	1	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	0.5845	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	0.4955	1.0000
8	0.4951	1.0000
9	0.8053	1.0000
10	0.5845	1.0000
11	0.5791	1.0000
12	0.8661	1.0000

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 218 di 271

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 42747.9	HOR. LOAD Y, KN 19372.5	HOR. LOAD Z, KN 10.9860
MOMENT X, KN- M -3579.89	MOMENT Y, KN- M 1523.81	MOMENT Z, KN- M -1523.81

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.76751E-03	HORIZONTAL Y, M 0.0147949	HORIZONTAL Z, M 3.99209E-05
ANGLE ROT. X, RAD -5.17212E-05	ANGLE ROT. Y, RAD 2.59329E-06	ANGLE ROT. Z, RAD -2.31128E-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	7.0992E-04	0.014446	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
2	1.7500E-03	0.014446	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
3	2.7901E-03	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
4	7.2159E-04	0.014679	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
5	1.7617E-03	0.014679	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
6	2.8017E-03	0.014679	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
7	7.3326E-04	0.014911	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
8	1.7733E-03	0.014911	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
9	2.8134E-03	0.014911	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
10	7.4493E-04	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
11	1.7850E-03	0.015144	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
12	2.8251E-03	0.015144	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
MINIMUM	7.0992E-04	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.8251E-03	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	12	10	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	1448.6	1513.0	29.348	-113.19	-114.35	5791.8
2	3527.3	1501.4	3.2802	-113.19	-10.406	5768.5
3	5606.1	1940.1	-28.882	-113.19	109.34	6884.8
4	1471.9	1378.1	26.306	-113.19	-106.29	5470.6
5	3550.7	1374.8	2.9222	-113.19	-9.4853	5468.7
6	5629.4	1871.5	-27.445	-113.19	105.79	6758.9
7	1495.2	1393.5	26.159	-113.19	-105.93	5548.2
8	3574.0	1390.2	2.9036	-113.19	-9.4414	5546.3
9	5652.7	1891.6	-27.287	-113.19	105.43	6851.2
10	1518.6	1563.6	28.846	-113.19	-113.15	6038.3
11	3597.3	1551.7	3.2171	-113.19	-10.259	6014.1
12	5676.1	2003.0	-28.382	-113.19	108.21	7169.4
MINIMUM	1448.6	1374.8	-28.882	-113.19	-114.35	5468.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5676.1	2003.0	29.348	-113.19	109.34	7169.4
Pile N.	12	12	1	1	3	12

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	7.0992E-04	0.014446	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
2	1.7500E-03	0.014446	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
3	2.7901E-03	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
4	7.2159E-04	0.014679	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
5	1.7617E-03	0.014679	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
6	2.8017E-03	0.014679	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
7	7.3326E-04	0.014911	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
8	1.7733E-03	0.014911	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
9	2.8134E-03	0.014911	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 219 di 271

10	7.4493E-04	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
11	1.7850E-03	0.015144	3.9921E-05	-5.1721E-05	2.5933E-06	-2.3113E-04
12	2.8251E-03	0.015144	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
MINIMUM	7.0992E-04	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.8251E-03	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	12	10	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	1448.6	1513.0	29.348	-113.19	-114.35	5791.8
2	3527.3	1501.4	3.2802	-113.19	-10.406	5768.5
3	5606.1	1940.1	-28.882	-113.19	109.34	6884.8
4	1471.9	1378.1	26.306	-113.19	-106.29	5470.6
5	3550.7	1374.8	2.9222	-113.19	-9.4853	5468.7
6	5629.4	1871.5	-27.445	-113.19	105.79	6758.9
7	1495.2	1393.5	26.159	-113.19	-105.93	5548.2
8	3574.0	1390.2	2.9036	-113.19	-9.4414	5546.3
9	5652.7	1891.6	-27.287	-113.19	105.43	6851.2
10	1518.6	1563.6	28.846	-113.19	-113.15	6038.3
11	3597.3	1551.7	3.2171	-113.19	-10.259	6014.1
12	5676.1	2003.0	-28.382	-113.19	108.21	7169.4
MINIMUM	1448.6	1374.8	-28.882	-113.19	-114.35	5468.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5676.1	2003.0	29.348	-113.19	109.34	7169.4
Pile N.	12	12	1	1	3	12

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.8199E+04
2	1.9302E+04
3	2.3829E+04
4	1.7248E+04
5	1.8415E+04
6	2.3465E+04
7	1.7494E+04
8	1.8661E+04
9	2.3755E+04
10	1.8978E+04
11	2.0078E+04
12	2.4723E+04
MINIMUM	1.7248E+04
Pile N.	4
MAXIMUM	2.4723E+04
Pile N.	12

* 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	-6.9361E-05	-1.3022E-06	-5791.8	-114.35	-352.12	-6.7454	-181.38	-3.4752	819.74	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.420	13.640	16.060	16.060	22.000	0.0000	0.0000
2	-6.9365E-05	-2.0713E-07	-5768.5	-10.406	-351.65	-0.8974	-180.53	-0.4426	1996.1	7.8500E+06	7.8500E+06
x(M)	14.960	14.520	0.0000	0.0000	13.640	12.980	16.060	16.060	22.000	0.0000	0.0000
3	-9.5473E-05	-1.9306E-04	-6884.8	-31.553	-431.22	-28.891	-221.14	-4.6449	3172.4	7.8500E+06	7.8500E+06
x(M)	13.860	0.2200	0.0000	8.5800	12.320	0.0000	16.060	4.1800	22.000	0.0000	0.0000
4	-6.4560E-05	-1.1973E-06	-5470.6	-106.29	-341.83	-6.4654	-162.71	-3.0575	832.94	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	13.860	14.080	16.060	16.060	22.000	0.0000	0.0000
5	-6.4928E-05	-1.8651E-07	-5468.7	-9.4853	-342.46	-0.8269	-162.91	-0.4026	2009.3	7.8500E+06	7.8500E+06
x(M)	15.400	14.960	0.0000	0.0000	13.860	13.420	16.060	16.060	22.000	0.0000	0.0000
6	-9.0106E-05	-1.9307E-04	-6758.9	-30.652	-422.33	-27.453	-217.75	-4.2987	3185.6	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000
7	-6.5572E-05	-1.1971E-06	-5548.2	-105.93	-347.65	-6.4698	-164.46	-3.0407	846.14	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
8	-6.5948E-05	-1.8598E-07	-5546.3	-9.4414	-348.18	-0.8261	-164.66	-0.4003	2022.5	7.8500E+06	7.8500E+06
x(M)	15.400	14.960	0.0000	0.0000	13.860	13.420	16.060	16.060	22.000	0.0000	0.0000
9	-9.0887E-05	-1.9307E-04	-6851.2	-30.596	-428.67	-27.295	-220.09	-4.2570	3198.8	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000
10	-7.2070E-05	-1.2927E-06	-6038.3	-113.15	-369.58	-6.7465	-187.25	-3.4164	859.34	7.8500E+06	7.8500E+06
x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
11	-7.2051E-05	-2.0385E-07	-6014.1	-10.259	-369.35	-0.8925	-186.34	-0.4349	2035.7	7.8500E+06	7.8500E+06
x(M)	14.960	14.520	0.0000	0.0000	13.640	12.980	16.060	16.060	22.000	0.0000	0.0000
12	-9.7737E-05	-1.9306E-04	-7169.4	-31.397	-451.05	-28.391	-228.58	-4.5112	3212.0	7.8500E+06	7.8500E+06
x(M)	13.860	0.2200	0.0000	8.5800	12.320	0.0000	16.060	4.1800	22.000	0.0000	0.0000
Min.	-9.7737E-05	-1.9307E-04	-7169.4	-114.35	-451.05	-28.891	-228.58	-4.6449	819.74	7.8500E+06	7.8500E+06
Pile N.	12	6	12	1	12	3	12	3	1	1	1

* MAXIMUM VALUES AND LOCATIONS *

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 220 di 271

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	0.014446	2.7267E-04	1958.1	37.287	1513.1	29.351	223.64	4.3006	1.8199E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.1800	4.8400	0.0000	0.0000	0.0000
2	0.014446	3.9921E-05	1953.6	5.1348	1501.7	3.2807	221.68	0.5332	1.9302E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.3600	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
3	0.014446	1.2349E-06	2278.0	109.34	1940.7	6.0397	323.31	3.2283	2.3829E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
4	0.014679	2.7267E-04	1869.8	35.028	1378.2	26.308	193.57	3.6622	1.7248E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	0.0000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
5	0.014679	3.9921E-05	1871.3	4.8256	1375.1	2.9226	193.42	0.4545	1.8415E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	8.5800	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
6	0.014679	1.1528E-06	2247.6	105.79	1872.0	5.8157	304.14	3.1139	2.3465E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
7	0.014911	2.7267E-04	1897.1	34.972	1393.6	26.161	195.04	3.6297	1.7494E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.2400	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
8	0.014911	3.9921E-05	1898.7	4.8155	1390.5	2.9041	194.89	0.4500	1.8661E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	8.5800	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
9	0.014911	1.1464E-06	2279.1	105.43	1892.1	5.8093	306.15	3.0960	2.3755E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
10	0.015144	2.7267E-04	2044.5	37.097	1563.8	28.849	228.75	4.1881	1.8978E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	0.0000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
11	0.015144	3.9921E-05	2039.6	5.1003	1552.0	3.2176	226.79	0.5175	2.0078E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.3600	0.0000	0.0000	4.8400	4.1800	0.0000	0.0000	0.0000
12	0.015144	1.2114E-06	2376.6	108.21	2003.5	6.0217	329.79	3.1757	2.4723E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
Max.	0.015144	2.7267E-04	2376.6	109.34	2003.5	29.351	329.79	4.3006	2.4723E+04	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	1	12	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	0.8661	1.0000
2	0.8051	1.0000
3	0.8658	1.0000
4	0.5794	1.0000
5	0.4962	1.0000
6	0.5790	1.0000
7	0.5448	1.0000
8	0.4626	1.0000
9	0.5444	1.0000
10	0.5849	1.0000
11	0.4967	1.0000
12	0.5845	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
46799.7	115.110	-15505.3
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-4662.91	-39552.5	39552.5

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.94396E-03	-3.42630E-04	-0.0107190
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-5.65600E-05	-1.60052E-04	1.17908E-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
------------	------------	------------	------------	------------	------------	------------

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 221 di 271

*****	*****	*****	*****	*****	*****	*****
1	3.5549E-03	-7.2441E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
2	3.0243E-03	-7.2441E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
3	2.4937E-03	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
4	2.8347E-03	-4.6989E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
5	2.3041E-03	-4.6989E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
6	1.7735E-03	-4.6989E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
7	2.1144E-03	-2.1537E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
8	1.5838E-03	-2.1537E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
9	1.0533E-03	-2.1537E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
10	1.3942E-03	3.9150E-05	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
11	8.6361E-04	3.9150E-05	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
12	3.3302E-04	3.9150E-05	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
MINIMUM	3.3302E-04	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.5549E-03	3.9150E-05	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	1	10	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	6969.1	-49.778	-1592.8	-123.78	5417.0	-36.191
2	6074.2	-45.939	-1544.4	-123.78	5349.9	-27.868
3	5013.8	-48.541	-1645.6	-123.78	5637.6	-33.174
4	5695.2	-2.2677	-1223.2	-123.78	4510.7	119.82
5	4634.7	-0.1937	-1125.6	-123.78	4300.1	123.73
6	3574.3	-1.9162	-1265.0	-123.78	4698.7	120.95
7	4255.7	28.894	-1176.6	-123.78	4388.7	239.38
8	3195.3	27.729	-1077.2	-123.78	4169.7	234.86
9	2134.8	28.734	-1217.1	-123.78	4572.6	239.23
10	2816.2	61.202	-1233.4	-123.78	4529.4	363.09
11	1755.8	56.665	-1128.9	-123.78	4301.6	349.87
12	680.61	60.521	-1275.6	-123.78	4718.1	361.62
MINIMUM	680.61	-49.778	-1645.6	-123.78	4169.7	-36.191
Pile N.	12	1	3	1	8	1
MAXIMUM	6969.1	61.202	-1077.2	-123.78	5637.6	363.09
Pile N.	1	10	8	1	3	10

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	3.5549E-03	-7.2441E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
2	3.0243E-03	-7.2441E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
3	2.4937E-03	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
4	2.8347E-03	-4.6989E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
5	2.3041E-03	-4.6989E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
6	1.7735E-03	-4.6989E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
7	2.1144E-03	-2.1537E-04	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
8	1.5838E-03	-2.1537E-04	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
9	1.0533E-03	-2.1537E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
10	1.3942E-03	3.9150E-05	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
11	8.6361E-04	3.9150E-05	-0.010719	-5.6560E-05	-1.6005E-04	1.1791E-04
12	3.3302E-04	3.9150E-05	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
MINIMUM	3.3302E-04	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.5549E-03	3.9150E-05	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	1	10	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	6969.1	-49.778	-1592.8	-123.78	5417.0	-36.191
2	6074.2	-45.939	-1544.4	-123.78	5349.9	-27.868
3	5013.8	-48.541	-1645.6	-123.78	5637.6	-33.174
4	5695.2	-2.2677	-1223.2	-123.78	4510.7	119.82
5	4634.7	-0.1937	-1125.6	-123.78	4300.1	123.73
6	3574.3	-1.9162	-1265.0	-123.78	4698.7	120.95
7	4255.7	28.894	-1176.6	-123.78	4388.7	239.38
8	3195.3	27.729	-1077.2	-123.78	4169.7	234.86
9	2134.8	28.734	-1217.1	-123.78	4572.6	239.23
10	2816.2	61.202	-1233.4	-123.78	4529.4	363.09
11	1755.8	56.665	-1128.9	-123.78	4301.6	349.87
12	680.61	60.521	-1275.6	-123.78	4718.1	361.62
MINIMUM	680.61	-49.778	-1645.6	-123.78	4169.7	-36.191
Pile N.	12	1	3	1	8	1
MAXIMUM	6969.1	61.202	-1077.2	-123.78	5637.6	363.09
Pile N.	1	10	8	1	3	10

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 223 di 271

Max. Pile N.	2.3040E-04 11	8.2111E-05 3	41.761 12	5637.6 3	61.217 10	333.95 3	9.6539 1	187.33 3	2.0195E+04 1	7.8500E+06 1	7.8500E+06 1
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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	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4955	1.0000
8	0.4951	1.0000
9	0.8053	1.0000
10	0.5845	1.0000
11	0.5791	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 48151.6	HOR. LOAD Y, KN 19812.7	HOR. LOAD Z, KN 31.4860
MOMENT X, KN- M -3455.99	MOMENT Y, KN- M 821.370	MOMENT Z, KN- M -821.370

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.99281E-03	HORIZONTAL Y, M 0.0153112	HORIZONTAL Z, M 5.03642E-05
ANGLE ROT. X, RAD -5.03968E-05	ANGLE ROT. Y, RAD 1.58939E-06	ANGLE ROT. Z, RAD -2.35455E-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	9.2254E-04	0.014971	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
2	1.9821E-03	0.014971	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
3	3.0416E-03	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
4	9.2969E-04	0.015198	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
5	1.9892E-03	0.015198	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
6	3.0488E-03	0.015198	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
7	9.3684E-04	0.015425	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
8	1.9964E-03	0.015425	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
9	3.0559E-03	0.015425	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
10	9.4399E-04	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
11	2.0035E-03	0.015651	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
12	3.0631E-03	0.015651	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1549.1	29.905	-110.29	-118.29	5966.3
2	3991.2	1537.2	4.8195	-110.29	-17.740	5942.3
3	6108.8	1985.1	-25.669	-110.29	96.870	7087.3
4	1887.8	1410.5	26.838	-110.29	-110.11	5632.4
5	4005.5	1407.0	4.3287	-110.29	-16.447	5630.4
6	6123.1	1913.9	-24.396	-110.29	93.718	6952.7
7	1902.1	1425.3	26.698	-110.29	-109.77	5707.4

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 224 di 271

8	4019.8	1421.9	4.3049	-110.29	-16.389	5705.4
9	6137.4	1933.3	-24.264	-110.29	93.415	7042.2
10	1916.4	1598.0	29.429	-110.29	-117.15	6205.1
11	4034.1	1585.7	4.7390	-110.29	-17.549	6180.2
12	6151.7	2045.7	-25.249	-110.29	95.916	7362.6
MINIMUM	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

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	9.2254E-04	0.014971	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
2	1.9821E-03	0.014971	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
3	3.0416E-03	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
4	9.2969E-04	0.015198	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
5	1.9892E-03	0.015198	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
6	3.0488E-03	0.015198	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
7	9.3684E-04	0.015425	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
8	1.9964E-03	0.015425	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
9	3.0559E-03	0.015425	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
10	9.4399E-04	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
11	2.0035E-03	0.015651	5.0364E-05	-5.0397E-05	1.5894E-06	-2.3546E-04
12	3.0631E-03	0.015651	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1549.1	29.905	-110.29	-118.29	5966.3
2	3991.2	1537.2	4.8195	-110.29	-17.740	5942.3
3	6108.8	1985.1	-25.669	-110.29	96.870	7087.3
4	1887.8	1410.5	26.838	-110.29	-110.11	5632.4
5	4005.5	1407.0	4.3287	-110.29	-16.447	5630.4
6	6123.1	1913.9	-24.396	-110.29	93.718	6952.7
7	1902.1	1425.3	26.698	-110.29	-109.77	5707.4
8	4019.8	1421.9	4.3049	-110.29	-16.389	5705.4
9	6137.4	1933.3	-24.264	-110.29	93.415	7042.2
10	1916.4	1598.0	29.429	-110.29	-117.15	6205.1
11	4034.1	1585.7	4.7390	-110.29	-17.549	6180.2
12	6151.7	2045.7	-25.249	-110.29	95.916	7362.6
MINIMUM	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

PILE GROUP STRESS, KN/ M**2

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.8963E+04
2	2.0085E+04
3	2.4721E+04
4	1.7969E+04
5	1.9158E+04
6	2.4325E+04
7	1.8202E+04
8	1.9391E+04
9	2.4601E+04
10	1.9703E+04
11	2.0824E+04
12	2.5571E+04
MINIMUM	1.7969E+04
Pile N.	4
MAXIMUM	2.5571E+04
Pile N.	12

* 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	-7.1520E-05	-1.3167E-06	-5966.3	-118.29	-365.08	-6.9217	-185.76	-3.5189	1060.2	7.8500E+06	7.8500E+06

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 225 di 271

x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
2	-7.1517E-05	-2.4407E-07	-5942.3	-17.740	-364.87	-1.1876	-184.87	-0.5992	2258.6	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
3	-9.7430E-05	-1.7647E-04	-7087.3	-28.596	-446.26	-25.677	-226.59	-4.1142	3456.9	7.8500E+06	7.8500E+06
x(M)	13.860	0.2200	0.0000	8.5800	12.320	0.0000	16.060	4.1800	22.000	0.0000	0.0000
4	-6.6885E-05	-1.2166E-06	-5632.4	-110.11	-354.70	-6.6554	-166.55	-3.0923	1068.3	7.8500E+06	7.8500E+06
x(M)	15.400	15.620	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
5	-6.7276E-05	-2.2388E-07	-5630.4	-16.447	-355.24	-1.1275	-166.75	-0.5360	2266.6	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	13.860	16.060	16.060	22.000	0.0000	0.0000
6	-9.2046E-05	-1.7648E-04	-6952.7	-27.779	-436.56	-24.404	-222.84	-3.8094	3465.0	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000
7	-6.7859E-05	-1.2181E-06	-5707.4	-109.77	-360.45	-6.6594	-168.20	-3.0758	1076.4	7.8500E+06	7.8500E+06
x(M)	15.400	15.620	0.0000	0.0000	14.080	14.080	16.060	16.060	22.000	0.0000	0.0000
8	-6.8258E-05	-2.2384E-07	-5705.4	-16.389	-361.00	-1.1277	-168.40	-0.5331	2274.7	7.8500E+06	7.8500E+06
x(M)	15.400	15.400	0.0000	0.0000	14.080	13.860	16.060	16.060	22.000	0.0000	0.0000
9	-9.2792E-05	-1.7648E-04	-7042.2	-27.732	-442.72	-24.272	-225.08	-3.7779	3473.1	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.8400	22.000	0.0000	0.0000
10	-7.4126E-05	-1.3123E-06	-6205.1	-117.15	-382.33	-6.9220	-191.39	-3.4626	1084.5	7.8500E+06	7.8500E+06
x(M)	14.960	15.180	0.0000	0.0000	13.640	13.640	16.060	16.060	22.000	0.0000	0.0000
11	-7.4236E-05	-2.4226E-07	-6180.2	-17.549	-382.09	-1.1852	-190.48	-0.5895	2282.8	7.8500E+06	7.8500E+06
x(M)	15.180	14.960	0.0000	0.0000	13.640	13.420	16.060	16.060	22.000	0.0000	0.0000
12	-9.9829E-05	-1.7648E-04	-7362.6	-28.457	-465.45	-25.257	-233.84	-4.0026	3481.2	7.8500E+06	7.8500E+06
x(M)	14.080	0.2200	0.0000	8.5800	12.540	0.0000	16.060	4.1800	22.000	0.0000	0.0000
Min.	-9.9829E-05	-1.7648E-04	-7362.6	-118.29	-465.45	-25.677	-233.84	-4.1142	1060.2	7.8500E+06	7.8500E+06
Pile N.	12	6	12	1	12	3	12	3	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	0.014971	2.7715E-04	2023.1	37.959	1549.3	29.908	227.38	4.3330	1.8963E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
2	0.014971	5.0364E-05	2018.3	6.6561	1537.6	4.8205	225.44	0.7249	2.0085E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
3	0.014971	1.1200E-06	2352.4	96.870	1985.7	5.4774	328.10	2.8802	2.4721E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
4	0.015198	2.7715E-04	1930.2	35.691	1410.6	26.841	196.75	3.6916	1.7969E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.4600	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
5	0.015198	5.0364E-05	1931.8	6.2655	1407.3	4.3296	196.59	0.6205	1.9158E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
6	0.015198	1.0470E-06	2317.9	93.718	1914.5	5.2739	308.51	2.7792	2.4325E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
7	0.015425	2.7715E-04	1956.4	35.643	1425.5	26.701	198.15	3.6608	1.8202E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.4600	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
8	0.015425	5.0364E-05	1958.0	6.2541	1422.2	4.3058	198.00	0.6153	1.9391E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.2400	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
9	0.015425	1.0417E-06	2348.5	93.415	1933.9	5.2684	310.42	2.7640	2.4601E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.300	8.3600	0.0000	0.0000	12.760	4.1800	16.060	0.0000	0.0000	0.0000
10	0.015651	2.7715E-04	2106.7	37.769	1598.2	29.432	232.32	4.2263	1.9703E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	9.0200	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
11	0.015651	5.0364E-05	2101.6	6.6192	1586.1	4.7400	230.33	0.7052	2.0824E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	9.0200	8.8000	0.0000	0.0000	4.8400	4.8400	0.0000	0.0000	0.0000
12	0.015651	1.0997E-06	2447.5	95.916	2046.3	5.4608	334.29	2.8372	2.5571E+04	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.3600	0.0000	0.0000	12.540	4.1800	16.060	0.0000	0.0000	0.0000
Max.	0.015651	2.7715E-04	2447.5	96.870	2046.3	29.908	334.29	4.3330	2.5571E+04	7.8500E+06	7.8500E+06
Pile N.	10	1	12	3	12	1	12	1	12	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	0.5845	1.0000
2	0.4981	1.0000
3	0.5907	1.0000
4	0.5436	1.0000
5	0.4631	1.0000
6	0.5501	1.0000
7	0.5777	1.0000
8	0.4961	1.0000
9	0.5838	1.0000
10	0.8619	1.0000
11	0.8019	1.0000
12	0.8661	1.0000

* TABLE L * COMPUTATION ON PILE CAP

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 226 di 271

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 44472.2	HOR. LOAD Y, KN 115.110	HOR. LOAD Z, KN 964.294
MOMENT X, KN- M 1079.95	MOMENT Y, KN- M 59.5534	MOMENT Z, KN- M -59.5534

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M 1.83940E-03	HORIZONTAL Y, M 7.22733E-05	HORIZONTAL Z, M 5.39756E-04
ANGLE ROT. X,RAD 1.11190E-05	ANGLE ROT. Y,RAD 5.55174E-06	ANGLE ROT. Z,RAD -1.40815E-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	1.7956E-03	1.4733E-04	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
2	1.8019E-03	1.4733E-04	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
3	1.8083E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
4	1.8206E-03	9.7291E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
5	1.8269E-03	9.7291E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
6	1.8332E-03	9.7291E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
7	1.8456E-03	4.7256E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
8	1.8519E-03	4.7256E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
9	1.8582E-03	4.7256E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
10	1.8705E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
11	1.8769E-03	-2.7799E-06	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
12	1.8832E-03	-2.7799E-06	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	21.373	70.582	24.334	-244.36	74.315
2	3631.1	19.397	70.868	24.334	-253.77	69.585
3	3643.8	21.509	86.151	24.334	-299.05	74.635
4	3668.4	13.258	67.534	24.334	-237.13	46.187
5	3681.1	12.022	67.795	24.334	-246.26	43.195
6	3693.7	13.355	82.512	24.334	-290.43	46.417
7	3718.3	6.2984	70.074	24.334	-243.17	20.795
8	3731.0	5.7278	70.689	24.334	-253.34	19.442
9	3743.7	6.3397	85.539	24.334	-297.62	20.892
10	3768.3	-1.4047	89.341	24.334	-286.92	-6.3979
11	3780.9	-1.3574	94.591	24.334	-308.79	-6.2818
12	3793.6	-1.4079	108.62	24.334	-350.00	-6.4057
MINIMUM	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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	1.7956E-03	1.4733E-04	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
2	1.8019E-03	1.4733E-04	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
3	1.8083E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
4	1.8206E-03	9.7291E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
5	1.8269E-03	9.7291E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
6	1.8332E-03	9.7291E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
7	1.8456E-03	4.7256E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
8	1.8519E-03	4.7256E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
9	1.8582E-03	4.7256E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
10	1.8705E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
11	1.8769E-03	-2.7799E-06	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 227 di 271

12	1.8832E-03	-2.7799E-06	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	21.373	70.582	24.334	-244.36	74.315
2	3631.1	19.397	70.868	24.334	-253.77	69.585
3	3643.8	21.509	86.151	24.334	-299.05	74.635
4	3668.4	13.258	67.534	24.334	-237.13	46.187
5	3681.1	12.022	67.795	24.334	-246.26	43.195
6	3693.7	13.355	82.512	24.334	-290.43	46.417
7	3718.3	6.2984	70.074	24.334	-243.17	20.795
8	3731.0	5.7278	70.689	24.334	-253.34	19.442
9	3743.7	6.3397	85.539	24.334	-297.62	20.892
10	3768.3	-1.4047	89.341	24.334	-286.92	-6.3979
11	3780.9	-1.3574	94.591	24.334	-308.79	-6.2818
12	3793.6	-1.4079	108.62	24.334	-350.00	-6.4057
MINIMUM	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

1	2813.8
2	2844.2
3	2986.6
4	2800.6
5	2833.1
6	2972.6
7	2836.3
8	2873.6
9	3013.5
10	2993.4
11	3066.1
12	3196.9
MINIMUM	2800.6
Pile N.	4
MAXIMUM	3196.9
Pile N.	12

* 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	-9.2054E-07	-3.0729E-06	-74.315	-244.36	-3.8389	-12.733	-2.4301	-8.0456	2047.6	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.760	12.760	16.060	16.060	22.000	0.0000	0.0000
2	-7.8215E-07	-2.8703E-06	-69.585	-253.77	-3.5180	-12.877	-2.2718	-8.3120	2054.8	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	13.200	13.200	16.060	16.060	22.000	0.0000	0.0000
3	-9.3052E-07	-3.7239E-06	-74.635	-299.05	-3.8597	-15.454	-2.4375	-9.7613	2062.0	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.760	12.760	16.060	16.060	22.000	0.0000	0.0000
4	-5.7048E-07	-2.8515E-06	-46.187	-237.13	-2.4250	-12.251	-1.5484	-7.8452	2075.9	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
5	-4.8569E-07	-2.6716E-06	-43.195	-246.26	-2.2304	-12.459	-1.4243	-7.9545	2083.1	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.420	13.420	16.060	16.060	22.000	0.0000	0.0000
6	-5.7682E-07	-3.4599E-06	-46.417	-290.43	-2.4407	-14.882	-1.5556	-9.5314	2090.2	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.760	12.980	16.060	16.060	22.000	0.0000	0.0000
7	-3.0784E-07	-3.0362E-06	-20.795	-243.17	-1.1960	-12.657	-0.7418	-8.0179	2104.1	7.8500E+06	7.8500E+06
x(M)	14.080	14.300	0.0000	0.0000	12.540	12.760	16.060	16.060	22.000	0.0000	0.0000
8	-2.6331E-07	-2.8595E-06	-19.442	-253.34	-1.1029	-12.852	-0.7006	-8.2947	2111.3	7.8500E+06	7.8500E+06
x(M)	14.520	14.740	0.0000	0.0000	12.980	13.200	16.060	16.060	22.000	0.0000	0.0000
9	-3.1154E-07	-3.6807E-06	-20.892	-297.62	-1.2025	-15.364	-0.7438	-9.7293	2118.5	7.8500E+06	7.8500E+06
x(M)	14.080	14.300	0.0000	0.0000	12.540	12.760	16.060	16.060	22.000	0.0000	0.0000
10	-4.2164E-06	-4.6444E-06	-0.8480	-286.92	-1.4050	-15.415	-0.2211	-7.9697	2132.4	7.8500E+06	7.8500E+06
x(M)	2.2000	13.200	9.2400	0.0000	0.0000	11.440	5.0600	16.060	22.000	0.0000	0.0000
11	-4.2444E-06	-4.7252E-06	-0.8300	-308.79	-1.3577	-16.440	-0.2104	-9.0028	2139.6	7.8500E+06	7.8500E+06
x(M)	2.4200	13.420	9.4600	0.0000	0.0000	11.660	5.0600	16.060	22.000	0.0000	0.0000
12	-4.2147E-06	-5.5975E-06	-0.8492	-350.00	-1.4082	-18.652	-0.2219	-9.6393	2146.7	7.8500E+06	7.8500E+06
x(M)	2.2000	13.200	9.2400	0.0000	0.0000	11.440	5.0600	16.060	22.000	0.0000	0.0000
Min.	-4.2444E-06	-5.5975E-06	-74.635	-350.00	-3.8597	-18.652	-2.4375	-9.7613	2047.6	7.8500E+06	7.8500E+06
Pile N.	11	12	3	12	3	12	3	3	1	1	1

* MAXIMUM VALUES AND LOCATIONS *

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
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APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 228 di 271

	y-Dir M	z-Dir M	z-Dir KN- M	y-Dir KN- M	y-Dir KN	z-Dir KN	y-Dir KN/ M	z-Dir KN/ M	STRESS KN/ M**2	z-Dir KN- M**2	y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4733E-04	4.8972E-04	22.119	73.420	21.377	70.594	3.5792	11.841	2813.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
2	1.4733E-04	5.3976E-04	20.772	76.057	19.401	70.881	3.1471	11.506	2844.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.3600	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
3	1.4733E-04	5.8979E-04	22.208	88.917	21.512	86.166	3.6094	14.455	2986.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
4	9.7291E-05	4.8972E-04	14.144	71.353	13.261	67.546	2.1991	11.164	2800.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
5	9.7291E-05	5.3976E-04	13.277	73.880	12.024	67.808	1.9325	10.849	2833.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.5800	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
6	9.7291E-05	5.8979E-04	14.211	86.462	13.357	82.527	2.2204	13.646	2972.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
7	4.7256E-05	4.8972E-04	6.9686	73.090	6.2994	70.087	1.0755	11.729	2836.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
8	4.7256E-05	5.3976E-04	6.5618	75.940	5.7288	70.702	0.9496	11.469	2873.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.3600	0.0000	0.0000	4.4000	4.6200	0.0000	0.0000	0.0000
9	4.7256E-05	5.8979E-04	6.9974	88.521	6.3408	85.554	1.0847	14.320	3013.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
10	2.6774E-08	4.8972E-04	6.3979	85.512	0.1661	89.356	0.1189	16.180	2993.4	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.4800	13.420	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
11	2.5278E-08	5.3976E-04	6.2818	91.660	0.1629	94.608	0.1176	16.877	3066.1	7.8500E+06	7.8500E+06
x(M)	14.960	0.0000	0.0000	7.7000	13.420	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
12	2.6867E-08	5.8979E-04	6.4057	103.32	0.1664	108.64	0.1189	19.657	3196.9	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.4800	13.260	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
Max.	1.4733E-04	5.8979E-04	22.208	103.32	21.512	108.64	3.6094	19.657	3196.9	7.8500E+06	7.8500E+06
Pile N.	1	3	3	12	3	12	3	12	12	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	0.5845	1.0000
2	0.5749	1.0000
3	0.8533	1.0000
4	0.4983	1.0000
5	0.4934	1.0000
6	0.7934	1.0000
7	0.5004	1.0000
8	0.4952	1.0000
9	0.7947	1.0000
10	0.6031	1.0000
11	0.5935	1.0000
12	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
51231.8	3071.91	736.006
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
593.586	3851.52	-3851.52

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.12124E-03	1.77898E-03	4.24718E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
3.77757E-06	1.03332E-05	-4.31540E-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	1.8573E-03	1.8045E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05

APPALTATORE:			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
Conorzio	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 SPALLA A E SPALLA B			IF3A	02	E ZZ CL	VI0103 001	A	229 di 271

2	2.0515E-03	1.8045E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
3	2.2457E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
4	1.9038E-03	1.7875E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
5	2.0980E-03	1.7875E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
6	2.2922E-03	1.7875E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
7	1.9503E-03	1.7705E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
8	2.1445E-03	1.7705E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
9	2.3387E-03	1.7705E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
10	1.9968E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
11	2.1910E-03	1.7535E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
12	2.3852E-03	1.7535E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
MINIMUM	1.8573E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3852E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	12	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	3741.8	247.94	55.710	8.2672	-185.93	830.77
2	4129.9	245.34	57.652	8.2672	-193.61	824.85
3	4518.0	312.95	76.750	8.2672	-240.12	977.80
4	3834.7	222.29	50.458	8.2672	-173.47	766.87
5	4222.8	220.87	52.441	8.2672	-181.21	763.62
6	4611.0	296.16	73.385	8.2672	-232.74	937.47
7	3927.7	220.53	50.587	8.2672	-173.78	759.74
8	4315.8	219.03	52.553	8.2672	-181.49	756.30
9	4703.9	293.37	73.456	8.2672	-232.91	927.88
10	4020.6	244.92	56.786	8.2672	-188.46	814.49
11	4408.7	242.43	58.784	8.2672	-196.28	808.86
12	4796.8	306.09	77.444	8.2672	-241.66	952.22
MINIMUM	3741.8	219.03	50.458	8.2672	-241.66	756.30
Pile N.	1	8	4	1	12	8
MAXIMUM	4796.8	312.95	77.444	8.2672	-173.47	977.80
Pile N.	12	3	12	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	1.8573E-03	1.8045E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
2	2.0515E-03	1.8045E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
3	2.2457E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
4	1.9038E-03	1.7875E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
5	2.0980E-03	1.7875E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
6	2.2922E-03	1.7875E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
7	1.9503E-03	1.7705E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
8	2.1445E-03	1.7705E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
9	2.3387E-03	1.7705E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
10	1.9968E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
11	2.1910E-03	1.7535E-03	4.2472E-04	3.7776E-06	1.0333E-05	-4.3154E-05
12	2.3852E-03	1.7535E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
MINIMUM	1.8573E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3852E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	12	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	3741.8	247.94	55.710	8.2672	-185.93	830.77
2	4129.9	245.34	57.652	8.2672	-193.61	824.85
3	4518.0	312.95	76.750	8.2672	-240.12	977.80
4	3834.7	222.29	50.458	8.2672	-173.47	766.87
5	4222.8	220.87	52.441	8.2672	-181.21	763.62
6	4611.0	296.16	73.385	8.2672	-232.74	937.47
7	3927.7	220.53	50.587	8.2672	-173.78	759.74
8	4315.8	219.03	52.553	8.2672	-181.49	756.30
9	4703.9	293.37	73.456	8.2672	-232.91	927.88
10	4020.6	244.92	56.786	8.2672	-188.46	814.49
11	4408.7	242.43	58.784	8.2672	-196.28	808.86
12	4796.8	306.09	77.444	8.2672	-241.66	952.22
MINIMUM	3741.8	219.03	50.458	8.2672	-241.66	756.30
Pile N.	1	8	4	1	12	8
MAXIMUM	4796.8	312.95	77.444	8.2672	-173.47	977.80
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

APPALTATORE: Consorzio Soci			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
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 SPALLA A E SPALLA B			IF3A	02	E ZZ CL	VI0103 001	A	230 di 271

1	4671.4
2	4878.9
3	5577.2
4	4528.8
5	4744.1
6	5507.1
7	4560.7
8	4775.6
9	5531.9
10	4783.2
11	4991.8
12	5661.7

MINIMUM	4528.8
Pile N.	4
MAXIMUM	5661.7
Pile N.	12

* 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	-1.1680E-05	-2.6519E-06	-830.77	-185.93	-46.253	-10.434	-28.806	-6.4870	2117.4	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
2	-1.1506E-05	-2.7109E-06	-824.85	-193.61	-45.879	-10.794	-28.687	-6.7456	2337.1	7.8500E+06	7.8500E+06
x(M)	14.300	14.300	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
3	-1.7482E-05	-4.2742E-06	-977.80	-240.12	-55.725	-13.650	-28.321	-6.9444	2556.7	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.440	11.440	16.060	16.060	22.000	0.0000	0.0000
4	-9.8248E-06	-2.2500E-06	-766.87	-173.47	-42.054	-9.5812	-26.843	-6.1092	2170.0	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
5	-9.7419E-06	-2.3157E-06	-763.62	-181.21	-41.846	-9.9412	-26.722	-6.3472	2389.6	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
6	-1.6046E-05	-3.9557E-06	-937.47	-232.74	-53.312	-13.186	-28.671	-7.1014	2609.3	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.660	11.660	16.060	16.060	22.000	0.0000	0.0000
7	-9.7897E-06	-2.2616E-06	-759.74	-173.78	-41.749	-9.6052	-26.635	-6.1226	2222.6	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
8	-9.6868E-06	-2.3235E-06	-756.30	-181.49	-41.529	-9.9628	-26.508	-6.3595	2442.2	7.8500E+06	7.8500E+06
x(M)	14.740	14.740	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
9	-1.5942E-05	-3.9648E-06	-927.88	-232.91	-52.837	-13.198	-28.367	-7.0988	2661.9	7.8500E+06	7.8500E+06
x(M)	13.200	13.200	0.0000	0.0000	11.660	11.660	16.060	16.060	22.000	0.0000	0.0000
10	-1.1791E-05	-2.7474E-06	-814.49	-188.46	-45.646	-10.604	-28.157	-6.5356	2275.2	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
11	-1.1604E-05	-2.8081E-06	-808.86	-196.28	-45.304	-10.977	-28.067	-6.8028	2494.8	7.8500E+06	7.8500E+06
x(M)	14.080	14.080	0.0000	0.0000	12.540	12.540	16.060	16.060	22.000	0.0000	0.0000
12	-1.7324E-05	-4.3482E-06	-952.22	-241.66	-54.492	-13.748	-27.300	-6.9046	2714.5	7.8500E+06	7.8500E+06
x(M)	12.980	12.980	0.0000	0.0000	11.440	11.440	16.060	16.060	22.000	0.0000	0.0000
Min.	-1.7482E-05	-4.3482E-06	-977.80	-241.66	-55.725	-13.748	-28.806	-7.1014	2117.4	7.8500E+06	7.8500E+06
Pile N.	3	12	3	12	3	12	1	6	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	1.8045E-03	4.0772E-04	268.26	60.561	247.98	55.720	42.153	9.4866	4671.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
2	1.8045E-03	4.2472E-04	266.53	62.718	245.39	57.663	41.589	9.7774	4878.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
3	1.8045E-03	4.4172E-04	311.25	76.218	313.01	76.765	57.259	14.035	5577.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
4	1.7875E-03	4.0772E-04	249.44	56.858	222.33	50.468	36.632	8.3265	4528.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.4000	0.0000	0.0000	0.0000
5	1.7875E-03	4.2472E-04	248.50	59.040	220.92	52.452	36.341	8.6302	4744.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
6	1.7875E-03	4.4172E-04	299.75	74.106	296.22	73.400	53.462	13.237	5507.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
7	1.7705E-03	4.0772E-04	247.47	56.957	220.57	50.596	36.382	8.3553	4560.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.4000	0.0000	0.0000	0.0000
8	1.7705E-03	4.2472E-04	246.47	59.127	219.08	52.564	36.074	8.6549	4775.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
9	1.7705E-03	4.4172E-04	297.06	74.158	293.44	73.471	52.991	13.255	5531.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.4800	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
10	1.7535E-03	4.0772E-04	263.83	61.318	244.96	56.797	41.928	9.7292	4783.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
11	1.7535E-03	4.2472E-04	262.22	63.525	242.48	58.796	41.386	10.032	4991.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	7.9200	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
12	1.7535E-03	4.4172E-04	304.05	76.655	306.16	77.460	56.224	14.207	5661.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
Max.	1.8045E-03	4.4172E-04	311.25	76.655	313.01	77.460	57.259	14.207	5661.7	7.8500E+06	7.8500E+06
Pile N.	1	3	3	12	3	12	3	12	12	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 231 di 271

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	0.5060	1.0000
3	0.6207	1.0000
4	0.5394	1.0000
5	0.4661	1.0000
6	0.5779	1.0000
7	0.5707	1.0000
8	0.4960	1.0000
9	0.6072	1.0000
10	0.8405	1.0000
11	0.7843	1.0000
12	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
44472.2	115.110	964.294
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1079.95	13602.0	-13602.0

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.83940E-03	2.12150E-04	6.13760E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
1.09982E-05	2.73412E-05	-4.14718E-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	1.4682E-03	2.8639E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
2	1.6549E-03	2.8639E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
3	1.8415E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
4	1.5913E-03	2.3690E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
5	1.7779E-03	2.3690E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
6	1.9645E-03	2.3690E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
7	1.7143E-03	1.8740E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
8	1.9009E-03	1.8740E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
9	2.0875E-03	1.8740E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
10	1.8373E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
11	2.0240E-03	1.3791E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
12	2.2106E-03	1.3791E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
MINIMUM	1.4682E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2106E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
Pile N.	12	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	2964.2	20.892	70.183	24.070	-217.30	25.636
2	3337.2	18.557	70.777	24.070	-227.74	20.658
3	3710.2	21.909	88.301	24.070	-277.75	27.865
4	3210.1	12.477	66.648	24.070	-209.12	-2.7626
5	3583.1	10.839	67.144	24.070	-219.08	-6.1402
6	3956.1	13.292	84.380	24.070	-268.74	-1.0215
7	3456.0	5.8217	69.090	24.070	-214.85	-27.525
8	3829.0	4.7717	69.854	24.070	-225.62	-29.457
9	4202.0	6.3089	87.052	24.070	-274.96	-26.563

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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 232 di 271

10	3701.9	0.1484	88.461	24.070	-258.15	-51.579
11	4074.9	-0.2031	93.481	24.070	-279.58	-52.015
12	4447.9	0.2951	108.92	24.070	-323.65	-51.338
MINIMUM	2964.2	-0.2031	66.648	24.070	-323.65	-52.015
Pile N.	1	11	4	1	12	11
MAXIMUM	4447.9	21.909	108.92	24.070	-209.12	27.865
Pile N.	12	3	12	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	1.4682E-03	2.8639E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
2	1.6549E-03	2.8639E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
3	1.8415E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
4	1.5913E-03	2.3690E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
5	1.7779E-03	2.3690E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
6	1.9645E-03	2.3690E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
7	1.7143E-03	1.8740E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
8	1.9009E-03	1.8740E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
9	2.0875E-03	1.8740E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
10	1.8373E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
11	2.0240E-03	1.3791E-04	6.1376E-04	1.0998E-05	2.7341E-05	-4.1472E-05
12	2.2106E-03	1.3791E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
MINIMUM	1.4682E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05	-4.1472E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2106E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05	-4.1472E-05
Pile N.	12	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	2964.2	20.892	70.183	24.070	-217.30	25.636
2	3337.2	18.557	70.777	24.070	-227.74	20.658
3	3710.2	21.909	88.301	24.070	-277.75	27.865
4	3210.1	12.477	66.648	24.070	-209.12	-2.7626
5	3583.1	10.839	67.144	24.070	-219.08	-6.1402
6	3956.1	13.292	84.380	24.070	-268.74	-1.0215
7	3456.0	5.8217	69.090	24.070	-214.85	-27.525
8	3829.0	4.7717	69.854	24.070	-225.62	-29.457
9	4202.0	6.3089	87.052	24.070	-274.96	-26.563
10	3701.9	0.1484	88.461	24.070	-258.15	-51.579
11	4074.9	-0.2031	93.481	24.070	-279.58	-52.015
12	4447.9	0.2951	108.92	24.070	-323.65	-51.338
MINIMUM	2964.2	-0.2031	66.648	24.070	-323.65	-52.015
Pile N.	1	11	4	1	12	11
MAXIMUM	4447.9	21.909	108.92	24.070	-209.12	27.865
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

*****	*****
1	2333.8
2	2574.5
3	2936.9
4	2443.9
5	2685.1
6	3044.9
7	2605.5
8	2849.4
9	3206.6
10	2884.6
11	3159.0
12	3500.1
MINIMUM	2333.8
Pile N.	1
MAXIMUM	3500.1
Pile N.	12

* 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	-3.8054E-06	-3.9645E-06	-25.636	-217.30	-6.9904	-14.075	-3.2841	-8.4876	1677.4	7.8500E+06	7.8500E+06
x(M)	12.320	13.860	0.0000	10.340	12.320	16.060	16.060	22.000	0.0000	0.0000	0.0000
2	-3.4615E-06	-3.6631E-06	-20.658	-227.74	-6.5435	-14.269	-3.3307	-8.9190	1888.4	7.8500E+06	7.8500E+06

APPALTORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.						
Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA		RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 233 di 271

x(M)	12.760	14.300	0.0000	0.0000	10.560	12.760	16.060	16.060	22.000	0.0000	0.0000
3	-3.9698E-06	-4.8445E-06	-27.865	-277.75	-7.1950	-17.196	-3.2406	-10.263	2099.5	7.8500E+06	7.8500E+06
x(M)	12.320	13.860	0.0000	0.0000	10.340	12.100	16.060	16.060	22.000	0.0000	0.0000
4	-4.1120E-06	-3.6505E-06	-2.9202	-209.12	-5.8659	-13.515	-2.5121	-8.3210	1816.5	7.8500E+06	7.8500E+06
x(M)	11.880	14.080	16.060	0.0000	9.6800	12.540	16.060	16.060	22.000	0.0000	0.0000
5	-3.8817E-06	-3.3719E-06	-2.8238	-219.08	-5.5195	-13.653	-2.5775	-8.5823	2027.6	7.8500E+06	7.8500E+06
x(M)	12.100	14.520	16.280	0.0000	9.9000	12.980	16.060	16.060	22.000	0.0000	0.0000
6	-4.2330E-06	-4.4983E-06	-2.9788	-268.74	-6.0484	-16.593	-2.5405	-10.138	2238.7	7.8500E+06	7.8500E+06
x(M)	11.880	14.080	16.060	0.0000	9.6800	12.320	13.200	16.060	22.000	0.0000	0.0000
7	-5.5132E-06	-3.8694E-06	-3.0303	-214.85	-5.5592	-13.917	-2.4186	-8.4490	1955.7	7.8500E+06	7.8500E+06
x(M)	10.780	14.080	15.400	0.0000	8.3600	12.320	13.200	16.060	22.000	0.0000	0.0000
8	-5.5059E-06	-3.5898E-06	-2.9876	-225.62	-5.3020	-14.129	-2.2277	-8.8486	2166.8	7.8500E+06	7.8500E+06
x(M)	10.780	14.520	15.620	0.0000	8.3600	12.760	13.200	16.060	22.000	0.0000	0.0000
9	-5.5288E-06	-4.7427E-06	-3.0709	-274.96	-5.6923	-17.016	-2.5085	-10.236	2377.8	7.8500E+06	7.8500E+06
x(M)	10.780	13.860	15.180	0.0000	8.1400	12.320	13.200	16.060	22.000	0.0000	0.0000
10	-8.1498E-06	-5.7964E-06	-3.8666	-258.15	-6.9904	-16.827	-2.4704	-8.2008	2094.8	7.8500E+06	7.8500E+06
x(M)	8.8000	12.980	14.080	0.0000	6.1600	11.220	13.200	16.060	22.000	0.0000	0.0000
11	-8.3483E-06	-5.8001E-06	-3.8970	-279.58	-6.8737	-17.783	-2.4527	-9.2549	2305.9	7.8500E+06	7.8500E+06
x(M)	8.8000	13.200	14.080	0.0000	6.1600	11.440	13.200	16.060	22.000	0.0000	0.0000
12	-8.0802E-06	-6.8714E-06	-3.8574	-323.65	-7.0511	-20.232	-2.4790	-9.7603	2517.0	7.8500E+06	7.8500E+06
x(M)	8.8000	12.980	14.080	0.0000	6.1600	11.220	13.200	16.060	22.000	0.0000	0.0000
Min.	-8.3483E-06	-6.8714E-06	-27.865	-323.65	-7.1950	-20.232	-3.3307	-10.263	1677.4	7.8500E+06	7.8500E+06
Pile N.	11	12	3	12	3	12	2	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	2.8639E-04	5.6427E-04	45.344	82.889	20.893	70.192	4.6101	12.294	2333.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.7000	0.0000	0.0000	3.5200	4.1800	0.0000	0.0000	0.0000
2	2.8639E-04	6.1376E-04	43.319	85.298	18.558	70.788	4.0505	12.009	2574.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.9200	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
3	2.8639E-04	6.6325E-04	46.243	100.06	21.911	88.315	4.8646	15.501	2936.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.9400	7.7000	0.0000	0.0000	3.5200	4.1800	0.0000	0.0000	0.0000
4	2.3690E-04	5.6427E-04	40.168	80.303	12.477	66.657	3.1968	11.502	2443.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	7.7000	0.0000	0.0000	3.3000	4.4000	0.0000	0.0000	0.0000
5	2.3690E-04	6.1376E-04	38.753	82.545	10.839	67.155	2.7931	11.219	2685.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	8.1400	0.0000	0.0000	3.5200	4.4000	0.0000	0.0000	0.0000
6	2.3690E-04	6.6325E-04	40.897	97.279	13.292	84.395	3.4059	14.611	3044.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	5.0600	7.7000	0.0000	0.0000	3.3000	4.4000	0.0000	0.0000	0.0000
7	1.8740E-04	5.6427E-04	40.269	82.137	5.8204	69.100	2.2689	12.051	2605.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.5200	7.7000	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
8	1.8740E-04	6.1376E-04	39.610	84.648	4.7701	69.866	1.9842	11.812	2849.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.3000	7.9200	0.0000	0.0000	2.8600	4.4000	0.0000	0.0000	0.0000
9	1.8740E-04	6.6325E-04	40.600	99.227	6.3073	87.068	2.4066	15.221	3206.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	3.5200	7.7000	0.0000	0.0000	2.8600	4.1800	0.0000	0.0000	0.0000
10	1.3791E-04	5.6427E-04	51.701	95.592	1.2927	88.475	1.8741	16.594	2884.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.6600	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
11	1.3791E-04	6.1376E-04	52.015	101.39	1.2977	93.497	1.7505	17.223	3159.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.0000	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
12	1.3791E-04	6.6325E-04	51.574	114.07	1.2912	108.94	1.9299	20.378	3500.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	0.6600	7.2600	16.280	0.0000	2.2000	3.9600	0.0000	0.0000	0.0000
Max.	2.8639E-04	6.6325E-04	52.015	114.07	21.911	108.94	4.8646	20.378	3500.1	7.8500E+06	7.8500E+06
Pile N.	1	3	11	12	3	12	3	12	12	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	0.5863	1.0000
2	0.5805	1.0000
3	0.8661	1.0000
4	0.4960	1.0000
5	0.4951	1.0000
6	0.8043	1.0000
7	0.4958	1.0000
8	0.4949	1.0000
9	0.8042	1.0000
10	0.5845	1.0000
11	0.5787	1.0000
12	0.8649	1.0000

* TABLE L * COMPUTATION ON PILE CAP

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 234 di 271

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

VERT. LOAD, KN 47296.6	HOR. LOAD Y, KN 1548.57	HOR. LOAD Z, KN -126.000
MOMENT X , KN- M -355.267	MOMENT Y, KN- M 773.782	MOMENT Z, KN- M -773.782

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M 1.95716E-03	HORIZONTAL Y, M 8.84725E-04	HORIZONTAL Z, M -6.36587E-05
ANGLE ROT. X,RAD -3.03204E-06	ANGLE ROT. Y,RAD 5.41223E-07	ANGLE ROT. Z,RAD -1.82955E-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	1.8712E-03	8.6426E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
2	1.9535E-03	8.6426E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
3	2.0358E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
4	1.8736E-03	8.7790E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
5	1.9559E-03	8.7790E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
6	2.0383E-03	8.7790E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
7	1.8760E-03	8.9155E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
8	1.9584E-03	8.9155E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
9	2.0407E-03	8.9155E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
10	1.8785E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
11	1.9608E-03	9.0519E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
12	2.0431E-03	9.0519E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
MINIMUM	1.8712E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0431E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	12	10	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	3769.5	120.24	-7.8134	-6.6356	28.388	405.71
2	3934.1	119.48	-9.8062	-6.6356	35.539	403.97
3	4098.6	152.79	-15.027	-6.6356	50.081	479.19
4	3774.4	110.32	-7.0764	-6.6356	26.607	384.50
5	3938.9	110.18	-8.9227	-6.6356	33.403	384.21
6	4103.5	148.48	-14.380	-6.6356	48.646	472.60
7	3779.3	112.15	-7.0747	-6.6356	26.603	391.25
8	3943.8	112.01	-8.9208	-6.6356	33.399	390.97
9	4108.4	150.95	-14.378	-6.6356	48.643	480.84
10	3784.1	126.16	-7.7991	-6.6356	28.354	427.03
11	3948.7	125.37	-9.7882	-6.6356	35.497	425.20
12	4113.2	160.43	-15.014	-6.6356	50.053	504.46
MINIMUM	3769.5	110.18	-15.027	-6.6356	26.603	384.21
Pile N.	1	5	3	1	7	5
MAXIMUM	4113.2	160.43	-7.0747	-6.6356	50.081	504.46
Pile N.	12	12	7	1	3	12

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	1.8712E-03	8.6426E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
2	1.9535E-03	8.6426E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
3	2.0358E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
4	1.8736E-03	8.7790E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
5	1.9559E-03	8.7790E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
6	2.0383E-03	8.7790E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
7	1.8760E-03	8.9155E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
8	1.9584E-03	8.9155E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
9	2.0407E-03	8.9155E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
10	1.8785E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
11	1.9608E-03	9.0519E-04	-6.3659E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
12	2.0431E-03	9.0519E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 235 di 271

MINIMUM	1.8712E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0431E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	12	10	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	3769.5	120.24	-7.8134	-6.6356	28.388	405.71
2	3934.1	119.48	-9.8062	-6.6356	35.539	403.97
3	4098.6	152.79	-15.027	-6.6356	50.081	479.19
4	3774.4	110.32	-7.0764	-6.6356	26.607	384.50
5	3938.9	110.18	-8.9227	-6.6356	33.403	384.21
6	4103.5	148.48	-14.380	-6.6356	48.646	472.60
7	3779.3	112.15	-7.0747	-6.6356	26.603	391.25
8	3943.8	112.01	-8.9208	-6.6356	33.399	390.97
9	4108.4	150.95	-14.378	-6.6356	48.643	480.84
10	3784.1	126.16	-7.7991	-6.6356	28.354	427.03
11	3948.7	125.37	-9.7882	-6.6356	35.497	425.20
12	4113.2	160.43	-15.014	-6.6356	50.053	504.46
MINIMUM	3769.5	110.18	-15.027	-6.6356	26.603	384.21
Pile N.	1	5	3	1	7	5
MAXIMUM	4113.2	160.43	-7.0747	-6.6356	50.081	504.46
Pile N.	12	12	7	1	3	12

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	3353.2
2	3442.8
3	3764.8
4	3292.1
5	3386.0
6	3747.4
7	3315.1
8	3408.9
9	3774.8
10	3425.3
11	3514.5
12	3848.4

MINIMUM	3292.1
Pile N.	4
MAXIMUM	3848.4
Pile N.	12

* 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	-5.5675E-06	-5.0046E-05	-405.71	-7.6476	-22.258	-7.8149	-13.896	-1.2852	2133.1	7.8500E+06	7.8500E+06
x(M)	14.300	0.2200	0.0000	8.3600	12.540	0.0000	16.060	4.6200	22.000	0.0000	0.0000
2	-5.5195E-06	-6.3668E-05	-403.97	-9.6758	-22.146	-9.8081	-13.861	-1.6130	2226.2	7.8500E+06	7.8500E+06
x(M)	14.300	0.2200	0.0000	8.3600	12.540	0.0000	16.060	4.6200	22.000	0.0000	0.0000
3	-8.4323E-06	-7.7303E-05	-479.19	-13.715	-26.951	-15.029	-13.606	-2.6831	2319.3	7.8500E+06	7.8500E+06
x(M)	12.980	0.0000	0.0000	7.7000	11.440	0.0000	16.060	4.1800	22.000	0.0000	0.0000
4	-4.7637E-06	-5.0052E-05	-384.50	-7.1668	-20.664	-7.0778	-13.233	-1.1253	2135.9	7.8500E+06	7.8500E+06
x(M)	14.740	0.2200	0.0000	8.5800	12.980	0.0000	16.060	4.6200	22.000	0.0000	0.0000
5	-4.7587E-06	-6.3675E-05	-384.21	-9.0962	-20.648	-8.9245	-13.223	-1.4215	2229.0	7.8500E+06	7.8500E+06
x(M)	14.740	0.2200	0.0000	8.5800	12.980	0.0000	16.060	4.6200	22.000	0.0000	0.0000
6	-7.9139E-06	-7.7303E-05	-472.60	-13.327	-26.442	-14.383	-14.174	-2.5293	2322.1	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	7.7000	11.660	0.0000	16.060	4.1800	22.000	0.0000	0.0000
7	-4.8325E-06	-5.0052E-05	-391.25	-7.1657	-20.987	-7.0761	-13.443	-1.1250	2138.6	7.8500E+06	7.8500E+06
x(M)	14.740	0.2200	0.0000	8.5800	12.980	0.0000	16.060	4.6200	22.000	0.0000	0.0000
8	-4.8277E-06	-6.3675E-05	-390.97	-9.0950	-20.972	-8.9227	-13.434	-1.4211	2231.7	7.8500E+06	7.8500E+06
x(M)	14.740	0.2200	0.0000	8.5800	12.980	0.0000	16.060	4.6200	22.000	0.0000	0.0000
9	-8.0276E-06	-7.7303E-05	-480.84	-13.327	-26.861	-14.381	-14.409	-2.5290	2324.9	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	7.7000	11.660	0.0000	16.060	4.1800	22.000	0.0000	0.0000
10	-5.8024E-06	-5.0046E-05	-427.03	-7.6388	-23.300	-7.8006	-14.575	-1.2821	2141.4	7.8500E+06	7.8500E+06
x(M)	14.300	0.2200	0.0000	8.3600	12.540	0.0000	16.060	4.6200	22.000	0.0000	0.0000
11	-5.7511E-06	-6.3668E-05	-425.20	-9.6646	-23.182	-9.7901	-14.537	-1.6091	2234.5	7.8500E+06	7.8500E+06
x(M)	14.300	0.2200	0.0000	8.3600	12.540	0.0000	16.060	4.6200	22.000	0.0000	0.0000
12	-8.7962E-06	-7.7303E-05	-504.46	-13.707	-28.243	-15.017	-14.302	-2.6801	2327.6	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	7.7000	11.440	0.0000	16.060	4.1800	22.000	0.0000	0.0000
Min.	-8.7962E-06	-7.7303E-05	-504.46	-13.715	-28.243	-15.029	-14.575	-2.6831	2133.1	7.8500E+06	7.8500E+06
Pile N.	12	3	12	3	12	3	10	3	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

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 236 di 271

*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	8.6426E-04	3.0071E-07	128.85	28.388	120.26	1.3383	20.394	0.8639	3353.2	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	7.9200	0.0000	0.0000	12.980	4.4000	16.060	0.0000	0.0000	0.0000
2	8.6426E-04	3.8069E-07	128.34	35.539	119.51	1.6898	20.228	1.0905	3442.8	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	7.9200	0.0000	0.0000	12.980	4.4000	16.060	0.0000	0.0000	0.0000
3	8.6426E-04	7.0722E-07	150.18	50.081	152.82	2.4974	27.954	1.3286	3764.8	7.8500E+06	7.8500E+06
x(M)	0.0000	13.200	7.4800	0.0000	0.0000	11.660	3.9600	16.060	0.0000	0.0000	0.0000
4	8.7790E-04	2.5461E-07	122.51	26.607	110.34	1.2296	18.098	0.7978	3292.1	7.8500E+06	7.8500E+06
x(M)	0.0000	14.960	8.1400	0.0000	0.0000	13.420	4.6200	16.060	0.0000	0.0000	0.0000
5	8.7790E-04	3.2475E-07	122.43	33.403	110.20	1.5582	18.071	1.0105	3386.0	7.8500E+06	7.8500E+06
x(M)	0.0000	14.960	8.1400	0.0000	0.0000	13.420	4.6200	16.060	0.0000	0.0000	0.0000
6	8.7790E-04	6.5296E-07	148.27	48.646	148.51	2.4119	26.779	1.3550	3747.4	7.8500E+06	7.8500E+06
x(M)	0.0000	13.420	7.4800	0.0000	0.0000	11.880	4.1800	16.060	0.0000	0.0000	0.0000
7	8.9155E-04	2.5452E-07	124.41	26.603	112.17	1.2294	18.390	0.7976	3315.1	7.8500E+06	7.8500E+06
x(M)	0.0000	14.960	8.1400	0.0000	0.0000	13.420	4.6200	16.060	0.0000	0.0000	0.0000
8	8.9155E-04	3.2466E-07	124.34	33.399	112.04	1.5580	18.364	1.0103	3408.9	7.8500E+06	7.8500E+06
x(M)	0.0000	14.960	8.3600	0.0000	0.0000	13.420	4.6200	16.060	0.0000	0.0000	0.0000
9	8.9155E-04	6.5285E-07	150.60	48.643	150.98	2.4118	27.214	1.3551	3774.8	7.8500E+06	7.8500E+06
x(M)	0.0000	13.420	7.4800	0.0000	0.0000	11.880	4.1800	16.060	0.0000	0.0000	0.0000
10	9.0519E-04	2.9986E-07	134.86	28.354	126.18	1.3362	21.364	0.8630	3425.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	7.9200	0.0000	0.0000	12.980	4.4000	16.060	0.0000	0.0000	0.0000
11	9.0519E-04	3.7959E-07	134.32	35.497	125.39	1.6871	21.190	1.0893	3514.5	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	7.9200	0.0000	0.0000	12.980	4.4000	16.060	0.0000	0.0000	0.0000
12	9.0519E-04	7.0603E-07	157.31	50.053	160.46	2.4958	29.314	1.3292	3848.4	7.8500E+06	7.8500E+06
x(M)	0.0000	13.200	7.4800	0.0000	0.0000	11.660	3.9600	16.060	0.0000	0.0000	0.0000
Max.	9.0519E-04	7.0722E-07	157.31	50.081	160.46	2.4974	29.314	1.3551	3848.4	7.8500E+06	7.8500E+06
Pile N.	10	3	12	3	12	3	12	9	12	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	0.5786	1.0000
3	0.8645	1.0000
4	0.4959	1.0000
5	0.4949	1.0000
6	0.8038	1.0000
7	0.4961	1.0000
8	0.4951	1.0000
9	0.8040	1.0000
10	0.5869	1.0000
11	0.5809	1.0000
12	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
51231.8	3071.91	157.429
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-54.5222	11977.1	-11977.1

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.12124E-03	1.86337E-03	1.54436E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.25398E-06	2.01635E-05	-6.71912E-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	1.6828E-03	1.8549E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
2	1.9851E-03	1.8549E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
3	2.2875E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 237 di 271

4	1.7735E-03	1.8605E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
5	2.0759E-03	1.8605E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
6	2.3782E-03	1.8605E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
7	1.8643E-03	1.8662E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
8	2.1666E-03	1.8662E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
9	2.4690E-03	1.8662E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
10	1.9550E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
11	2.2573E-03	1.8718E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
12	2.5597E-03	1.8718E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	242.74	13.282	-2.7443	-23.596	783.96
2	3997.3	241.07	12.327	-2.7443	-20.384	780.33
3	4601.6	310.02	15.647	-2.7443	-26.056	935.11
4	3574.3	219.60	11.705	-2.7443	-20.138	730.41
5	4178.6	219.21	10.912	-2.7443	-17.293	729.78
6	4783.0	297.21	14.802	-2.7443	-24.357	908.53
7	3755.7	220.41	11.707	-2.7443	-20.153	733.42
8	4360.0	220.01	10.913	-2.7443	-17.306	732.75
9	4964.3	298.23	14.801	-2.7443	-24.366	912.04
10	3937.0	245.81	13.314	-2.7443	-23.697	794.47
11	4541.3	244.12	12.357	-2.7443	-20.480	790.81
12	5145.7	313.49	15.661	-2.7443	-26.111	946.49
MINIMUM	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

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	1.6828E-03	1.8549E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
2	1.9851E-03	1.8549E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
3	2.2875E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
4	1.7735E-03	1.8605E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
5	2.0759E-03	1.8605E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
6	2.3782E-03	1.8605E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
7	1.8643E-03	1.8662E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
8	2.1666E-03	1.8662E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
9	2.4690E-03	1.8662E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
10	1.9550E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
11	2.2573E-03	1.8718E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
12	2.5597E-03	1.8718E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	242.74	13.282	-2.7443	-23.596	783.96
2	3997.3	241.07	12.327	-2.7443	-20.384	780.33
3	4601.6	310.02	15.647	-2.7443	-26.056	935.11
4	3574.3	219.60	11.705	-2.7443	-20.138	730.41
5	4178.6	219.21	10.912	-2.7443	-17.293	729.78
6	4783.0	297.21	14.802	-2.7443	-24.357	908.53
7	3755.7	220.41	11.707	-2.7443	-20.153	733.42
8	4360.0	220.01	10.913	-2.7443	-17.306	732.75
9	4964.3	298.23	14.801	-2.7443	-24.366	912.04
10	3937.0	245.81	13.314	-2.7443	-23.697	794.47
11	4541.3	244.12	12.357	-2.7443	-20.480	790.81
12	5145.7	313.49	15.661	-2.7443	-26.111	946.49
MINIMUM	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

PILE GROUP	STRESS, KN/ M**2
1	4273.0

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 SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 239 di 271

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	0.4981	1.0000
3	0.5907	1.0000
4	0.5436	1.0000
5	0.4631	1.0000
6	0.5501	1.0000
7	0.5777	1.0000
8	0.4961	1.0000
9	0.5838	1.0000
10	0.8619	1.0000
11	0.8019	1.0000
12	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
44472.2	115.110	964.294
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
1079.95	59.5534	-59.5534

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.83940E-03	7.22733E-05	5.39756E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
1.11190E-05	5.55174E-06	-1.40815E-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	1.7956E-03	1.4733E-04	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
2	1.8019E-03	1.4733E-04	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
3	1.8083E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
4	1.8206E-03	9.7291E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
5	1.8269E-03	9.7291E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
6	1.8332E-03	9.7291E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
7	1.8456E-03	4.7256E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
8	1.8519E-03	4.7256E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
9	1.8582E-03	4.7256E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
10	1.8705E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
11	1.8769E-03	-2.7799E-06	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
12	1.8832E-03	-2.7799E-06	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	21.373	70.582	24.334	-244.36	74.315
2	3631.1	19.397	70.868	24.334	-253.77	69.585
3	3643.8	21.509	86.151	24.334	-299.05	74.635
4	3668.4	13.258	67.534	24.334	-237.13	46.187
5	3681.1	12.022	67.795	24.334	-246.26	43.195
6	3693.7	13.355	82.512	24.334	-290.43	46.417
7	3718.3	6.2984	70.074	24.334	-243.17	20.795
8	3731.0	5.7278	70.689	24.334	-253.34	19.442
9	3743.7	6.3397	85.539	24.334	-297.62	20.892
10	3768.3	-1.4047	89.341	24.334	-286.92	-6.3979
11	3780.9	-1.3574	94.591	24.334	-308.79	-6.2818

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 SPALLA A E SPALLA B				COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 240 di 271

12	3793.6	-1.4079	108.62	24.334	-350.00	-6.4057
MINIMUM	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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	1.7956E-03	1.4733E-04	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
2	1.8019E-03	1.4733E-04	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
3	1.8083E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
4	1.8206E-03	9.7291E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
5	1.8269E-03	9.7291E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
6	1.8332E-03	9.7291E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
7	1.8456E-03	4.7256E-05	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
8	1.8519E-03	4.7256E-05	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
9	1.8582E-03	4.7256E-05	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
10	1.8705E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
11	1.8769E-03	-2.7799E-06	5.3976E-04	1.1119E-05	5.5517E-06	-1.4082E-06
12	1.8832E-03	-2.7799E-06	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	21.373	70.582	24.334	-244.36	74.315
2	3631.1	19.397	70.868	24.334	-253.77	69.585
3	3643.8	21.509	86.151	24.334	-299.05	74.635
4	3668.4	13.258	67.534	24.334	-237.13	46.187
5	3681.1	12.022	67.795	24.334	-246.26	43.195
6	3693.7	13.355	82.512	24.334	-290.43	46.417
7	3718.3	6.2984	70.074	24.334	-243.17	20.795
8	3731.0	5.7278	70.689	24.334	-253.34	19.442
9	3743.7	6.3397	85.539	24.334	-297.62	20.892
10	3768.3	-1.4047	89.341	24.334	-286.92	-6.3979
11	3780.9	-1.3574	94.591	24.334	-308.79	-6.2818
12	3793.6	-1.4079	108.62	24.334	-350.00	-6.4057
MINIMUM	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	1	4	3

PILE GROUP STRESS, KN/ M**2

1	2813.8
2	2844.2
3	2986.6
4	2800.6
5	2833.1
6	2972.6
7	2836.3
8	2873.6
9	3013.5
10	2993.4
11	3066.1
12	3196.9
MINIMUM	2800.6
Pile N.	4
MAXIMUM	3196.9
Pile N.	12

* 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	-9.2054E-07	-3.0729E-06	-74.315	-244.36	-3.8389	-12.733	-2.4301	-8.0456	2047.6	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	0.0000	12.760	12.760	16.060	16.060	22.000	0.0000	0.0000
2	-7.8215E-07	-2.8703E-06	-69.585	-253.77	-3.5180	-12.877	-2.2718	-8.3120	2054.8	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	0.0000	13.200	13.200	16.060	16.060	22.000	0.0000	0.0000
3	-9.3052E-07	-3.7239E-06	-74.635	-299.05	-3.8597	-15.454	-2.4375	-9.7613	2062.0	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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 241 di 271

x(M)	14.300	14.300	0.0000	0.0000	12.760	12.760	16.060	16.060	22.000	0.0000	0.0000
4	-5.7048E-07	-2.8515E-06	-46.187	-237.13	-2.4250	-12.251	-1.5484	-7.8452	2075.9	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.980	12.980	16.060	16.060	22.000	0.0000	0.0000
5	-4.8569E-07	-2.6716E-06	-43.195	-246.26	-2.2304	-12.459	-1.4243	-7.9545	2083.1	7.8500E+06	7.8500E+06
x(M)	14.960	14.960	0.0000	0.0000	13.420	13.420	16.060	16.060	22.000	0.0000	0.0000
6	-5.7682E-07	-3.4599E-06	-46.417	-290.43	-2.4407	-14.882	-1.5556	-9.5314	2090.2	7.8500E+06	7.8500E+06
x(M)	14.520	14.520	0.0000	0.0000	12.760	12.980	16.060	16.060	22.000	0.0000	0.0000
7	-3.0784E-07	-3.0362E-06	-20.795	-243.17	-1.1960	-12.657	-0.7418	-8.0179	2104.1	7.8500E+06	7.8500E+06
x(M)	14.080	14.300	0.0000	0.0000	12.540	12.760	16.060	16.060	22.000	0.0000	0.0000
8	-2.6331E-07	-2.8595E-06	-19.442	-253.34	-1.1029	-12.852	-0.7006	-8.2947	2111.3	7.8500E+06	7.8500E+06
x(M)	14.520	14.740	0.0000	0.0000	12.980	13.200	16.060	16.060	22.000	0.0000	0.0000
9	-3.1154E-07	-3.6807E-06	-20.892	-297.62	-1.2025	-15.364	-0.7438	-9.7293	2118.5	7.8500E+06	7.8500E+06
x(M)	14.080	14.300	0.0000	0.0000	12.540	12.760	16.060	16.060	22.000	0.0000	0.0000
10	-4.2164E-06	-4.6444E-06	-0.8480	-286.92	-1.4050	-15.415	-0.2211	-7.9697	2132.4	7.8500E+06	7.8500E+06
x(M)	2.2000	13.200	0.0000	0.0000	9.2400	11.440	5.0600	16.060	22.000	0.0000	0.0000
11	-4.2444E-06	-4.7252E-06	-0.8300	-308.79	-1.3577	-16.440	-0.2104	-9.0028	2139.6	7.8500E+06	7.8500E+06
x(M)	2.4200	13.420	9.4600	0.0000	0.0000	11.660	5.0600	16.060	22.000	0.0000	0.0000
12	-4.2147E-06	-5.5975E-06	-0.8492	-350.00	-1.4082	-18.652	-0.2219	-9.6393	2146.7	7.8500E+06	7.8500E+06
x(M)	2.2000	13.200	9.2400	0.0000	0.0000	11.440	5.0600	16.060	22.000	0.0000	0.0000
Min.	-4.2444E-06	-5.5975E-06	-74.635	-350.00	-3.8597	-18.652	-2.4375	-9.7613	2047.6	7.8500E+06	7.8500E+06
Pile N.	11	12	3	12	3	12	3	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	1.4733E-04	4.8972E-04	22.119	73.420	21.377	70.594	3.5792	11.841	2813.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
2	1.4733E-04	5.3976E-04	20.772	76.057	19.401	70.881	3.1471	11.506	2844.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.3600	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
3	1.4733E-04	5.8979E-04	22.208	88.917	21.512	86.166	3.6094	14.455	2986.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
4	9.7291E-05	4.8972E-04	14.144	71.353	13.261	67.546	2.1991	11.164	2800.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
5	9.7291E-05	5.3976E-04	13.277	73.880	12.024	67.808	1.9325	10.849	2833.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.3600	8.3600	0.0000	0.0000	4.6200	4.6200	0.0000	0.0000	0.0000
6	9.7291E-05	5.8979E-04	14.211	86.462	13.357	82.527	2.2204	13.646	2972.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
7	4.7256E-05	4.8972E-04	6.9686	73.090	6.2994	70.887	1.0755	11.729	2836.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
8	4.7256E-05	5.3976E-04	6.5618	75.940	5.7288	70.702	0.9496	11.469	2873.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	8.3600	0.0000	0.0000	4.4000	4.6200	0.0000	0.0000	0.0000
9	4.7256E-05	5.8979E-04	6.9974	88.521	6.3408	85.554	1.0847	14.320	3013.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	8.1400	0.0000	0.0000	4.4000	4.4000	0.0000	0.0000	0.0000
10	2.6774E-08	4.8972E-04	6.3979	85.512	0.1661	89.356	0.1189	16.180	2993.4	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	7.4800	0.0000	13.420	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
11	2.5278E-08	5.3976E-04	6.2818	91.660	0.1629	94.608	0.1176	16.877	3066.1	7.8500E+06	7.8500E+06
x(M)	14.960	0.0000	0.0000	0.0000	13.420	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
12	2.6867E-08	5.8979E-04	6.4057	103.32	0.1664	108.64	0.1189	19.657	3196.9	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.4800	13.200	0.0000	16.060	4.1800	0.0000	0.0000	0.0000
Max.	1.4733E-04	5.8979E-04	22.208	103.32	21.512	108.64	3.6094	19.657	3196.9	7.8500E+06	7.8500E+06
Pile N.	1	3	3	12	3	12	3	12	12	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	0.5855	1.0000
2	0.5798	1.0000
3	0.8661	1.0000
4	0.4958	1.0000
5	0.4951	1.0000
6	0.8048	1.0000
7	0.4957	1.0000
8	0.4950	1.0000
9	0.8047	1.0000
10	0.5845	1.0000
11	0.5789	1.0000
12	0.8654	1.0000

* TABLE L * COMPUTATION ON PILE CAP

* EQUIVALENT CONCENTRATED LOAD AT ORIGIN *

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 242 di 271

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN
 50285.0 2529.44 -109.698

 MOMENT X , KN- M MOMENT Y, KN- M MOMENT Z, KN- M
 903.572 -1610.41 1610.41

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M HORIZONTAL Y, M HORIZONTAL Z, M
 2.08176E-03 1.41564E-03 -7.32155E-05

 ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
 9.31339E-06 -3.22248E-06 -2.13853E-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	2.0073E-03	1.4785E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
2	2.1035E-03	1.4785E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
3	2.1997E-03	1.4785E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
4	1.9928E-03	1.4366E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
5	2.0890E-03	1.4366E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
6	2.1853E-03	1.4366E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
7	1.9783E-03	1.3947E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
8	2.0745E-03	1.3947E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
9	2.1707E-03	1.3947E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
10	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
11	2.0600E-03	1.3528E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
12	2.1563E-03	1.3528E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
MINIMUM	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	2.1997E-03	1.4785E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-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	4041.6	210.77	-15.580	20.382	51.601	724.03
2	4233.9	209.49	-9.2229	20.382	29.085	721.09
3	4426.2	267.52	-3.9344	20.382	8.8714	852.63
4	4012.6	184.72	-14.049	20.382	47.969	654.46
5	4204.9	184.54	-8.3398	20.382	27.007	654.10
6	4397.2	248.21	-3.7369	20.382	8.4605	801.51
7	3983.6	179.00	-14.047	20.382	47.964	633.46
8	4175.9	178.83	-8.3390	20.382	27.005	633.12
9	4368.3	240.59	-3.7368	20.382	8.4600	776.06
10	3954.6	191.70	-15.565	20.382	51.565	656.44
11	4146.9	190.53	-9.2142	20.382	29.063	653.76
12	4339.3	243.54	-3.9327	20.382	8.8670	773.86
MINIMUM	3954.6	178.83	-15.580	20.382	8.4600	633.12
Pile N.	10	8	1	1	9	8
MAXIMUM	4426.2	267.52	-3.7368	20.382	51.601	852.63
Pile N.	3	3	9	1	1	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	2.0073E-03	1.4785E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
2	2.1035E-03	1.4785E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
3	2.1997E-03	1.4785E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
4	1.9928E-03	1.4366E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
5	2.0890E-03	1.4366E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
6	2.1853E-03	1.4366E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
7	1.9783E-03	1.3947E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
8	2.0745E-03	1.3947E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
9	2.1707E-03	1.3947E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
10	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
11	2.0600E-03	1.3528E-03	-7.3216E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
12	2.1563E-03	1.3528E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-05
MINIMUM	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
Pile N.	10	10	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 243 di 271

MAXIMUM 2.1997E-03 1.4785E-03 -3.1305E-05 9.3134E-06 -3.2225E-06 -2.1385E-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	4041.6	210.77	-15.580	20.382	51.601	724.03
2	4233.9	209.49	-9.2229	20.382	29.085	721.09
3	4426.2	267.52	-3.9344	20.382	8.8714	852.63
4	4012.6	184.72	-14.049	20.382	47.969	654.46
5	4204.9	184.54	-8.3398	20.382	27.007	654.10
6	4397.2	248.21	-3.7369	20.382	8.4605	801.51
7	3983.6	179.00	-14.047	20.382	47.964	633.46
8	4175.9	178.83	-8.3390	20.382	27.005	633.12
9	4368.3	240.59	-3.7368	20.382	8.4600	776.06
10	3954.6	191.70	-15.565	20.382	51.565	656.44
11	4146.9	190.53	-9.2142	20.382	29.063	653.76
12	4339.3	243.54	-3.9327	20.382	8.8670	773.86

MINIMUM 3954.6 178.83 -15.580 20.382 8.4600 633.12
Pile N. 10 8 1 1 9 8
MAXIMUM 4426.2 267.52 -3.7368 20.382 51.601 852.63
Pile N. 3 3 9 1 1 3

PILE GROUP	STRESS, KN/ M**2
1	4464.7
2	4560.9
3	5062.8
4	4239.3
5	4343.5
6	4893.0
7	4160.1
8	4264.2
9	4800.3
10	4213.3
11	4309.9
12	4777.3

MINIMUM 4160.1
Pile N. 7
MAXIMUM 5062.8
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	-9.3736E-06	-1.1513E-04	-724.03	-17.087	-38.351	-15.583	-24.139	-2.6622	2287.1	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.9200	12.760	0.0000	16.060	4.4000	22.000	0.0000	0.0000
2	-9.2889E-06	-7.3215E-05	-721.09	-10.744	-38.171	-9.2247	-24.076	-1.6043	2395.9	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.7000	12.760	0.0000	16.060	4.1800	22.000	0.0000	0.0000
3	-1.4217E-05	-3.1305E-05	-852.63	-5.3891	-46.505	-3.9349	-23.786	-0.8102	2504.7	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	6.3800	11.440	0.0000	16.060	3.7400	22.000	0.0000	0.0000
4	-7.6933E-06	-1.1513E-04	-654.46	-16.000	-34.011	-14.051	-21.892	-2.3238	2270.7	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	8.1400	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
5	-7.6885E-06	-7.3215E-05	-654.10	-10.094	-33.998	-8.3413	-21.882	-1.4090	2379.5	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.9200	13.200	0.0000	16.060	4.4000	22.000	0.0000	0.0000
6	-1.2778E-05	-3.1305E-05	-801.51	-5.2411	-43.617	-3.7375	-23.619	-0.7610	2488.3	7.8500E+06	7.8500E+06
x(M)	13.420	0.0000	0.0000	6.6000	11.660	0.0000	16.060	3.7400	22.000	0.0000	0.0000
7	-7.4743E-06	-1.1513E-04	-633.46	-15.998	-32.999	-14.050	-21.233	-2.3234	2254.3	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	8.1400	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
8	-7.4699E-06	-7.3215E-05	-633.12	-10.093	-32.985	-8.3406	-21.224	-1.4088	2363.1	7.8500E+06	7.8500E+06
x(M)	14.740	0.0000	0.0000	7.9200	12.980	0.0000	16.060	4.4000	22.000	0.0000	0.0000
9	-1.2415E-05	-3.1305E-05	-776.06	-5.2409	-42.318	-3.7373	-22.899	-0.7609	2471.9	7.8500E+06	7.8500E+06
x(M)	13.420	0.0000	0.0000	6.6000	11.660	0.0000	16.060	3.7400	22.000	0.0000	0.0000
10	-8.5877E-06	-1.1513E-04	-656.44	-17.075	-35.001	-15.568	-22.007	-2.6588	2237.9	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.9200	12.540	0.0000	16.060	4.4000	22.000	0.0000	0.0000
11	-8.5109E-06	-7.3215E-05	-653.76	-10.736	-34.836	-9.2159	-21.949	-1.6022	2346.7	7.8500E+06	7.8500E+06
x(M)	14.300	0.0000	0.0000	7.7000	12.760	0.0000	16.060	4.1800	22.000	0.0000	0.0000
12	-1.3035E-05	-3.1305E-05	-773.86	-5.3874	-42.462	-3.9332	-21.675	-0.8097	2455.5	7.8500E+06	7.8500E+06
x(M)	13.200	0.0000	0.0000	6.3800	11.440	0.0000	16.060	3.7400	22.000	0.0000	0.0000
Min.	-1.4217E-05	-1.1513E-04	-852.63	-17.087	-46.505	-15.583	-24.139	-2.6622	2237.9	7.8500E+06	7.8500E+06
Pile N.	3	1	3	1	3	1	1	1	10	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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4785E-03	7.5762E-07	221.29	51.601	210.81	2.9411	35.492	1.8216	4464.7	7.8500E+06	7.8500E+06

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 244 di 271

x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.540	4.4000	16.060	0.0000	0.0000	0.0000
2	1.4785E-03	5.0316E-07	220.48	29.085	209.53	1.8303	35.213	1.1127	4560.9	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.320	4.4000	16.060	0.0000	0.0000	0.0000
3	1.4785E-03	4.1716E-07	258.16	8.8714	267.58	0.9145	48.646	0.4117	5062.8	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.340	4.1800	13.200	0.0000	0.0000	0.0000
4	1.4366E-03	6.3774E-07	201.37	47.969	184.75	2.6916	30.113	1.7126	4239.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.980	4.6200	16.060	0.0000	0.0000	0.0000
5	1.4366E-03	4.2733E-07	201.28	27.007	184.58	1.6855	30.080	1.0562	4343.5	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.760	4.6200	16.060	0.0000	0.0000	0.0000
6	1.4366E-03	3.9306E-07	243.60	8.4605	248.26	0.8818	44.522	0.3776	4893.0	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.560	4.1800	16.060	0.0000	0.0000	0.0000
7	1.3947E-03	6.3752E-07	195.41	47.964	179.03	2.6911	29.192	1.7123	4160.1	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.980	4.6200	16.060	0.0000	0.0000	0.0000
8	1.3947E-03	4.2722E-07	195.33	27.005	178.87	1.6852	29.161	1.0561	4264.2	7.8500E+06	7.8500E+06
x(M)	0.0000	14.520	8.3600	0.0000	0.0000	12.760	4.6200	16.060	0.0000	0.0000	0.0000
9	1.3947E-03	3.9299E-07	236.41	8.4600	240.63	0.8817	43.171	0.3777	4800.3	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.560	4.1800	16.060	0.0000	0.0000	0.0000
10	1.3528E-03	7.5603E-07	202.12	51.565	191.73	2.9383	32.314	1.8207	4213.3	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.540	4.4000	16.060	0.0000	0.0000	0.0000
11	1.3528E-03	5.0227E-07	201.39	29.063	190.57	1.8286	32.059	1.1122	4309.9	7.8500E+06	7.8500E+06
x(M)	0.0000	14.080	8.1400	0.0000	0.0000	12.320	4.4000	16.060	0.0000	0.0000	0.0000
12	1.3528E-03	4.1683E-07	235.91	8.8670	243.59	0.9141	44.331	0.4113	4777.3	7.8500E+06	7.8500E+06
x(M)	0.0000	12.320	7.4800	0.0000	0.0000	10.340	4.1800	13.200	0.0000	0.0000	0.0000
Max.	1.4785E-03	7.5762E-07	258.16	51.601	267.58	2.9411	48.646	1.8216	5062.8	7.8500E+06	7.8500E+06
Pile N.	1	1	3	1	3	1	3	1	3	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	0.5845	1.0000
2	0.5550	1.0000
3	0.7902	1.0000
4	0.5111	1.0000
5	0.4853	1.0000
6	0.7349	1.0000
7	0.5227	1.0000
8	0.4954	1.0000
9	0.7430	1.0000
10	0.6837	1.0000
11	0.6570	1.0000
12	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
47488.2	871.021	633.508
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-25.9153	15522.8	-15522.8

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.96515E-03	6.53669E-04	4.35869E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-7.73164E-07	2.85479E-05	-5.49281E-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	1.5253E-03	6.4845E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
2	1.7725E-03	6.4845E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
3	2.0196E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
4	1.6537E-03	6.5193E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
5	1.9009E-03	6.5193E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 245 di 271

6	2.1481E-03	6.5193E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
7	1.7822E-03	6.5541E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
8	2.0294E-03	6.5541E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
9	2.2766E-03	6.5541E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
10	1.9107E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
11	2.1578E-03	6.5889E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
12	2.4050E-03	6.5889E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
MINIMUM	1.5253E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.4050E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	12	10	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	3078.2	68.099	50.766	-1.6921	-146.93	177.61
2	3572.2	65.688	48.531	-1.6921	-141.20	172.26
3	4066.2	83.556	60.580	-1.6921	-167.42	211.64
4	3334.9	62.563	46.447	-1.6921	-136.98	165.71
5	3829.0	60.341	44.394	-1.6921	-131.59	160.66
6	4323.0	80.129	57.756	-1.6921	-161.32	205.09
7	3591.7	64.008	47.130	-1.6921	-138.60	169.74
8	4085.7	61.663	44.996	-1.6921	-133.04	164.42
9	4579.7	81.313	58.162	-1.6921	-162.23	208.44
10	3848.5	77.461	56.242	-1.6921	-159.35	200.65
11	4342.5	75.366	54.212	-1.6921	-154.19	196.14
12	4836.5	90.834	64.293	-1.6921	-175.45	229.49
MINIMUM	3078.2	60.341	44.394	-1.6921	-175.45	160.66
Pile N.	1	5	5	1	12	5
MAXIMUM	4836.5	90.834	64.293	-1.6921	-131.59	229.49
Pile N.	12	12	12	1	5	12

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	1.5253E-03	6.4845E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
2	1.7725E-03	6.4845E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
3	2.0196E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
4	1.6537E-03	6.5193E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
5	1.9009E-03	6.5193E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
6	2.1481E-03	6.5193E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
7	1.7822E-03	6.5541E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
8	2.0294E-03	6.5541E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
9	2.2766E-03	6.5541E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
10	1.9107E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
11	2.1578E-03	6.5889E-04	4.3587E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
12	2.4050E-03	6.5889E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
MINIMUM	1.5253E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.4050E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	12	10	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	3078.2	68.099	50.766	-1.6921	-146.93	177.61
2	3572.2	65.688	48.531	-1.6921	-141.20	172.26
3	4066.2	83.556	60.580	-1.6921	-167.42	211.64
4	3334.9	62.563	46.447	-1.6921	-136.98	165.71
5	3829.0	60.341	44.394	-1.6921	-131.59	160.66
6	4323.0	80.129	57.756	-1.6921	-161.32	205.09
7	3591.7	64.008	47.130	-1.6921	-138.60	169.74
8	4085.7	61.663	44.996	-1.6921	-133.04	164.42
9	4579.7	81.313	58.162	-1.6921	-162.23	208.44
10	3848.5	77.461	56.242	-1.6921	-159.35	200.65
11	4342.5	75.366	54.212	-1.6921	-154.19	196.14
12	4836.5	90.834	64.293	-1.6921	-175.45	229.49
MINIMUM	3078.2	60.341	44.394	-1.6921	-175.45	160.66
Pile N.	1	5	5	1	12	5
MAXIMUM	4836.5	90.834	64.293	-1.6921	-131.59	229.49
Pile N.	12	12	12	1	5	12

PILE GROUP	STRESS, KN/ M**2
1	2433.4
2	2689.7
3	3110.6

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 246 di 271

4 2532.2
5 2789.8
6 3229.1
7 2689.9
8 2946.6
9 3384.0
10 2946.5
11 3205.8
12 3603.5

MINIMUM 2433.4
Pile N. 1
MAXIMUM 3603.5
Pile N. 12

* 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	-5.4467E-06	-3.3170E-06	-177.61	-146.93	-15.724	-10.798	-8.8826	-6.3399	1741.9	7.8500E+06	7.8500E+06
x(M)	13.420	13.640	0.0000	0.0000	11.660	12.100	16.060	16.060	22.000	0.0000	0.0000
2	-5.1811E-06	-3.1384E-06	-172.26	-141.20	-15.337	-10.443	-8.8365	-6.2273	2021.5	7.8500E+06	7.8500E+06
x(M)	13.640	13.860	0.0000	0.0000	11.880	12.100	16.060	16.060	22.000	0.0000	0.0000
3	-7.2866E-06	-4.4653E-06	-211.64	-167.42	-18.234	-12.317	-8.4757	-6.0493	2301.0	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	10.780	11.000	16.060	16.060	22.000	0.0000	0.0000
4	-4.7845E-06	-2.8982E-06	-165.71	-136.98	-14.800	-10.094	-8.7471	-6.1451	1887.2	7.8500E+06	7.8500E+06
x(M)	13.860	14.080	0.0000	0.0000	12.100	12.320	16.060	16.060	22.000	0.0000	0.0000
5	-4.5519E-06	-2.7356E-06	-160.66	-131.59	-14.429	-9.7545	-8.6225	-5.9806	2166.8	7.8500E+06	7.8500E+06
x(M)	13.860	14.300	0.0000	0.0000	12.100	12.540	16.060	16.060	22.000	0.0000	0.0000
6	-6.8361E-06	-4.1566E-06	-205.09	-161.32	-17.708	-11.898	-8.7509	-6.1750	2446.3	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	11.000	11.220	16.060	16.060	22.000	0.0000	0.0000
7	-4.8999E-06	-2.9657E-06	-169.74	-138.60	-15.053	-10.216	-8.8523	-6.1898	2032.5	7.8500E+06	7.8500E+06
x(M)	13.860	14.080	0.0000	0.0000	12.100	12.320	16.060	16.060	22.000	0.0000	0.0000
8	-4.6678E-06	-2.7969E-06	-164.42	-133.04	-14.669	-9.8628	-8.7340	-6.0295	2312.0	7.8500E+06	7.8500E+06
x(M)	13.860	14.080	0.0000	0.0000	12.100	12.540	16.060	16.060	22.000	0.0000	0.0000
9	-6.9394E-06	-4.2106E-06	-208.44	-162.23	-17.909	-11.967	-8.7845	-6.1602	2591.6	7.8500E+06	7.8500E+06
x(M)	12.760	12.980	0.0000	0.0000	11.220	11.220	16.060	16.060	22.000	0.0000	0.0000
10	-6.4129E-06	-3.9030E-06	-200.65	-159.35	-17.277	-11.675	-9.0097	-6.3662	2177.8	7.8500E+06	7.8500E+06
x(M)	12.980	13.200	0.0000	0.0000	11.220	11.440	16.060	16.060	22.000	0.0000	0.0000
11	-6.1845E-06	-3.7390E-06	-196.14	-154.19	-16.954	-11.365	-9.0571	-6.3246	2457.3	7.8500E+06	7.8500E+06
x(M)	13.200	13.420	0.0000	0.0000	11.440	11.660	16.060	16.060	22.000	0.0000	0.0000
12	-8.0151E-06	-4.8891E-06	-229.49	-175.45	-19.412	-12.893	-8.3580	-5.8134	2736.9	7.8500E+06	7.8500E+06
x(M)	12.540	12.760	0.0000	0.0000	10.560	10.780	13.200	16.060	22.000	0.0000	0.0000
Min.	-8.0151E-06	-4.8891E-06	-229.49	-175.45	-19.412	-12.893	-9.0571	-6.3662	1741.9	7.8500E+06	7.8500E+06
Pile N.	12	12	12	12	12	12	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	6.4845E-04	4.3935E-04	95.273	64.356	68.107	50.772	12.673	9.1189	2433.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.0400	7.4800	0.0000	0.0000	3.9600	4.1800	0.0000	0.0000	0.0000
2	6.4845E-04	4.3587E-04	93.426	62.584	65.696	48.538	12.121	8.6483	2689.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	3.9600	4.1800	0.0000	0.0000	0.0000
3	6.4845E-04	4.3239E-04	107.02	71.274	83.568	60.590	16.364	11.511	3110.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.7400	3.9600	0.0000	0.0000	0.0000
4	6.5193E-04	4.3935E-04	90.993	61.050	62.571	46.453	11.382	8.1462	2532.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
5	6.5193E-04	4.3587E-04	89.203	59.386	60.350	44.402	10.891	7.7231	2789.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.4000	0.0000	0.0000	0.0000
6	6.5193E-04	4.3239E-04	104.64	69.274	80.141	57.766	15.490	10.835	3229.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
7	6.5541E-04	4.3935E-04	92.266	61.596	64.016	47.137	11.678	8.3014	2689.9	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.4800	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
8	6.5541E-04	4.3587E-04	90.395	59.870	61.673	45.003	11.159	7.8587	2946.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	7.7000	0.0000	0.0000	4.1800	4.1800	0.0000	0.0000	0.0000
9	6.5541E-04	4.3239E-04	105.64	69.585	81.326	58.172	15.737	10.934	3384.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.8200	7.0400	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
10	6.5889E-04	4.3935E-04	102.81	68.447	77.472	56.250	14.770	10.392	2946.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.0400	7.2600	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
11	6.5889E-04	4.3587E-04	101.30	66.876	75.378	54.221	14.281	9.9551	3205.8	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.0400	7.2600	0.0000	0.0000	3.9600	3.9600	0.0000	0.0000	0.0000
12	6.5889E-04	4.3239E-04	112.58	73.837	90.850	64.305	18.043	12.418	3603.5	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	6.6000	6.8200	0.0000	0.0000	3.7400	3.9600	0.0000	0.0000	0.0000
Max.	6.5889E-04	4.3935E-04	112.58	73.837	90.850	64.305	18.043	12.418	3603.5	7.8500E+06	7.8500E+06
Pile N.	10	1	12	12	12	12	12	12	12	1	1

LOAD CASE : 29

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 247 di 271

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	0.5724	1.0000
3	0.8455	1.0000
4	0.4999	1.0000
5	0.4924	1.0000
6	0.7862	1.0000
7	0.5033	1.0000
8	0.4952	1.0000
9	0.7883	1.0000
10	0.6140	1.0000
11	0.6020	1.0000
12	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
44472.2	115.110	7.90600E-09
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-0.23020	8185.00	-8185.00

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.83940E-03	1.49721E-04	4.60362E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-3.85978E-08	1.31729E-05	-2.54021E-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	1.6362E-03	1.4946E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
2	1.7505E-03	1.4946E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
3	1.8648E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
4	1.6955E-03	1.4964E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
5	1.8098E-03	1.4964E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
6	1.9241E-03	1.4964E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
7	1.7547E-03	1.4981E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
8	1.8690E-03	1.4981E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
9	1.9834E-03	1.4981E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
10	1.8140E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
11	1.9283E-03	1.4998E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
12	2.0426E-03	1.4998E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
MINIMUM	1.6362E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0426E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	12	10	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	3299.8	8.8920	-0.089836	-0.084471	15.741	1.8578
2	3528.3	8.7216	-0.1446	-0.084471	15.868	1.5208
3	3756.8	12.283	0.4418	-0.084471	15.097	8.6377
4	3418.3	7.7264	-0.2857	-0.084471	16.007	-0.5187
5	3646.8	7.6143	-0.3277	-0.084471	16.114	-0.7412
6	3875.2	11.570	0.3090	-0.084471	15.284	7.3002
7	3536.8	7.7967	-0.2785	-0.084471	15.995	-0.3267
8	3765.3	7.6769	-0.3217	-0.084471	16.103	-0.5652
9	3993.7	11.627	0.3132	-0.084471	15.275	7.4609
10	3655.3	9.3694	-0.023409	-0.084471	15.640	2.9735
11	3883.7	9.2021	-0.078616	-0.084471	15.769	2.6451
12	4112.2	12.631	0.4860	-0.084471	15.027	9.4642

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 248 di 271

MINIMUM	3299.8	7.6143	-0.3277	-0.084471	15.027	-0.7412
Pile N.	1	5	5	1	12	5
MAXIMUM	4112.2	12.631	0.4860	-0.084471	16.114	9.4642
Pile N.	12	12	12	1	5	12

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	1.6362E-03	1.4946E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
2	1.7505E-03	1.4946E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
3	1.8648E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
4	1.6955E-03	1.4964E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
5	1.8098E-03	1.4964E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
6	1.9241E-03	1.4964E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
7	1.7547E-03	1.4981E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
8	1.8690E-03	1.4981E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
9	1.9834E-03	1.4981E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
10	1.8140E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
11	1.9283E-03	1.4998E-04	4.6036E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
12	2.0426E-03	1.4998E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
MINIMUM	1.6362E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0426E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	12	10	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	3299.8	8.8920	-0.089836	-0.084471	15.741	1.8578
2	3528.3	8.7216	-0.1446	-0.084471	15.868	1.5208
3	3756.8	12.283	0.4418	-0.084471	15.097	8.6377
4	3418.3	7.7264	-0.2857	-0.084471	16.007	-0.5187
5	3646.8	7.6143	-0.3277	-0.084471	16.114	-0.7412
6	3875.2	11.570	0.3090	-0.084471	15.284	7.3002
7	3536.8	7.7967	-0.2785	-0.084471	15.995	-0.3267
8	3765.3	7.6769	-0.3217	-0.084471	16.103	-0.5652
9	3993.7	11.627	0.3132	-0.084471	15.275	7.4609
10	3655.3	9.3694	-0.023409	-0.084471	15.640	2.9735
11	3883.7	9.2021	-0.078616	-0.084471	15.769	2.6451
12	4112.2	12.631	0.4860	-0.084471	15.027	9.4642
MINIMUM	3299.8	7.6143	-0.3277	-0.084471	15.027	-0.7412
Pile N.	1	5	5	1	12	5
MAXIMUM	4112.2	12.631	0.4860	-0.084471	16.114	9.4642
Pile N.	12	12	12	1	5	12

PILE GROUP STRESS, KN/ M**2

*****	*****
1	1914.9
2	2044.4
3	2178.1
4	1982.4
5	2112.0
6	2243.8
7	2049.4
8	2179.0
9	2311.0
10	2116.2
11	2245.7
12	2380.3
MINIMUM	1914.9
Pile N.	1
MAXIMUM	2380.3
Pile N.	12

* 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	-2.5431E-06	-2.6600E-06	-1.8578	-1.1985	-3.7900	-1.9528	-1.5799	-0.7485	1867.3	7.8500E+06	7.8500E+06
x (M)	11.880	9.2400	0.0000	14.520	9.6800	6.3800	13.200	13.200	22.000	0.0000	0.0000
2	-2.5214E-06	-2.6981E-06	-1.8260	-1.2045	-3.7562	-1.9494	-1.5852	-0.7443	1996.6	7.8500E+06	7.8500E+06
x (M)	11.880	9.2400	16.060	14.520	9.6800	6.3800	13.200	13.200	22.000	0.0000	0.0000
3	-2.9649E-06	-2.4094E-06	-8.6377	-1.1958	-4.4893	-2.1595	-2.1685	-0.8059	2125.9	7.8500E+06	7.8500E+06
x (M)	11.220	9.0200	0.0000	14.080	9.2400	6.3800	13.200	13.200	22.000	0.0000	0.0000
4	-2.3694E-06	-2.7955E-06	-1.7635	-1.2049	-3.5441	-1.8840	-1.6351	-0.7177	1934.4	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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 001	A	250 di 271	

51231.8 3071.91 157.429
MOMENT X , KN- M MOMENT Y, KN- M MOMENT Z, KN- M
-54.5222 11977.1 -11977.1

* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN *

VERTICAL , M HORIZONTAL Y, M HORIZONTAL Z, M
2.12124E-03 1.86337E-03 1.54436E-04
ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD
-1.25398E-06 2.01635E-05 -6.71912E-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	1.6828E-03	1.8549E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
2	1.9851E-03	1.8549E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
3	2.2875E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
4	1.7735E-03	1.8605E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
5	2.0759E-03	1.8605E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
6	2.3782E-03	1.8605E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
7	1.8643E-03	1.8662E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
8	2.1666E-03	1.8662E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
9	2.4690E-03	1.8662E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
10	1.9550E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
11	2.2573E-03	1.8718E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
12	2.5597E-03	1.8718E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	242.74	13.282	-2.7443	-23.596	783.96
2	3997.3	241.07	12.327	-2.7443	-20.384	780.33
3	4601.6	310.02	15.647	-2.7443	-26.056	935.11
4	3574.3	219.60	11.705	-2.7443	-20.138	730.41
5	4178.6	219.21	10.912	-2.7443	-17.293	729.78
6	4783.0	297.21	14.802	-2.7443	-24.357	908.53
7	3755.7	220.41	11.707	-2.7443	-20.153	733.42
8	4360.0	220.01	10.913	-2.7443	-17.306	732.75
9	4964.3	298.23	14.801	-2.7443	-24.366	912.04
10	3937.0	245.81	13.314	-2.7443	-23.697	794.47
11	4541.3	244.12	12.357	-2.7443	-20.480	790.81
12	5145.7	313.49	15.661	-2.7443	-26.111	946.49
MINIMUM	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

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	1.6828E-03	1.8549E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
2	1.9851E-03	1.8549E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
3	2.2875E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
4	1.7735E-03	1.8605E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
5	2.0759E-03	1.8605E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
6	2.3782E-03	1.8605E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
7	1.8643E-03	1.8662E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
8	2.1666E-03	1.8662E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
9	2.4690E-03	1.8662E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
10	1.9550E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
11	2.2573E-03	1.8718E-03	1.5444E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
12	2.5597E-03	1.8718E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	1	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 251 di 271

* 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	3393.0	242.74	13.282	-2.7443	-23.596	783.96
2	3997.3	241.07	12.327	-2.7443	-20.384	780.33
3	4601.6	310.02	15.647	-2.7443	-26.056	935.11
4	3574.3	219.60	11.705	-2.7443	-20.138	730.41
5	4178.6	219.21	10.912	-2.7443	-17.293	729.78
6	4783.0	297.21	14.802	-2.7443	-24.357	908.53
7	3755.7	220.41	11.707	-2.7443	-20.153	733.42
8	4360.0	220.01	10.913	-2.7443	-17.306	732.75
9	4964.3	298.23	14.801	-2.7443	-24.366	912.04
10	3937.0	245.81	13.314	-2.7443	-23.697	794.47
11	4541.3	244.12	12.357	-2.7443	-20.480	790.81
12	5145.7	313.49	15.661	-2.7443	-26.111	946.49
MINIMUM	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

PILE GROUP	STRESS, KN/ M**2
1	4273.0
2	4603.8
3	5410.4
4	4214.7
5	4554.6
6	5433.2
7	4326.4
8	4666.1
9	5546.3
10	4612.4
11	4943.1
12	5752.4
MINIMUM	4214.7
Pile N.	4
MAXIMUM	5752.4
Pile N.	12

* 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	-1.2491E-05	-1.8070E-06	-783.96	-23.596	-46.877	-3.8607	-28.754	-1.9481	1920.0	7.8500E+06	7.8500E+06
x(M)	14.080	12.760	0.0000	0.0000	12.320	10.780	16.060	16.060	22.000	0.0000	0.0000
2	-1.2385E-05	-1.8006E-06	-780.33	-20.384	-46.667	-3.7173	-28.700	-1.8558	2262.0	7.8500E+06	7.8500E+06
x(M)	14.080	12.760	0.0000	0.0000	12.540	10.780	16.060	16.060	22.000	0.0000	0.0000
3	-1.8917E-05	-2.3766E-06	-935.11	-26.056	-56.855	-4.3593	-27.795	-2.0720	2604.0	7.8500E+06	7.8500E+06
x(M)	12.980	11.880	0.0000	0.0000	11.220	9.6800	16.060	13.200	22.000	0.0000	0.0000
4	-1.0575E-05	-1.5819E-06	-730.41	-20.138	-43.133	-3.5730	-27.246	-1.9457	2022.7	7.8500E+06	7.8500E+06
x(M)	14.520	13.200	0.0000	0.0000	12.980	11.220	16.060	16.060	22.000	0.0000	0.0000
5	-1.0577E-05	-1.5978E-06	-729.78	-17.293	-43.128	-3.4551	-27.240	-1.8580	2364.6	7.8500E+06	7.8500E+06
x(M)	14.520	12.980	0.0000	0.0000	12.980	11.000	16.060	16.060	22.000	0.0000	0.0000
6	-1.7588E-05	-2.2733E-06	-908.53	-24.357	-55.095	-4.2087	-28.639	-1.9293	2706.6	7.8500E+06	7.8500E+06
x(M)	13.200	11.880	0.0000	0.0000	11.440	9.9000	16.060	13.200	22.000	0.0000	0.0000
7	-1.0616E-05	-1.5837E-06	-733.42	-20.153	-43.294	-3.5749	-27.347	-1.9461	2125.3	7.8500E+06	7.8500E+06
x(M)	14.520	13.200	0.0000	0.0000	12.980	11.220	16.060	16.060	22.000	0.0000	0.0000
8	-1.0617E-05	-1.5996E-06	-732.75	-17.306	-43.286	-3.4569	-27.341	-1.8584	2467.3	7.8500E+06	7.8500E+06
x(M)	14.520	12.980	0.0000	0.0000	12.980	11.000	16.060	16.060	22.000	0.0000	0.0000
9	-1.7649E-05	-2.2750E-06	-912.04	-24.366	-55.286	-4.2101	-28.736	-1.9304	2809.2	7.8500E+06	7.8500E+06
x(M)	13.200	11.880	0.0000	0.0000	11.440	9.9000	16.060	13.200	22.000	0.0000	0.0000
10	-1.2666E-05	-1.8165E-06	-794.47	-23.697	-47.459	-3.8714	-29.079	-1.9479	2227.9	7.8500E+06	7.8500E+06
x(M)	14.080	12.760	0.0000	0.0000	12.320	10.780	16.060	16.060	22.000	0.0000	0.0000
11	-1.2561E-05	-1.8094E-06	-790.81	-20.480	-47.246	-3.7274	-29.027	-1.8556	2569.9	7.8500E+06	7.8500E+06
x(M)	14.080	12.760	0.0000	0.0000	12.320	10.780	16.060	16.060	22.000	0.0000	0.0000
12	-1.9137E-05	-2.3827E-06	-946.49	-26.111	-57.482	-4.3667	-28.061	-2.0777	2911.8	7.8500E+06	7.8500E+06
x(M)	12.980	11.880	0.0000	0.0000	11.220	9.6800	16.060	13.200	22.000	0.0000	0.0000
Min.	-1.9137E-05	-2.3827E-06	-946.49	-26.111	-57.482	-4.3667	-29.079	-2.0777	1920.0	7.8500E+06	7.8500E+06
Pile N.	12	12	12	12	12	12	10	12	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	1.8549E-03	1.6008E-04	273.72	24.450	242.78	13.283	41.848	2.7436	4273.0	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.7000	6.3800	0.0000	0.0000	3.7400	4.4000	0.0000	0.0000	0.0000
2	1.8549E-03	1.5444E-04	272.72	23.686	241.11	12.328	41.497	2.5830	4603.8	7.8500E+06	7.8500E+06

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 252 di 271

x(M)	0.0000	0.0000	7.9200	6.1600	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
3	1.8549E-03	1.4879E-04	319.57	26.425	310.08	15.649	57.650	3.4905	5410.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	5.9400	0.0000	0.0000	3.9600	3.5200	0.0000	0.0000	0.0000
4	1.8605E-03	1.6008E-04	257.36	23.093	219.63	11.706	36.697	2.3719	4214.7	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	6.3800	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
5	1.8605E-03	1.5444E-04	257.24	22.469	219.26	10.913	36.635	2.2491	4554.6	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	6.3800	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
6	1.8605E-03	1.4879E-04	311.43	25.773	297.27	14.804	54.477	3.2745	5433.2	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	5.9400	0.0000	0.0000	3.9600	3.5200	0.0000	0.0000	0.0000
7	1.8662E-03	1.6008E-04	258.23	23.100	220.45	11.708	36.836	2.3730	4326.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	6.3800	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
8	1.8662E-03	1.5444E-04	258.10	22.475	220.06	10.914	36.770	2.2499	4665.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	8.1400	6.3800	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
9	1.8662E-03	1.4879E-04	312.44	25.777	298.30	14.803	54.667	3.2750	5546.3	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	5.9400	0.0000	0.0000	3.9600	3.5200	0.0000	0.0000	0.0000
10	1.8718E-03	1.6008E-04	276.78	24.491	245.86	13.316	42.407	2.7531	4612.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.7000	6.3800	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
11	1.8718E-03	1.5444E-04	275.76	23.725	244.17	12.359	42.052	2.5921	4943.1	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.9200	6.1600	0.0000	0.0000	4.4000	3.7400	0.0000	0.0000	0.0000
12	1.8718E-03	1.4879E-04	322.85	26.447	313.56	15.663	54.312	3.4960	5752.4	7.8500E+06	7.8500E+06
x(M)	0.0000	0.0000	7.2600	5.9400	0.0000	0.0000	3.9600	3.5200	0.0000	0.0000	0.0000
Max. Pile N.	1.8718E-03	1.6008E-04	322.85	26.447	313.56	15.663	58.312	3.4960	5752.4	7.8500E+06	7.8500E+06
	10	1	12	12	12	12	12	12	12	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
44472.2	115.110	867.865	971.933	20373.2	-20373.2

* 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
1.83940E-03	2.81213E-04	5.96550E-04	9.73967E-06	3.76892E-05	-6.14971E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.3083E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3705E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	12	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	2644.5	1.4981	59.397	21.315	-275.07	-70.769
Pile N.	1	11	4	1	12	11
MAXIMUM	4767.6	21.124	98.092	21.315	-171.30	0.3067
Pile N.	12	3	12	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	1.3083E-03	2.1547E-04	5.5272E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3705E-03	3.4695E-04	6.4038E-04	9.7397E-06	3.7689E-05	-6.1497E-05
Pile N.	12	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	2644.5	1.4981	59.397	21.315	-275.07	-70.769
Pile N.	1	11	4	1	12	11
MAXIMUM	4767.6	21.124	98.092	21.315	-171.30	0.3067
Pile N.	12	3	12	1	4	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.	-1.1473E-05	-7.0600E-06	-5.5723	-275.07	-10.127	-19.211	-4.1336	-9.4709	1496.5
Pile N.	11	12	11	12	3	12	3	3	1
Max.	3.4696E-04	6.4038E-04	72.233	109.54	21.124	98.110	5.4761	18.763	3548.9
Pile N.	1	3	11	12	3	12	3	12	12

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 253 di 271

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
70885.7	4451.74	1097.71	892.414	5605.86	-5605.86

* 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
2.94228E-03	2.58293E-03	6.34743E-04	5.74697E-06	1.56056E-05	-6.31659E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.5527E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	3.3319E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	12	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	5131.6	317.28	75.198	12.577	-360.91	1096.3
Pile N.	1	8	4	1	12	8
MAXIMUM	6651.2	453.66	115.59	12.577	-258.58	1418.6
Pile N.	12	3	12	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	2.5527E-03	2.5441E-03	6.0888E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	3.3319E-03	2.6217E-03	6.6060E-04	5.7470E-06	1.5606E-05	-6.3166E-05
Pile N.	12	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	5131.6	317.28	75.198	12.577	-360.91	1096.3
Pile N.	1	8	4	1	12	8
MAXIMUM	6651.2	453.66	115.59	12.577	-258.58	1418.6
Pile N.	12	3	12	1	4	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.	-2.5515E-05	-6.5450E-06	-1418.6	-360.91	-81.078	-20.598	-41.887	-10.623	2903.9
Pile N.	3	12	3	12	3	12	1	6	1
Max.	2.6217E-03	6.6060E-04	452.32	114.70	453.79	115.63	83.084	21.231	8042.4
Pile N.	1	3	3	12	3	12	3	12	12

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
44472.2	164.379	1446.44	1619.94	20396.7	-20396.7

* 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
1.83940E-03	3.13436E-04	9.20732E-04	1.64907E-05	4.10021E-05	-6.21030E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.2832E-03	2.0212E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3956E-03	4.2475E-04	9.9494E-04	1.6491E-05	4.1002E-05	-6.2103E-05
Pile N.	12	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	2594.3	-1.0901	100.03	36.090	-485.56	-80.511
Pile N.	1	11	4	1	12	11
MAXIMUM	4817.7	32.129	163.36	36.090	-313.80	39.396
Pile N.	12	3	12	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	1.2832E-03	2.0212E-04	8.4652E-04	1.6491E-05	4.1002E-05	-6.2103E-05
Pile N.	1	10	1	1	1	1

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 254 di 271

MAXIMUM 2.3956E-03 4.2475E-04 9.9494E-04 1.6491E-05 4.1002E-05 -6.2103E-05
Pile N. 12 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	2594.3	-1.0901	100.03	36.090	-485.56	-80.511
Pile N.	1	11	4	1	12	11
MAXIMUM	4817.7	32.129	163.36	36.090	-313.80	39.396
Pile N.	12	3	12	1	4	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.	-1.2955E-05	-1.0318E-05	-39.396	-485.56	-10.732	-30.364	-4.9220	-15.393	1468.1
Pile N.	11	12	3	12	12	12	2	3	1
Max.	4.2475E-04	9.9494E-04	80.511	171.14	32.131	163.39	7.1719	30.569	4202.4
Pile N.	1	3	11	12	3	12	3	12	12

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
69512.9	3665.15	-159.038	1307.58	-2334.58	2334.58

* 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
2.88347E-03	2.05350E-03	-1.06249E-04	1.34908E-05	-4.67281E-06	-3.10245E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5450.7	259.10	-22.569	29.525	12.363	918.39
Pile N.	10	8	1	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837	1236.7
Pile N.	3	3	9	1	1	3

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06	-3.1025E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06	-3.1025E-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	5450.7	259.10	-22.569	29.525	12.363	918.39
Pile N.	10	8	1	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837	1236.7
Pile N.	3	3	9	1	1	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.	-2.0723E-05	-1.6696E-04	-1236.7	-24.797	-67.589	-22.575	-35.063	-3.8602	3084.4
Pile N.	3	1	3	1	3	1	1	1	10
Max.	2.1446E-03	1.1047E-06	374.70	74.837	387.75	4.2745	70.550	2.6454	7181.9
Pile N.	1	1	3	1	3	1	3	1	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
70885.7	4451.74	229.847	-79.7489	17794.6	-17794.6

* 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
2.95742E-03	2.72656E-03	2.36806E-04	-1.86050E-06	3.26086E-05	-1.04062E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 255 di 271

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.2690E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.6458E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	12	10	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	4564.7	317.46	15.851	-4.0717	-34.674	1050.9
Pile N.	1	5	5	1	12	5
MAXIMUM	7098.6	454.58	22.965	-4.0717	-21.559	1366.1
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	2.2690E-03	2.7140E-03	2.2843E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.6458E-03	2.7391E-03	2.4518E-04	-1.8605E-06	3.2609E-05	-1.0406E-04
Pile N.	12	10	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	4564.7	317.46	15.851	-4.0717	-34.674	1050.9
Pile N.	1	5	5	1	12	5
MAXIMUM	7098.6	454.58	22.965	-4.0717	-21.559	1366.1
Pile N.	12	12	12	1	5	12

* 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.	-2.8334E-05	-3.8506E-06	-1366.1	-34.674	-84.114	-6.7544	-42.397	-3.2409	2583.1
Pile N.	12	12	12	12	12	12	10	12	1
Max.	2.7391E-03	2.4518E-04	472.31	41.095	454.72	22.968	84.851	5.2467	8116.7
Pile N.	10	1	12	12	12	12	12	12	12

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
44472.2	115.110	1446.44	1620.04	12247.7	-12247.7

* 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
1.83940E-03	2.01193E-04	8.76969E-04	1.65088E-05	2.78933E-05	-3.74854E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.4824E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.1964E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	12	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	2992.6	-6.4230	100.80	36.129	-501.72	-68.203
Pile N.	1	11	4	1	12	12
MAXIMUM	4419.5	27.531	163.29	36.129	-331.43	53.185
Pile N.	12	3	12	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	1.4824E-03	8.9759E-05	8.0268E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.1964E-03	3.1263E-04	9.5126E-04	1.6509E-05	2.7893E-05	-3.7485E-05
Pile N.	12	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	2992.6	-6.4230	100.80	36.129	-501.72	-68.203
Pile N.	1	11	4	1	12	12
MAXIMUM	4419.5	27.531	163.29	36.129	-331.43	53.185
Pile N.	12	3	12	1	4	3

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 256 di 271

* 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.	-1.3056E-05	-9.5198E-06	-53.185	-501.72	-8.7066	-29.397	-3.8739	-15.090	1693.5
Pile N.	11	12	3	12	12	1	3	1	1
Max.	3.1263E-04	9.5126E-04	68.203	164.55	27.534	163.33	5.6054	30.141	4019.9
Pile N.	1	3	12	12	3	12	3	12	12

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
69512.9	3665.15	-159.038	1307.58	-2334.58	2334.58

* 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
2.88347E-03	2.05350E-03	-1.06249E-04	1.34908E-05	-4.67281E-06	-3.10245E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06
Pile N.	10	10	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06
Pile N.	3	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	5450.7	259.10	-22.569	29.525	12.363
Pile N.	10	8	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837
Pile N.	3	3	9	1	3

* PILE TOP DISPLACEMENTS, LOCAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	2.7123E-03	1.9624E-03	-1.6696E-04	1.3491E-05	-4.6728E-06
Pile N.	10	10	1	1	1
MAXIMUM	3.0546E-03	2.1446E-03	-4.5540E-05	1.3491E-05	-4.6728E-06
Pile N.	3	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	5450.7	259.10	-22.569	29.525	12.363
Pile N.	10	8	1	9	8
MAXIMUM	6134.8	387.64	-5.4371	29.525	74.837
Pile N.	3	3	9	1	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.	-2.0723E-05	-1.6696E-04	-1236.7	-24.797	-67.589	-22.575	-35.063	-3.8602	3084.4
Pile N.	3	1	3	1	3	1	1	1	10
Max.	2.1446E-03	1.1047E-06	374.70	74.837	387.75	4.2745	70.550	2.6454	7181.9
Pile N.	1	1	3	1	3	1	3	1	3

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
65458.0	1267.40	947.515	-8.09890	22911.0	-22911.0

* 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
2.71699E-03	9.58470E-04	6.53139E-04	-8.14965E-07	4.28874E-05	-8.17323E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	2.0597E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05
Pile N.	1	1	3	1	1
MAXIMUM	3.3743E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05
Pile N.	12	10	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
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APPALDATTORE: 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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 257 di 271

MINIMUM	4146.3	87.817	66.355	-1.7836	-263.59	232.44
Pile N.	1	5	5	1	12	5
MAXIMUM	6711.6	131.85	96.438	-1.7836	-196.85	331.35
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	2.0597E-03	9.5297E-04	6.4947E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	3.3743E-03	9.6397E-04	6.5681E-04	-8.1497E-07	4.2887E-05	-8.1732E-05
Pile N.	12	10	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	4146.3	87.817	66.355	-1.7836	-263.59	232.44
Pile N.	1	5	5	1	12	5
MAXIMUM	6711.6	131.85	96.438	-1.7836	-196.85	331.35
Pile N.	12	12	12	1	5	12

* 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.	-1.1859E-05	-7.3834E-06	-331.35	-263.59	-28.446	-19.411	-13.199	-9.5112	2346.3
Pile N.	12	12	12	12	12	12	12	10	1
Max.	9.6397E-04	6.5681E-04	164.90	110.99	131.88	96.462	26.286	18.649	5068.2
Pile N.	10	1	12	12	12	12	12	12	12

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
45334.1	115.110	1446.44	1620.04	12247.7	-12247.7

* 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
1.87533E-03	2.01203E-04	8.77011E-04	1.65094E-05	2.78937E-05	-3.74857E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	1.5184E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2323E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	12	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	3064.4	-6.4227	100.80	36.131	-501.74	-68.197
Pile N.	1	11	4	1	12	12
MAXIMUM	4491.3	27.531	163.29	36.131	-331.45	53.194
Pile N.	12	3	12	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	1.5184E-03	8.9765E-05	8.0272E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.2323E-03	3.1264E-04	9.5130E-04	1.6509E-05	2.7894E-05	-3.7486E-05
Pile N.	12	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	3064.4	-6.4227	100.80	36.131	-501.74	-68.197
Pile N.	1	11	4	1	12	12
MAXIMUM	4491.3	27.531	163.29	36.131	-331.45	53.194
Pile N.	12	3	12	1	4	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.	-1.3056E-05	-9.5223E-06	-53.194	-501.74	-8.7067	-29.401	-3.8743	-15.092	1734.1
Pile N.	11	12	3	12	12	12	1	3	1
Max.	3.1264E-04	9.5130E-04	68.197	164.56	27.534	163.33	5.6056	30.142	4060.6
Pile N.	1	3	12	12	3	12	3	12	12

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 SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF3A	02	E ZZ CL	VI0103 001	A	258 di 271	

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
70885.7	4451.74	1097.71	892.414	17794.6	-17794.6

* 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
2.95843E-03	2.72708E-03	7.12267E-04	5.75003E-06	3.77651E-05	-1.04386E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	2.2338E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	1	10	1	1	1	1
MAXIMUM	3.6831E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	12	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	4494.2	316.22	74.730	12.584	-335.95	1046.1
Pile N.	1	8	4	1	12	8
MAXIMUM	7151.7	454.60	116.43	12.584	-231.65	1370.8
Pile N.	12	3	12	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	2.2338E-03	2.6883E-03	6.8639E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	1	10	1	1	1	1
MAXIMUM	3.6831E-03	2.7659E-03	7.3814E-04	5.7500E-06	3.7765E-05	-1.0439E-04
Pile N.	12	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	4494.2	316.22	74.730	12.584	-335.95	1046.1
Pile N.	1	8	4	1	12	8
MAXIMUM	7151.7	454.60	116.43	12.584	-231.65	1370.8
Pile N.	12	3	12	1	4	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.	-2.8033E-05	-7.9743E-06	-1370.8	-335.95	-84.176	-22.368	-42.761	-10.872	2543.2
Pile N.	3	12	3	12	3	12	1	6	1
Max.	2.7659E-03	7.3814E-04	473.57	126.61	454.72	116.46	84.505	22.080	8172.0
Pile N.	1	3	3	12	3	12	3	12	12

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
36714.0	115.110	-15505.3	-4662.91	-39558.9	39558.9

* 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
1.51745E-03	-3.33413E-04	-0.0106992	-5.65411E-05	-1.57945E-04	1.15540E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-6.8606E-05	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.1035E-03	4.8240E-05	-0.010445	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	1	10	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	-133.91	-49.710	-1645.5	-123.74	4168.3	-38.402
Pile N.	12	1	3	1	8	1
MAXIMUM	6232.5	61.234	-1077.3	-123.74	5635.0	360.68
Pile N.	1	10	8	1	3	10

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-6.8606E-05	-7.1507E-04	-0.010954	-5.6541E-05	-1.5794E-04	1.1554E-04
Pile N.	12	1	3	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 259 di 271

MAXIMUM 3.1035E-03 4.8240E-05 -0.010445 -5.6541E-05 -1.5794E-04 1.1554E-04
Pile N. 1 10 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	-133.91	-49.710	-1645.5	-123.74	4168.3	-38.402
Pile N.	12	1	3	1	8	1
MAXIMUM	6232.5	61.234	-1077.3	-123.74	5635.0	360.68
Pile N.	1	10	8	1	3	10

* 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.	-7.1507E-04	-0.010954	-360.68	-1790.9	-49.713	-1645.8	-12.638	-290.50	75.778
Pile N.	1	3	10	3	1	3	1	3	12
Max.	2.3287E-04	8.1774E-05	42.006	5635.0	61.243	333.12	9.4914	187.14	1.9771E+04
Pile N.	11	3	12	3	10	3	1	3	1

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
48151.6	19812.7	31.4860	-3455.99	821.370	-821.370

* 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
1.99281E-03	0.0153112	5.03642E-05	-5.03968E-05	1.58939E-06	-2.35455E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

* 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.	-9.9829E-05	-1.7648E-04	-7362.6	-118.29	-465.45	-25.677	-233.84	-4.1142	1060.2
Pile N.	12	6	1	12	3	12	3	3	1
Max.	0.015651	2.7715E-04	2447.5	96.870	2046.3	29.908	334.29	4.3330	2.5571E+04
Pile N.	10	1	12	3	12	1	12	1	12

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
48127.9	19530.2	62.9720	-3471.49	1326.62	-1326.62

* 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
1.99182E-03	0.0149853	7.69851E-05	-5.06220E-05	2.60482E-06	-2.32903E-04

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 260 di 271

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.2617E-04	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0575E-03	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	12	10	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	1880.8	1386.4	-22.775	-110.79	-128.27	5528.6
Pile N.	1	5	3	1	1	5
MAXIMUM	6140.5	2017.9	32.765	-110.79	87.034	7238.7
Pile N.	12	12	1	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.2617E-04	0.014644	-1.5081E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0575E-03	0.015327	3.0478E-04	-5.0622E-05	2.6048E-06	-2.3290E-04
Pile N.	12	10	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	1880.8	1386.4	-22.775	-110.79	-128.27	5528.6
Pile N.	1	5	3	1	1	5
MAXIMUM	6140.5	2017.9	32.765	-110.79	87.034	7238.7
Pile N.	12	12	1	1	3	12

* 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.	-9.8517E-05	-1.5113E-04	-7238.7	-128.27	-456.40	-22.782	-230.51	-3.8756	1064.3
Pile N.	12	6	12	1	12	3	12	1	1
Max.	0.015327	3.0478E-04	2402.5	87.034	2018.6	32.768	331.43	4.7845	2.5192E+04
Pile N.	10	1	12	3	12	1	12	1	12

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
43307.3	597.975	-15527.3	-4482.15	-1.32328E+05	1.32328E+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
1.93039E-03	-1.20505E-03	-0.0115831	-5.40545E-05	-3.42463E-04	4.26818E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

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 SPALLA A E SPALLA B			COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 261 di 271

* 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.	-1.5699E-03	-0.011826	-847.41	-1900.3	-20.457	-1648.4	-17.832	-294.31	421.08
Pile N.	1	3	12	3	11	3	1	3	11
Max.	2.6078E-04	8.9982E-05	71.642	5479.2	104.30	351.46	26.577	190.75	2.1667E+04
Pile N.	11	1	11	3	10	3	1	3	1

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
53582.4	6438.35	31.4860	-1044.56	829.135	-829.135

* 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
2.21925E-03	3.65510E-03	2.62799E-05	-1.04052E-05	1.52680E-06	-6.90257E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.8983E-03	3.5849E-03	-2.0544E-05	1.5268E-06	-6.9026E-05
Pile N.	1	1	3	1	1
MAXIMUM	2.5402E-03	3.7253E-03	7.3104E-05	1.5268E-06	-6.9026E-05
Pile N.	12	10	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	3823.8	458.95	-4.8550	-22.772	-34.336
Pile N.	1	5	3	1	5
MAXIMUM	5106.6	664.34	10.162	-22.772	17.892
Pile N.	12	12	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.8983E-03	3.5849E-03	-2.0544E-05	1.5268E-06	-6.9026E-05
Pile N.	1	1	3	1	1
MAXIMUM	2.5402E-03	3.7253E-03	7.3104E-05	1.5268E-06	-6.9026E-05
Pile N.	12	10	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	3823.8	458.95	-4.8550	-22.772	-34.336
Pile N.	1	5	3	1	5
MAXIMUM	5106.6	664.34	10.162	-22.772	17.892
Pile N.	12	12	1	3	12

* 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.	-3.6215E-05	-2.1092E-05	-2098.1	-34.336	-116.69	-4.8563	-60.222	-1.1754	2163.8
Pile N.	12	6	12	1	12	3	10	10	1
Max.	3.7253E-03	7.3103E-05	648.79	17.892	664.49	10.164	121.29	1.7222	9184.4
Pile N.	10	1	12	3	12	1	12	10	12

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
46799.7	19221.4	1.20100E-07	-3445.13	62.9771	-62.9771

* 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
1.93644E-03	0.0146035	2.15947E-05	-4.95393E-05	1.64505E-07	-2.24669E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	9.2432E-04	0.014269	-2.0133E-04	1.6451E-07	-2.2467E-04
Pile N.	1	1	3	1	1
MAXIMUM	2.9486E-03	0.014938	2.4452E-04	1.6451E-07	-2.2467E-04
Pile N.	12	10	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
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APPALDATORE: 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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 262 di 271

MINIMUM	1877.1	1364.1	-28.936	-108.42	-108.94	5422.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5922.8	1986.8	27.385	-108.42	106.62	7103.6
Pile N.	12	12	1	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.2432E-04	0.014269	-2.0133E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.9486E-03	0.014938	2.4452E-04	-4.9539E-05	1.6451E-07	-2.2467E-04
Pile N.	12	10	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	1877.1	1364.1	-28.936	-108.42	-108.94	5422.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5922.8	1986.8	27.385	-108.42	106.62	7103.6
Pile N.	12	12	1	1	3	12

* 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.	-9.7032E-05	-2.0133E-04	-7103.6	-108.94	-445.63	-28.945	-226.57	-4.7351	1062.2
Pile N.	12	3	12	1	12	3	12	3	1
Max.	0.014938	2.4452E-04	2348.8	106.62	1987.4	27.388	328.05	3.9797	2.4665E+04
Pile N.	10	1	12	3	12	1	12	1	12

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
43307.3	597.975	-15527.3	-4482.15	-1.32328E+05	1.32328E+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
1.93039E-03	-1.20505E-03	-0.0115831	-5.40545E-05	-3.42463E-04	4.26818E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-2.3019E-03	-1.5699E-03	-0.011826	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	6.1627E-03	-8.4019E-04	-0.011340	-5.4055E-05	-3.4246E-04	4.2682E-04
Pile N.	1	10	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	-4434.7	-8.3202	-1648.1	-118.30	4002.3	466.59
Pile N.	12	1	3	1	8	1
MAXIMUM	1.0200E+04	98.720	-1076.0	-118.30	5479.2	847.41
Pile N.	1	10	8	1	3	12

* 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.	-1.5699E-03	-0.011826	-847.41	-1900.3	-20.457	-1648.4	-17.832	-294.31	421.08
Pile N.	1	3	12	3	11	3	3	3	11
Max.	2.6078E-04	8.9982E-05	71.642	5479.2	104.30	351.46	26.577	190.75	2.1667E+04
Pile N.	11	1	11	3	10	3	1	3	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 263 di 271

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
42747.9	19372.5	10.9860	-3579.89	1523.81	-1523.81

* 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
1.76751E-03	0.0147949	3.99209E-05	-5.17212E-05	2.59329E-06	-2.31128E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.0992E-04	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.8251E-03	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	12	10	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	1448.6	1374.8	-28.882	-113.19	-114.35	5468.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5676.1	2003.0	29.348	-113.19	109.34	7169.4
Pile N.	12	12	1	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.0992E-04	0.014446	-1.9283E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	2.8251E-03	0.015144	2.7267E-04	-5.1721E-05	2.5933E-06	-2.3113E-04
Pile N.	12	10	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	1448.6	1374.8	-28.882	-113.19	-114.35	5468.7
Pile N.	1	5	3	1	1	5
MAXIMUM	5676.1	2003.0	29.348	-113.19	109.34	7169.4
Pile N.	12	12	1	1	3	12

* 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.	-9.7737E-05	-1.9307E-04	-7169.4	-114.35	-451.05	-28.891	-228.58	-4.6449	819.74
Pile N.	12	6	12	1	12	3	12	3	1
Max.	0.015144	2.7267E-04	2376.6	109.34	2003.5	29.351	329.79	4.3006	2.4723E+04
Pile N.	10	1	12	3	12	1	12	1	12

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
46799.7	115.110	-15505.3	-4662.91	-39552.5	39552.5

* 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
1.94396E-03	-3.42630E-04	-0.0107190	-5.65600E-05	-1.60052E-04	1.17908E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	3.3302E-04	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	12	1	3	1	1	1
MAXIMUM	3.5549E-03	3.9150E-05	-0.010464	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	1	10	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	680.61	-49.778	-1645.6	-123.78	4169.7	-36.191
Pile N.	12	1	3	1	8	1
MAXIMUM	6969.1	61.202	-1077.2	-123.78	5637.6	363.09
Pile N.	1	10	8	1	3	10

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	3.3302E-04	-7.2441E-04	-0.010974	-5.6560E-05	-1.6005E-04	1.1791E-04
Pile N.	12	1	3	1	1	1

APPALTATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 264 di 271

MAXIMUM 3.5549E-03 3.9150E-05 -0.010464 -5.6560E-05 -1.6005E-04 1.1791E-04
Pile N. 1 10 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	680.61	-49.778	-1645.6	-123.78	4169.7	-36.191
Pile N.	12	1	3	1	8	1
MAXIMUM	6969.1	61.202	-1077.2	-123.78	5637.6	363.09
Pile N.	1	10	8	1	3	10

* 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.	-7.2441E-04	-0.010974	-363.09	-1794.2	-49.781	-1646.0	-12.738	-290.65	385.15
Pile N.	1	3	10	3	1	3	1	3	12
Max.	2.3040E-04	8.2111E-05	41.761	5637.6	61.217	333.95	9.6539	187.33	2.0195E+04
Pile N.	11	3	12	3	10	3	1	3	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
48151.6	19812.7	31.4860	-3455.99	821.370	-821.370

* 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
1.99281E-03	0.0153112	5.03642E-05	-5.03968E-05	1.58939E-06	-2.35455E-04

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.2254E-04	0.014971	-1.7642E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	1	1	3	1	1	1
MAXIMUM	3.0631E-03	0.015651	2.7715E-04	-5.0397E-05	1.5894E-06	-2.3546E-04
Pile N.	12	10	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	1873.5	1407.0	-25.669	-110.29	-118.29	5630.4
Pile N.	1	5	3	1	1	5
MAXIMUM	6151.7	2045.7	29.905	-110.29	96.870	7362.6
Pile N.	12	12	1	1	3	12

* 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.	-9.9829E-05	-1.7648E-04	-7362.6	-118.29	-465.45	-25.677	-233.84	-4.1142	1060.2
Pile N.	12	6	12	1	12	3	12	3	1
Max.	0.015651	2.7715E-04	2447.5	96.870	2046.3	29.908	334.29	4.3330	2.5571E+04
Pile N.	10	1	12	3	12	1	12	1	12

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
44472.2	115.110	964.294	1079.95	59.5534	-59.5534

* 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
1.83940E-03	7.22733E-05	5.39756E-04	1.11190E-05	5.55174E-06	-1.40815E-06

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 265 di 271

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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.	-4.2444E-06	-5.5975E-06	-74.635	-350.00	-3.8597	-18.652	-2.4375	-9.7613	2047.6
Pile N.	11	12	3	12	3	12	3	3	1
Max.	1.4733E-04	5.8979E-04	22.208	103.32	21.512	108.64	3.6094	19.657	3196.9
Pile N.	1	3	3	12	3	12	3	12	12

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
51231.8	3071.91	736.006	593.586	3851.52	-3851.52

* 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
2.12124E-03	1.77898E-03	4.24718E-04	3.77757E-06	1.03332E-05	-4.31540E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.8573E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3852E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	12	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	3741.8	219.03	50.458	8.2672	-241.66	756.30
Pile N.	1	8	4	1	12	8
MAXIMUM	4796.8	312.95	77.444	8.2672	-173.47	977.80
Pile N.	12	3	12	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	1.8573E-03	1.7535E-03	4.0772E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	1	10	1	1	1	1
MAXIMUM	2.3852E-03	1.8045E-03	4.4172E-04	3.7776E-06	1.0333E-05	-4.3154E-05
Pile N.	12	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	3741.8	219.03	50.458	8.2672	-241.66	756.30
Pile N.	1	8	4	1	12	8
MAXIMUM	4796.8	312.95	77.444	8.2672	-173.47	977.80
Pile N.	12	3	12	1	4	3

APPALTATORE: Consorzio <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI			ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: Mandataria <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B							COMMESSA IF3A	LOTTO 02	CODIFICA E Z CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 266 di 271

* 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.	-1.7482E-05	-4.3482E-06	-977.80	-241.66	-55.725	-13.748	-28.806	-7.1014	2117.4
Pile N.	3	12	3	12	3	12	3	12	1
Max.	1.8045E-03	4.4172E-04	311.25	76.655	313.01	77.460	57.259	14.207	5661.7
Pile N.	1	3	3	12	3	12	3	12	12

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
44472.2	115.110	964.294	1079.95	13602.0	-13602.0

* 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
1.83940E-03	2.12150E-04	6.13760E-04	1.09982E-05	2.73412E-05	-4.14718E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.4682E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05
Pile N.	1	10	1	1	1
MAXIMUM	2.2106E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05
Pile N.	12	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	2964.2	-0.2031	66.648	24.070	-323.65
Pile N.	1	11	4	1	12
MAXIMUM	4447.9	21.909	108.92	24.070	-209.12
Pile N.	12	3	12	1	4

* PILE TOP DISPLACEMENTS, LOCAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.4682E-03	1.3791E-04	5.6427E-04	1.0998E-05	2.7341E-05
Pile N.	1	10	1	1	1
MAXIMUM	2.2106E-03	2.8639E-04	6.6325E-04	1.0998E-05	2.7341E-05
Pile N.	12	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	2964.2	-0.2031	66.648	24.070	-323.65
Pile N.	1	11	4	1	12
MAXIMUM	4447.9	21.909	108.92	24.070	-209.12
Pile N.	12	3	12	1	4

* 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.	-8.3483E-06	-6.8714E-06	-27.865	-323.65	-7.1950	-20.232	-3.3307	-10.263	1677.4
Pile N.	11	12	3	12	3	12	2	3	1
Max.	2.8639E-04	6.6325E-04	52.015	114.07	21.911	108.94	4.8646	20.378	3500.1
Pile N.	1	3	11	12	3	12	3	12	12

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
47296.6	1548.57	-126.000	-355.267	773.782	-773.782

* 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
1.95716E-03	8.84725E-04	-6.36587E-05	-3.03204E-06	5.41223E-07	-1.82955E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****
MINIMUM	1.8712E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07
Pile N.	1	1	3	1	1
MAXIMUM	2.0431E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07
Pile N.	12	10	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
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APPALDATORE: 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 SPALLA A E SPALLA B	COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO IF3A 02 E ZZ CL VI0103 001 A 267 di 271

MINIMUM	3769.5	110.18	-15.027	-6.6356	26.603	384.21
Pile N.	1	5	3	1	7	5
MAXIMUM	4113.2	160.43	-7.0747	-6.6356	50.081	504.46
Pile N.	12	12	7	1	3	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.8712E-03	8.6426E-04	-7.7303E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0431E-03	9.0519E-04	-5.0015E-05	-3.0320E-06	5.4122E-07	-1.8296E-05
Pile N.	12	10	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	3769.5	110.18	-15.027	-6.6356	26.603	384.21
Pile N.	1	5	3	1	7	5
MAXIMUM	4113.2	160.43	-7.0747	-6.6356	50.081	504.46
Pile N.	12	12	7	1	3	12

* 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.	-8.7962E-06	-7.7303E-05	-504.46	-13.715	-28.243	-15.029	-14.575	-2.6831	2133.1
Pile N.	12	3	12	3	12	3	10	3	1
Max.	9.0519E-04	7.0722E-07	157.31	50.081	160.46	2.4974	29.314	1.3551	3848.4
Pile N.	10	3	12	3	12	3	12	9	12

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
51231.8	3071.91	157.429	-54.5222	11977.1	-11977.1

* 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
2.12124E-03	1.86337E-03	1.54436E-04	-1.25398E-06	2.01635E-05	-6.71912E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

* 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.	-1.9137E-05	-2.3827E-06	-946.49	-26.111	-57.482	-4.3667	-29.079	-2.0777	1920.0
Pile N.	12	12	12	12	12	12	10	12	1
Max.	1.8718E-03	1.6008E-04	322.85	26.447	313.56	15.663	58.312	3.4960	5752.4
Pile N.	10	1	12	12	12	12	12	12	12

APPALTATORE: Consorzio HIRPINIA - ORSARA AV	Soci WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA				
PROGETTAZIONE: Mandatario ROCKSOIL S.P.A.	Mandanti NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 268 di 271

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
44472.2	115.110	964.294	1079.95	59.5534	-59.5534

* 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
1.83940E-03	7.22733E-05	5.39756E-04	1.11190E-05	5.55174E-06	-1.40815E-06

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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	1.7956E-03	-2.7799E-06	4.8972E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	1	10	1	1	1	1
MAXIMUM	1.8832E-03	1.4733E-04	5.8979E-04	1.1119E-05	5.5517E-06	-1.4082E-06
Pile N.	12	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	3618.5	-1.4079	67.534	24.334	-350.00	-6.4057
Pile N.	1	12	4	1	12	12
MAXIMUM	3793.6	21.509	108.62	24.334	-237.13	74.635
Pile N.	12	3	12	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.	-4.2444E-06	-5.5975E-06	-74.635	-350.00	-3.8597	-18.652	-2.4375	-9.7613	2047.6
Pile N.	11	12	3	12	3	12	3	3	1
Max.	1.4733E-04	5.8979E-04	22.208	103.32	21.512	108.64	3.6094	19.657	3196.9
Pile N.	1	3	3	12	3	12	3	12	12

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
50285.0	2529.44	-109.698	903.572	-1610.41	1610.41

* 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
2.08176E-03	1.41564E-03	-7.32155E-05	9.31339E-06	-3.22248E-06	-2.13853E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
Pile N.	10	10	1	1	1	1
MAXIMUM	2.1997E-03	1.4785E-03	-3.1305E-05	9.3134E-06	-3.2225E-06	-2.1385E-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	3954.6	178.83	-15.580	20.382	8.4600	633.12
Pile N.	10	8	1	1	9	8
MAXIMUM	4426.2	267.52	-3.7368	20.382	51.601	852.63
Pile N.	3	3	9	1	1	3

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.9638E-03	1.3528E-03	-1.1513E-04	9.3134E-06	-3.2225E-06	-2.1385E-05
Pile N.	10	10	1	1	1	1

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 SPALLA A E SPALLA B		COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 269 di 271

MAXIMUM 2.1997E-03 1.4785E-03 -3.1305E-05 9.3134E-06 -3.2225E-06 -2.1385E-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	3954.6	178.83	-15.580	20.382	8.4600	633.12
Pile N.	10	8	1	1	9	8
MAXIMUM	4426.2	267.52	-3.7368	20.382	51.601	852.63
Pile N.	3	3	9	1	1	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.	-1.4217E-05	-1.1513E-04	-852.63	-17.087	-46.505	-15.583	-24.139	-2.6622	2237.9
Pile N.	3	1	3	1	3	1	1	1	10
Max.	1.4785E-03	7.5762E-07	258.16	51.601	267.58	2.9411	48.646	1.8216	5062.8
Pile N.	1	1	3	1	3	1	3	1	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
47488.2	871.021	633.508	-25.9153	15522.8	-15522.8

* 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
1.96515E-03	6.53669E-04	4.35869E-04	-7.73164E-07	2.85479E-05	-5.49281E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.5253E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.4050E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	12	10	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	3078.2	60.341	44.394	-1.6921	-175.45	160.66
Pile N.	1	5	5	1	12	5
MAXIMUM	4836.5	90.834	64.293	-1.6921	-131.59	229.49
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.5253E-03	6.4845E-04	4.3239E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.4050E-03	6.5889E-04	4.3935E-04	-7.7316E-07	2.8548E-05	-5.4928E-05
Pile N.	12	10	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	3078.2	60.341	44.394	-1.6921	-175.45	160.66
Pile N.	1	5	5	1	12	5
MAXIMUM	4836.5	90.834	64.293	-1.6921	-131.59	229.49
Pile N.	12	12	12	1	5	12

* 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.	-8.0151E-06	-4.8891E-06	-229.49	-175.45	-19.412	-12.893	-9.0571	-6.3662	1741.9
Pile N.	12	12	12	12	12	12	11	10	1
Max.	6.5889E-04	4.3935E-04	112.58	73.837	90.850	64.305	18.043	12.418	3603.5
Pile N.	10	1	12	12	12	12	12	12	12

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
44472.2	115.110	7.90600E-09	-0.23020	8185.00	-8185.00

* 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
1.83940E-03	1.49721E-04	4.60362E-05	-3.85978E-08	1.31729E-05	-2.54021E-05

APPALDATORE: Consorzio Soci HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI					
PROGETTAZIONE: Mandatario Mandanti ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA	RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 270 di 271

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6362E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0426E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	12	10	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	3299.8	7.6143	-0.3277	-0.084471	15.027	-0.7412
Pile N.	1	5	5	1	12	5
MAXIMUM	4112.2	12.631	0.4860	-0.084471	16.114	9.4642
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6362E-03	1.4946E-04	4.5862E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.0426E-03	1.4998E-04	4.6210E-05	-3.8598E-08	1.3173E-05	-2.5402E-05
Pile N.	12	10	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	3299.8	7.6143	-0.3277	-0.084471	15.027	-0.7412
Pile N.	1	5	5	1	12	5
MAXIMUM	4112.2	12.631	0.4860	-0.084471	16.114	9.4642
Pile N.	12	12	12	1	5	12

* 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.	-2.9952E-06	-2.8311E-06	-9.4642	-1.2114	-4.5553	-2.1751	-2.2144	-0.8091	1867.3
Pile N.	12	5	12	8	12	12	12	12	1
Max.	1.4998E-04	4.6210E-05	28.486	16.114	12.631	0.4852	3.1748	0.6691	2419.4
Pile N.	10	1	12	5	12	12	12	12	12

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
51231.8	3071.91	157.429	-54.5222	11977.1	-11977.1

* 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
2.12124E-03	1.86337E-03	1.54436E-04	-1.25398E-06	2.01635E-05	-6.71912E-05

* PILE TOP DISPLACEMENTS, GLOBAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

* PILE TOP DISPLACEMENTS, LOCAL *

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.6828E-03	1.8549E-03	1.4879E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	1	1	3	1	1	1
MAXIMUM	2.5597E-03	1.8718E-03	1.6008E-04	-1.2540E-06	2.0164E-05	-6.7191E-05
Pile N.	12	10	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	3393.0	219.21	10.912	-2.7443	-26.111	729.78
Pile N.	1	5	5	1	12	5
MAXIMUM	5145.7	313.49	15.661	-2.7443	-17.293	946.49
Pile N.	12	12	12	1	5	12

APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA - ORSARA AV WEBUILD ITALIA PIZZAROTTI	ITINERARIO NAPOLI – BARI RADDOPPIO TRATTA APICE – ORSARA II LOTTO FUNZIONALE HIRPINIA - ORSARA					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A. NET ENGINEERING S.P.A., PINI, GCF ELETTRI-FER, M-INGEGNERIA						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF3A	LOTTO 02	CODIFICA E ZZ CL	DOCUMENTO VI0103 001	REV. A	FOGLIO 271 di 271

* 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.	-1.9137E-05	-2.3827E-06	-946.49	-26.111	-57.482	-4.3667	-29.079	-2.0777	1920.0
Pile N.	12	12	12	12	12	12	10	12	1
Max.	1.8718E-03	1.6008E-04	322.85	26.447	313.56	15.663	58.312	3.4960	5752.4
Pile N.	10	1	12	12	12	12	12	12	12